EUROPEAN COMMISSION
DG Competition

# *CASE M.8480 – PRAXAIR / LINDE*

(Only the English text is authentic)

# MERGER PROCEDURE
# REGULATION (EC) 139/2004

Article 8(2) Regulation (EC) 139/2004

Date: 20/08/2018

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EUROPEAN
COMMISSION

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**COMMISSION DECISION**

**of 20.08.2018**

**declaring a concentration to be compatible with the internal market and the EEA agreement**

**(Case M.8480 – PRAXAIR / LINDE)**

(Text with EEA relevance)

(Only the English text is authentic)

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**COMMISSION DECISION**

**of 20.08.2018**

**declaring a concentration to be compatible with the internal market and the EEA agreement**

**(Case M.8480 – PRAXAIR / LINDE)**

(Text with EEA relevance)

(Only the English text is authentic)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to the Agreement on the European Economic Area, and in particular Article 57 thereof,

Having regard to Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings[1], and in particular Article 8(2) thereof,

Having regard to the Commission's Decision of 16 February 2018 to initiate proceedings in this case,

Having given the undertakings concerned the opportunity to make known their views on the objections raised by the Commission,

Having regard to the opinion of the Advisory Committee on Concentrations[2],

Having regard to the final report of the Hearing Officer in this case[3],

Whereas:

## 1. INTRODUCTION

(1) On 12 January 2018, the Commission received notification of a concentration pursuant to Article 4 of Regulation (EC) No 139/2004 ('the Merger Regulation') that would result from the proposed merger, within the meaning of Article 3(1)(a) of the Merger Regulation, of the entire undertaking of Praxair, Inc. (United States of America) and the entire undertaking of Linde AG (Germany) to be implemented by way of a purchase of shares in a newly created company ('the Transaction'). The undertaking comprising Praxair, Inc. and its subsidiaries and the undertaking comprising Linde AG and its subsidiaries are hereinafter, respectively, referred to as "Praxair" and "Linde". Linde and Praxair are hereinafter collectively referred to as “the Notifying Parties” and individually as a “Notifying Party”.

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1 OJ L 24, 29.1.2004, p. 1. With effect from 1 December 2009, the Treaty on the Functioning of the European Union ("TFEU") has introduced certain changes, such as the replacement of "Community" by "Union" and "common market" by "internal market". The terminology of the TFEU will be used throughout this Decision.

2 OJ C ...,...200. , p....

3 OJ C ...,...200. , p....

(2) The recitals in this Decision are arranged as follows. Section 2 describes the Notifying Parties and explains why the Transaction would result in a concentration. Section 3 explains why the Transaction has a Union dimension. Section 4 describes the procedure followed in this case. Section 5 describes the investigation undertaken by the Commission into the Transaction. Section 6 provides an overview of the relevant gases industry in the European Economic Area ('EEA'). Section 7 defines the relevant product and geographic markets. Section 8 sets out the Commission's assessment of whether the Transaction is likely to significantly impede effective competition in each of the relevant markets. Section 9 sets out the Commission's assessment of the commitments proposed by the Notifying Parties. Section 10 contains the Commission's conclusions.

## 2. THE NOTIFYING PARTIES AND THE TRANSACTION

(3) The Notifying Parties are both international groups of companies active in the supply of a wide range of gases (namely, industrial gases, medical gases, specialty gases and helium) and of related services, notably homecare services for patients with respiratory problems and engineering and plant construction services. In addition, Praxair is also active in the provision of surface coating technologies.

(4) On 1 June 2017, Praxair and Linde entered into a business combination agreement under which they agreed to merge the whole of their respective businesses in a so-called "merger of equals". The Transaction entails the creation of a new company incorporated in Ireland and named "Linde plc" (hereinafter referred to in this Decision as "New HoldCo"). The Transaction is structured, for Linde's shareholders, as an exchange offer under German law[4] and, for Praxair, as a reverse triangular merger under Delaware law.[5] As a result of the Transaction, the Notifying Parties will become wholly-owned subsidiaries of New HoldCo, in which the shareholders of Praxair and of Linde will hold, respectively and on a fully diluted basis, approximately 50% each of the shares.[6]

(5) It follows that the Transaction would result in a concentration within the meaning of Article 3(1)(a) of the Merger Regulation.

## 3. UNION DIMENSION

(6) In 2016[7], the undertakings concerned had a combined aggregate world-wide turnover of more than EUR 5 000 million[8] (Praxair: EUR 9.5 billion; Linde: EUR 17 billion). Each of them had a Union-wide turnover in excess of EUR 250 million (Praxair:

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4 New HoldCo made an exchange offer to Linde's shareholders to acquire each Linde share in exchange for New HoldCO shares, with a minimum acceptance threshold of 75% (subsequently lowered to 60%). As of the date, of notification of the Transaction, over 90% of Linde's shareholders had accepted the tender offer. See Form CO, Section 1, paragraph 2.

5 Praxair will merge into a special purpose vehicle incorporated in the United States of America and will become a wholly-owned indirect subsidiary of New HoldCo. Praxair shareholders have already voted in favour of the Transaction.

6 Assuming acceptance of the exchange offer for 100% of the outstanding Linde shares. As mentioned in footnote 4, less than 10% of Linde's shareholders did not tender their shares within the deadline set. They will therefore remain as minority shareholders in Linde, a subsidiary of New HoldCo.

7 The last financial year for which data were available at the time of notification of the Transaction.

8 Turnover calculated in accordance with Article 5 of the Merger Regulation and with the Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings ("Consolidated Jurisdictional Notice"), OJ C 95, 16.4.2008, p. 1.

EUR […]; Linde: EUR […]). Neither of the undertakings concerned achieved more than two-thirds of its aggregate Union-wide turnover within one and the same Member State. The notified concentration therefore has a Union dimension within the meaning of Article 1(2) of the Merger Regulation.

## 4. THE PROCEDURE

(7) After a preliminary examination of the notification and based on a first phase market investigation, the Commission decided on 16 February 2018 to initiate proceedings pursuant Article 6(1)(c) of the Merger Regulation and Article 57 of the Agreement on the European Economic Area ("the Article 6(1)(c) Decision"). In the Article 6(1)(c) Decision, the Commission concluded that the Transaction raised serious doubts as to its compatibility with the internal market and with the Agreement on the European Economic Area ('EEA Agreement') in relation to the following markets as a result of the following effects:

(a) industrial gases[9], as a result of horizontal non-coordinated and coordinated effects[10] as well as vertical non-coordinated effects;

(b) medical gases, as a result of horizontal non-coordinated and coordinated effects[11] as well as vertical non-coordinated effects;[12]

(c) noble gases and noble gas mixtures in the EEA, electronic specialty gases ("ESGs") in the EEA, and calibration gases and other mixtures at national level, as a result of horizontal non-coordinated and vertical non-coordinated effects;

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9 That is: (i) the EEA tonnage markets for carbon monoxide, nitrogen and oxygen, (ii) the EEA small on-site plant markets for oxygen and nitrogen, (iii) the bulk markets for the supply of argon (EEA/national/Benelux), carbon dioxide (EEA/national/Benelux), hydrogen (national/Benelux), nitrogen (national/Benelux) and oxygen (national/Benelux) identified in Table 4 and 7 of the Article 6(1)(c) Decision (which correspond, in the essence, to Tables 6 and 13 of this Decision and contain also the EEA market for carbon dioxide), (iv) the EEA/national/Benelux cylinder markets for the supply of acetylene (all purity, standard purity grades), argon (all purity, standard purity grades), carbon dioxide (excluding dry ice: all purity, standard purity and high purity grades), carbon monoxide (standard purity grades), hydrogen (all purity, standard purity grades), nitrogen (all purity, standard purity grades), nitrous oxide (standard purity grades), and oxygen (all purity, standard purity grades) identified in Table 5 of the Article 6(1)(c) Decision (which corresponds to Table 11 of this Decision) and (v) the national/Benelux markets for the supply of dry ice identified in Table 6 of the Article 6(1)(c) Decision (which corresponds to Table 12 of this Decision).

10 Including the possible EEA market for small on-site plant supplies for hydrogen.

11 That is: (i) the national bulk markets for the supply of medical oxygen, medical nitrogen and medical nitrous oxide identified in Table 15 of the Article 6(1)(c) Decision (which corresponds, in the essence, to Table 36 of this Decision and contain also the EEA market for nitrous oxide); (ii) the national cylinder markets for the supply of medical carbon dioxide, medical argon, medical nitrogen, medical nitrous oxide, medical nitric oxide and medical oxygen identified in Table 16 of the Article 6(1)(c) Decision (which corresponds, in the essence, to Table 37 of this Decision and contain also the EEA market for nitrous oxide and the EEA market for nitric oxide, but it does not contain the market for nitric oxide in Germany); (iii) the EEA markets for the cylinder supply of medical nitric oxide and for the bulk and cylinder supply of medical nitrous oxide identified in Tables 15 and 16 of the Article 6(1)(c) Decision (which correspond, in the essence, to Tables 36 and 37 of this Decision, with the differences explained at point (i) and (ii) of this footnote).

12 That is: (i) the upstream national markets for the bulk supply of medical gases and the downstream national markets for the cylinder supply of medical gases and (ii) the upstream national markets for the bulk and cylinder supply of medical oxygen and the downstream national markets for the provision of (oxygen based) respiratory homecare services and possible sub-markets (that is, gaseous oxygen and liquid oxygen).

(d) refrigerants and chemicals, both at national level, as a result of vertical non-coordinated effects;

(e) helium procurement, at global level, as a result of horizontal non-coordinated and coordinated effects as well as vertical non-coordinated effects;

(f) helium wholesale (at global level) and helium retail (at national level, with the exception of the potential market for the retail supply of helium in cryogenic portable tanks which was considered likely to be global), as a result of horizontal non-coordinated effects and vertical non-coordinated effects;

(g) respiratory homecare services (and potential sub-markets) in Spain and Portugal, as a result of horizontal non-coordinated and coordinated effects as well as vertical non-coordinated effects;[13]

(h) respiratory homecare services (and potential sub-markets) in Italy, as a result of horizontal coordinated effects.

(8) Moreover, the Commission concluded that serious doubts as to the Transaction's compatibility with the internal market and with the EEA Agreement could not be excluded with respect to refrigerants and chemicals, both at national level, as a result of horizontal non-coordinated and coordinated effects.

(9) On 22 February 2018, the second phase investigation period was extended by ten working days at the request of the Notifying Parties pursuant to the first sentence of the second subparagraph of Article 10(3) of the Merger Regulation.

(10) The Notifying Parties chose not to submit a response to the Article 6(1)(c) Decision and not to use the opportunity to attend a state of play meeting within the timeframe set forth in the Commission's Best Practices on the conduct of EC merger control proceedings of 2004.[14]

(11) On 9 March 2018, the Notifying Parties submitted a paper on aspects for which they requested the Commission to reconsider its preliminary conclusions in the Article 6(1)(c) Decision in relation to specialty gases.[15]

(12) On 15 March 2018, the Notifying Parties submitted further papers on aspects to be reconsidered by the Commission (collectively referred to, together with the paper of 9 March 2018, as "the Thematic Papers").[16]

(13) On 15 March 2018, the Commission adopted a decision pursuant to Article 11(3) of the Merger Regulation, following Linde's failure to provide complete information in response to a request for information ("RFI") from the Commission ("the Article 11(3) Decision of 15 March 2018"). The Article 11(3) Decision of 15 March 2018

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13 That is to say the upstream national markets for the bulk and cylinder supply of medical oxygen and the downstream national markets for the provision of (oxygen based) respiratory homecare services and possible sub-markets (gaseous oxygen and liquid oxygen).

14 Case team's email to the Notifying Parties of 22 February 2018 at 7:07 pm (Brussels time).

15 Notifying Parties, "Paper on Absence of material supply links between the EEA Divestment Business and Praxair", 9 March 2018.

16 Notifying Parties, "SIAD Group as a Stand-Alone Tier 2 Industrial Gases and Engineering Business", "The EEA Divestment Business Does Not Need to Include Praxair's Iberian Business", "The EEA Divestment Business Does Not Need to Include Praxair's Shareholding in Rivoira S.p.A.", "Supply of Process Plants and Process Plant Components Absence of Input Foreclosure Concerns", "On-site Supply of Industrial Gases Suitability of Proposed Divestitures", "Paper on Observations on the Commission's Bidding Analysis" and "Response to European Commission's 6(1)(c) Decision. Residual Topics", 15 March 2018.

suspended the time limits referred to in the first subparagraph of Article 10(3) of the Merger Regulation. Linde responded to the RFI on 19 March 2018 and the suspension expired at the end of that day.

(14) State of play meetings between the Notifying Parties and the Commission took place on 23 March 2018 and on 24 May 2018.

(15) Based on the second phase investigation which supplemented the findings of the first phase investigation, the Commission issued a statement of objections on 31 May 2018 pursuant to Article 18 of the Merger Regulation and Protocol 21 of the EEA Agreement ("the Statement of Objections"). In the Statement of Objections, the Commission came to the preliminary view that the notified concentration would significantly impede effective competition in a substantial part of the internal market within the meaning of Article 2(3) of the Merger Regulation, and within a substantial part of the territory covered by the EEA Agreement within the meaning of Article 57 of the EEA Agreement, as a result of horizontal non-coordinated effects in:

(a) the EEA tonnage markets for the supply of carbon monoxide, hydrogen, nitrogen and oxygen;

(b) the EEA small on-site plant markets for the supply of oxygen and nitrogen;

(c) the EEA bulk market for the supply of argon;

(d) the national bulk markets identified in Table 6 of the Statement of Objections (which corresponds to Table 6 in Section 8.2.1. of this Decision) for the supply of argon, carbon dioxide (excluding Slovakia), nitrogen and oxygen;

(e) the bulk markets for the supply of argon, carbon dioxide, nitrogen and oxygen in Benelux[17];

(f) the bulk market for the supply of hydrogen in Germany;

(g) the national cylinder markets identified in Table 11 of the Statement of Objections (which corresponds to Table 11 in Section 8.2.1. of this Decision) for the supply of (all purity and standard purity grades of) acetylene (excluding Italy), argon, carbon dioxide excluding dry ice, hydrogen, nitrogen and oxygen;

(h) the cylinder markets for the supply of (all purity and standard purity grades of) acetylene, argon, carbon dioxide excluding dry ice, hydrogen and oxygen in Benelux;

(i) the cylinder markets for the supply of standard purity grades of carbon monoxide in the Czech Republic, Germany and Norway;

(j) the cylinder markets for the supply of standard purity grades of nitrous oxide in Portugal and Spain;

(k) the EEA cylinder markets for the supply of high purity grades of acetylene, argon, carbon dioxide (excluding dry ice), hydrogen, nitrogen and oxygen;

(l) the national cylinder markets identified in Table 11 of the Statement of Objections (which corresponds to Table 11 in Section 8.2.1. of this Decision) for the supply of high purity grades of acetylene, argon, carbon dioxide (excluding dry ice), hydrogen, nitrogen and oxygen;

[17] See recital (100).

(m) the cylinder markets for the supply of high purity grades of acetylene, argon and hydrogen in the Benelux;

(n) the national markets identified in Table 12 of the Statement of Objections (which corresponds to Table 12 in Section 8.2.1. of this Decision) for the supply of dry ice (excluding France);

(o) the market for the supply of dry ice in Benelux;

(p) the national bulk markets for the supply of medical oxygen, medical nitrogen and medical nitrous oxide identified in Table 36 of the Statement of Objections (which corresponds to Table 36 in Section 8.3.1. of this Decision);

(q) the national cylinder markets for the supply of medical carbon dioxide, medical argon, medical nitrogen, medical nitrous oxide (excluding Italy and Spain), medical nitric oxide and medical oxygen identified in Table 37 of the Statement of Objections (which corresponds to Table 37 in Section 8.3.1. of this Decision);

(r) the global and EEA cylinder markets for the supply of (i) krypton, (ii) xenon, (iii) neon, (iv) brominated compound gas mixtures, (v) fluorine noble gas mixtures, (vi) hydrogen chloride noble gas mixtures, (vii) inert noble gas mixtures;

(s) the EEA bulk market for the supply of nitrogen trifluoride;

(t) the EEA cylinder markets for supply of the following ESGs: (i) ammonia, (ii) boron trichloride, (iii) chlorine, (iv) deuterium, (v) diborane and mixtures, (vi) dichlorosilane, (vii) germane and mixtures, (viii) halocarbon 116, (ix) halocarbon 23, (x) halocarbon 318, (xi) halocarbon 41, (xii) high purity nitrous oxide, (xiii) hydrogen bromide, (xiv) hydrogen chloride, (xv) hydrogen fluoride, (xvi) nitrogen trifluoride, (xvii) phosphine and mixtures, (xviii) silane and mixtures, (xix) silicon tetrachloride, (xx) silicon tetrafluoride, (xxi) sulphur hexafluoride, (xxii) tetrafluoromethane, (xxiii) trichlorosilane;

(u) the cylinder markets for the supply of chemical gases in the following countries: (i) Austria, in relation to ethylene and sulphur dioxide; (ii) the Czech Republic, in relation to chlorine, ethane, ethylene, hydrogen sulphide, nitric oxide, sulphur dioxide and sulphur hexafluoride; (iii) Denmark, in relation to ammonia, butene, methane and nitric oxide; (iv) Germany, in relation to ethylene, carbon monoxide, methane and nitric oxide; (v) Italy, in relation to ethylene oxide and iso-butane; (vi) the Netherlands, in relation to butane, carbon monoxide, methane and propane; (vii) Norway, in relation to ammonia, butane, ethane and methane; (viii) Portugal, in relation to methane; (ix) Romania, in relation to ethylene, methane and propane; (x) Slovakia, in relation to methane; (xi) Slovenia, in relation to sulphur dioxide and sulphur hexafluoride; (xii) Spain, in relation to methane; (xiii) Sweden, in relation to methane; and (xiv) the United Kingdom, in relation to methane and propane;

(v) the cylinder markets for the supply of calibration gases and other mixtures in the following countries: (i) Austria, in relation to environmental and special application mixtures; (ii) Bulgaria, in relation to environmental and special application mixtures; (iii) the Czech Republic, in relation to environmental, other calibration and special application mixtures; (iv) Denmark, in relation to environmental and special application mixtures; (v) Germany, in relation to environmental, other calibration and special application mixtures; (vi) Hungary, in relation to environmental, other calibration and special

application mixtures; (vii) Italy, in relation to environmental mixtures; (viii) the Netherlands, in relation to environmental, other calibration and special application mixtures; (ix) Norway in relation to environmental and special application mixtures; (x) Poland, in relation to special application mixtures; (xi) Portugal, in relation to environmental and special application mixtures; (xii) Romania, in relation to special application mixtures; (xiii) Slovakia, in relation to other calibration and special application mixtures; (xiv) Slovenia, in relation to environmental, other calibration and special application mixtures; (xv) Spain, in relation to environmental and other calibration mixtures; (xvi) Sweden, in relation to environmental and special application mixtures; and (xvii) the United Kingdom, in relation to special application mixtures.

(w) the global market for the wholesale supply of helium;

(x) the global market for the retail supply of helium in cryogenic portable tanks;

(y) the markets for retail supply of helium in Austria, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, the Netherlands, Norway, Portugal, Romania, Slovakia, Spain, Sweden, and the United Kingdom ('UK');

(z) the potential sub-markets for retail supply of standard purity helium in cylinders in Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and the UK;

(aa) the potential sub-markets for retail supply of high purity helium in cylinders in Denmark and Norway;

(bb) the potential sub-markets for retail supply of helium in dewars in Germany and Norway;

(cc) the potential sub-markets for retail supply of helium in tube trailers in Germany, Italy, the Netherlands, Portugal, and Spain;

(dd) the markets for the provision of respiratory homecare services in Spain and Portugal, including oxygen and non-oxygen therapies as well as the other potential sub-markets.

(16) In particular, in relation to the markets mentioned in recital (15), the Commission came to the preliminary view in the Statement of Objections that the Transaction would result in the creation or strengthening of a dominant position in some of those markets[18] and in the removal of a significant competitive constraint, at least, on all the others of those markets.

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[18] That is, with respect to bulk supply of industrial gases, the markets for the supply of carbon dioxide in Ireland and Norway, oxygen in Norway and argon in Norway, where the combined market shares of the Notifying Parties are, by either volume or value, above [90-100]% (based on the Notifying Parties' market share data), as well as the bulk markets for the supply of argon in Austria, Czech Republic, Finland, Spain, Sweden, Benelux, Italy, Germany, Hungary, Romania, Bulgaria and Denmark and at EEA level; carbon dioxide in Cyprus, Czech Republic, Denmark, Finland, Germany, Sweden, Hungary and Romania; nitrogen in Austria, Czech Republic, Portugal, Romania, Sweden, United Kingdom, Germany and Hungary; and oxygen in Czech Republic, Sweden, Benelux, Germany, Romania and Slovakia, where the combined market shares of the Notifying Parties are above 50% (based both on the Notifying Parties' market share data and the market reconstruction).
With respect to cylinders supply of industrial gases, the markets for the supply of carbon monoxide (standard purity) and nitrogen (high purity) in the Czech Republic and for the supply of carbon dioxide excluding dry ice (high purity), hydrogen (high purity) and nitrogen (high purity) in Norway, where the

merged entity's market shares will be, by either volume or value, above [90-100]% as well as the following markets where the merged entity will hold a market share above 50%: Austria (for the supply of carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice); Bulgaria (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), hydrogen (all purity grades), oxygen (all purity grades), oxygen (standard purity)); Czech Republic (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity),carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (high purity), nitrogen (high purity), oxygen (all purity grades), oxygen (standard purity)); Finland (for the supply of argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity)); Germany (for the supply of acetylene (all purity grades), acetylene (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity)); Hungary (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Ireland (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (standard purity)); Italy (for the supply of carbon dioxide excluding dry ice (high purity)); Norway (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Romania (for supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity)); Sweden (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); the United Kingdom (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), oxygen (all purity grades), oxygen (standard purity)).

With respect to medical gases, the markets for the bulk supply of medical nitrogen in Hungary, Norway, and Sweden; medical oxygen in the Czech Republic, Hungary, Romania, and Slovakia; and the cylinder supply of medical carbon dioxide in the Czech Republic, Hungary, Norway, and Sweden; the markets for the cylinder supply of medical carbon dioxide in the Czech Republic, Hungary, Norway and Sweden; medical nitric oxide in Norway and Spain; medical nitrogen in the Czech Republic, Hungary, Norway, and Slovakia; medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia and Sweden; medical oxygen in the Czech Republic, Norway, Romania, Slovakia, and Sweden where the merged entity will hold a market share above 50%.

With respect to noble gases and noble gas mixtures, the markets for the cylinder supply of brominated compound gas mixtures and hydrogen chloride noble gas mixtures in the EEA, and of fluorine noble gas mixtures both in the EEA and globally, where the combined market share of the Notifying Parties is above 50%.

With respect to ESGs, the markets for the cylinder supply of chlorine, deuterium, hydrogen bromide, hydrogen chloride, hydrogen fluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, sulphur hexafluoride, and trichlorosilane.

With respect to chemical gases, (i) Czech Republic, in relation to chlorine, ethane, ethylene and sulphur dioxide; (ii) Denmark, in relation to butene, methane and nitric oxide; (iii) Germany, in relation to nitric

(17) Further, in the Statement of Objections, the Commission's preliminary assessment at that stage of the investigation was that the Transaction would significantly impede effective competition as a result of vertical non-coordinated effects in relation to the vertical links between the upstream global market for the wholesale supply of helium (including access to helium sources) and the downstream markets for the retail supply of helium (and potential sub-markets) identified in Tables 51, 53 and 54 of the Statement of Objections (which correspond to Tables 51, 53 and 54 in Sections 8.9 and 8.10 of this Decision).

(18) The first access to file was granted to the Notifying Parties on 1 June 2018, the day after the issue of the Statement of Objections. Subsequent access to the file was provided on 6 June 2018, 18 July 2018 and 6 August 2018. Access to confidential data and information relied upon by the Commission in the Statement of Objections was granted to the Notifying Parties' economic advisors in accordance with the data room procedure.[19]

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oxide; (iv) Italy, in relation to ethylene oxide; (v) the Netherlands, in relation to methane, (vi) Norway, in relation to ammonia, ethane and methane, (vii) Romania, in relation to ethylene and propane, (viii) Slovakia, in relation to methane; (ix) Slovenia, in relation to sulphur dioxide; and (x) Sweden, in relation to methane, where the combined market share of the Notifying Parties is above 50%.

With respect to calibration gases and other gas mixtures, (i) Bulgaria, in relation to special application mixtures; (ii) Czech Republic, in relation to environmental, other calibration and special application mixtures; (iii) Denmark, in relation to special application mixtures; (iv) Hungary, in relation to other calibration and special application mixtures; (v) Norway, in relation to special application mixtures; (vi) Slovakia, in relation to other calibration and special application mixtures; (vii) Slovenia, in relation to other calibration and special application mixtures; and (viii) Sweden, in relation to environmental and special application mixtures.

With respect to the global wholesale supply of helium where the combined market shares of the Notifying Parties is above 50%.

With respect to the helium retail supply, in the following markets (and potential sub-markets) where the combined market shares of the Notifying Parties are above 50%: (i) in Austria: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (ii) in Bulgaria: the potential sub-market for the supply of standard purity cylinders; (iii) in the Czech Republic: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (iv) in Denmark: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (v) in Germany: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (vi) in Hungary: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (vii) in Italy: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (viii) in the Netherlands: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (ix) in Norway: the helium retail market, as well as in the potential sub-markets for the supply of standard purity cylinders and high purity cylinders; (x) in Poland: the potential sub-market for the supply of standard purity cylinders; (xi) in Portugal: the helium retail market and the potential sub-market for the supply of tube trailers; (xii) in Romania: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (xiii) in Slovakia: the potential sub-market for the supply of standard purity cylinders; (xiv) in Spain: the potential sub-markets for the supply of standard purity cylinders and tube trailers; (xv) in Sweden: the helium retail market and the potential sub-market for the supply of standard purity cylinders; and (xvi) in the United Kingdom: the helium retail market and the potential sub-market for the supply of standard purity cylinders.

[19] Business secrets and other confidential information of third parties within the meaning of Article 339 TFEU, Article 18(3) of the Merger Regulation and Article 17(3) of the Commission Implementing Regulation (EU) No 1269/2013 of 5 December 2013 amending Regulation (EC) No 802/2004 implementing Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (OJ L 336, 14.12.2013, p. 1) can exceptionally be made available to the addressee of a statement of objections within the framework of the data room procedure and under the strict conditions set out in data room rules. The data room procedures are set in the Best practices on the disclosure of information in data rooms, 2 June 2015, available at http://ec.europa.eu/competition/mergers/legislation/legislation html#best_practices

(19) On 14 June 2018, the Notifying Parties submitted their written reply to the Statement of Objections ("the Reply to the Statement of Objections").

(20) On 20 June 2018, the Commission adopted a decision extending the procedure by a total of ten working days in accordance with the third sentence of the second subparagraph of Article 10(3) of the Merger Regulation. On the same day, the Notifying Parties submitted commitments pursuant to Article 8(2) of the Merger Regulation in order to address the competition concerns identified by the Commission.

(21) One 22 June 2018, the Commission launched a market test of the commitments submitted by the Notifying Parties on 20 June 2018. Based on the results of the market test, the Notifying Parties submitted an amended set of commitments on 4 July 2018 and a final one on 10 July 2018.

(22) The Advisory Committee discussed a draft of this Decision on 6 August 2018 and issued a favourable opinion.[20]

## 5. THE INVESTIGATION

(23) Prior to the notification of the Transaction the Commission sent 13 RFIs to the Notifying Parties, including requests for tender data. The responses to those RFIs were then included in the notification. The Commission also conducted 20 interviews with the Notifying Parties' competitors, customers and suppliers.

(24) During the first phase investigation, the Commission sent over 2 500 detailed RFIs to the Notifying Parties' competitors and customers, eliciting around 600 responses, as well as to the Notifying Parties themselves, including four detailed internal documents requests, resulting in the submission of over 1 million internal documents of Linde and Praxair. The Commission also interviewed the Notifying Parties' suppliers and carried out a preliminary tender analysis and a market reconstruction for the industrial gas markets.

(25) During the second phase investigation, the Commission sent eleven targeted RFIs to the Notifying Parties and their competitors, customers and suppliers in order to complement the information gathered in the first phase investigation. Moreover, the Commission conducted over 20 interviews with the Notifying Parties' competitors and customers. In addition, the Commission performed an extensive review of internal documents submitted by the Notifying Parties. Finally, the Commission refined its tender analysis and market reconstruction for the industrial gas markets and performed a market reconstruction for the helium markets.

(26) The investigation conducted by the Commission on the commitments proposed by the Notifying Parties is described in Section 9.

[20] At the Advisory Committee all present Member States agreed that that the Transaction must be declared compatible with the internal market and the EEA Agreement in accordance with Article 2(2) and 8(2) of the Merger Regulation and Article 57 of the EEA Agreement.

## 6. INDUSTRY OVERVIEW

### 6.1. Categorisation of gases

(27) The core business of each of the Notifying Parties is the production and distribution of gases. Gases produced and supplied by the Notifying Parties can be categorised in four main categories depending on their applications and mode of production.

(28) **Industrial gases**: these gases are obtained from the air, mainly through cryogenic air separation technology (the so-called "**air gases**" or "**atmospheric gases**": oxygen, nitrogen and argon)[21] or from synthetic processes or natural sources (the so-called "**non-atmospheric gases**": hydrogen, acetylene, carbon monoxide, carbon dioxide and nitrous oxide).[22] In relation to these gases, companies typically build the plants, produce the gases and distribute the gases to their clients. The gases are used in a very wide variety of industries (metallurgy, chemical, paper, glass, electronics, food, fish farming, etc.). Each of the Notifying Parties generates the majority of its turnover from the production and sale of industrial gases (accounting in 2016 for around [a large share] of Linde's turnover both worldwide and in the EEA and for as much as [a large share] of Praxair's worldwide turnover and [a large share] of its EEA turnover[23]).[24]

(29) **Medical gases**: these gases (medical argon, medical oxygen, medical nitrogen, medical carbon dioxide, medical nitrous oxide and medical nitric oxide) consist of the same molecule as industrial gases[25] and are produced using the same process but are subject to higher regulatory requirements, such as specific certifications of the production and distribution facilities and specific marketing authorisations for their sale in each EEA country. They are sold to customers (mostly hospitals and clinics) together with certain services and medical equipment for (for example) the delivery of the gas to the hospital or the tracking and management of cylinders inside the hospital. In the case of medical oxygen, the gas can also be sold to patients receiving respiratory homecare assistance.

(30) **Specialty gases**: this category of gases includes a large variety of gases with the common characteristic of being higher value products sold in smaller quantities than industrial gases. Frequently, the production of specialty gases involves the use of industrial gases with higher purity grades and/or the mixing of gases with other components.[26] Within specialty gases, **noble gases** (krypton, neon, xenon) are extracted from the air where they exist in very small concentrations. They are

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21 Cryogenic air separation is the most prevalent method of producing air gases. It is performed through plants called air separation units ("ASUs"). Other processes used to produce air gases are pressure swing adsorption, through adsorption plants, and membrane separation, through membrane plants.

22 Non atmospheric gases are either not present in the air, or they are present but not in a sufficient concentration to make air separation a commercially viable production technology. Different production processes are used to produce different non-atmospheric gases (for example, steam reforming, steam cracking, etc.; Form CO, Chapter A, Section 6, Table 15). All processes require a feed gas from which the non-atmospheric gas is extracted. As the feed gases are mainly by-products of chemical processes, they are often sourced from chemical companies and then purified and distributed by the gas suppliers. This is the case in particular for carbon dioxide.

23 Form CO, Section 2, Table 1.

24 Industrial gases are relatively homogenous products with little or no product differentiation. Therefore, gas companies build on expertise in application technologies to attract new or keep existing customers. Form CO, Chapter A, Section 8, paragraph 456.

25 With the exception of medical nitric oxide, which belongs to the category of specialty gases and is sold in the EEA mostly as a mixture with nitrogen.

26 Form CO, Chapter A, Section 6, paragraph 105.

produced in the largest air separation units ("ASUs").[27] They are used, pure or in mixtures, by the lighting and electronics industries. Other specialty gases and gas mixtures are typically not produced in-house by industrial gas companies, but sourced from chemical companies, purified, blended and distributed to end-customers. The generation of these gases is performed through chemical synthesis, rather than air separation. They include **ESGs**, mostly used by the semiconductor industry; **refrigerants** used as cooling agents; **chemical gases** used by the chemical, biochemical and manufacturing industries; and **calibration and other gas mixtures** used for the calibration of instruments and other specialty applications. While specialty gases are generally processed in dedicated facilities (notably, at the level of transfilling), they typically use the distribution network of industrial gases; in fact, gas companies tend to use their distribution channels for as many products as possible in order to reduce costs where practically feasible.[28] In addition, customers of specialty gases, generally of large size, often purchase (i) different types of specialty gases within a certain category (for example, different types of noble gases and mixtures),[29] (ii) different types of gases across various categories of specialty gases (for example, noble gases and ESGs),[30] and (iii) other types of gases, notably industrial gases and helium, together with specialty gases.[31] Although these gases can

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27 Form CO, Chapter A, Section 6, footnote 59 and Chapter C, Section 6, paragraph 650.

28 Form CO, Chapter C, Section 8, paragraphs 890 and 902. According to the Notifying Parties, ESGs constitute an exception to this, in the sense that they are typically sold through separate distribution channels (Form CO, Chapter C, Section 8, paragraph 890). In this respect, the Commission notes that although ESGs constitute complex products which are sold through specialised personnel and may require specific equipment (for example, in terms of cylinder technology) to be delivered, these gases are purchased by certain customers also sourcing industrial gases (responses to RFI Q53 to customers of electronic specialty gases, question 15). Therefore, there appear to be some synergies between the distribution network of industrial gases and ESGs as well. In this respect, for example, Air Products explained that *"it is essential to have a strong industrial gases distribution network in order to cost-effectively distribute calibration mixtures and other speciality gases."* (agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 14, ID 6198).

29 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 2; responses to RFI Q23 to customers of electronic specialty gases, question 2; responses to RFI Q24 to customers of chemicals, question 3; responses to RFI Q27 to customers of calibration and other gas mixtures, question 3; and responses to RFI Q25 to customers of refrigerants, question 3. This is in line with the data submitted by the Notifying Parties, according to which a […] proportion of their sales of specialty gases within a certain category (in value) relates to customers purchasing more than one product within that category of specialty gases (Notifying Parties' reply to RFI57, question 27).

30 For example, certain customers of noble gases do also purchase ESGs (and *viceversa*), as well as chemicals and calibration mixtures in some instances (responses to RFI Q54 to customers of noble gases and noble gas mixtures, questions 15-17; and responses to RFI Q53 to customers of electronic specialty gases, questions 16-18), while customers of chemical gases (notably, chemical producers) also purchase calibration gases and other specialty mixtures for their laboratories. This is in line with the data submitted by the Notifying Parties, according to which a relevant proportion of their specialty gases related to a certain category (in terms of sales value) – for example, noble gases – is supplied with other types of specialty gases – for example, ESGs (that is to say, is supplied to the same customers, irrespective of whether these gases are part of the same contract and/or are sold to the customers at the same moment in time) (Notifying Parties' reply to RFI57, question 26).

31 For example, customers purchasing noble gases and ESGs may also purchase other gases, notably industrial gases and helium (responses to RFI Q54 to customers of noble gases and noble gas mixtures, questions 13 and 14, and responses to RFI Q53 to customers of electronic specialty gases, questions 14 and 15). In addition, customers of chemical gases, typically of large size, also purchase significant quantities of industrial gases (for example, agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraphs 5 and 6, ID 6084). This is in line with the data submitted by the Notifying Parties, according to which a relevant proportion of each category of specialty gases (in terms of sales value) is supplied with other gases, notably industrial gases and/or helium (that is to say, is

also be sourced from different suppliers, customers generally prefer, and consider it more convenient, to purchase their requirements from either a single supplier or a limited number of providers, which are each able to offer a wide variety of gases ("one-stop shop solution(s)"[32]).[33] This also means that being able to supply specialty gases, along with other types of gases, is important for suppliers to get access to customers that source these types of products, which are generally large companies making significant purchases of gases.[34] In addition, specific competences and knowledge are needed to supply specialty gases, and providers build on expertise in application technologies to attract or keep existing customers. Consequently,

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supplied to the same customers, irrespective of whether these gases are part of the same contract and/or are sold to the customer at the same moment in time) (Notifying Parties' reply to RFI57, question 27).

32 A customer referring to the Notifying Parties as being able to provide a wide range of gases explicitly qualified them as *"one stop shop gases suppliers.*" ([…]'s responses to RFI Q53 to customers of electronic specialty gases, question 25, ID 5373).

33 For example, a significant number of customers of noble gases and noble gas mixtures indicated that for them it is either crucial or important that their suppliers of noble gases are able to provide them with industrial gases and/or helium (responses to RFI Q54 to customers of noble gases and noble gas mixtures, questions 13 and 14). For instance, in relation to ESGs, a customer explained that "*it is very critical to ensure the supply (that) competitors are equitably capable in product portfolio, technology, size/scope, financial viability, market presence and business acumen.*" ([…]'s responses to RFI Q53 to customers of electronic specialty gases, question 25, ID 5643). In the context of the second phase market investigation […], which purchases large quantities of various chemical gases as well as industrial gases, explained that it considers *"the ability to supply a broad range of gases as of paramount importance for providers."* (agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 8, ID 6084). This was also confirmed by competitors. For example, [a competitor] explained that *"Customers that purchase industrial and chemical gases generally require suppliers to provide both types of gases, as part of the same supply contract."* (agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 17, ID 6302).

34 For example, Messer explained that *"customers for chemical gases typically prefer to have only one supplier to provide all the gases they need. Therefore, having chemical gases in their product portfolio is very important for suppliers to be able to serve customers purchasing a wide range of gases, which are typically large companies."* (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 24, ID 6230). Air Products also mentioned that *"is active on this market* [referring to chemicals] *in order to be able to supply its customers of industrial & speciality gases with this type of gases, should they require so. Customers of industrial & speciality gases that also purchase chemical gases are generally large customers."* (agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 12, ID 6198). In relation to noble gases and noble gas mixtures, Westfalen explained that *"Westfalen needs to source these gases in order to be able to provide them to customers that request a wide range of products. In fact, customers generally favour suppliers that are able to provide them with the whole range of products they source for their operations; therefore, not being able to offer noble gases represents a relevant competitive disadvantage vis-à-vis these customers."* (agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 17, ID 6108). In relation to ESGs, Air Liquide explained that *"the supply of ESGs represents a key activity which positively contributes to their reputation of credible supplier for customers."* (agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 28, ID 6402). In relation to calibration and other gas mixtures, Air Products explained that *"it is important to offer this type of gases in the product portfolio."* (agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 14, ID 6198). In relation to refrigerants, while the second phase investigation revealed that the supply of these gases is relatively less linked with other types of specialty and other gases, mainly in light of the somewhat different customer base, it appears that being able to provide refrigerants may be relevant for suppliers in order to be able to serve customers which operate in certain industries that do purchase other types of gases. This is the case for example of customers active in the automotive sector that purchase helium as well as refrigerant gases (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 24, ID 6230). In addition, the Commission notes that while the supply of refrigerant gases does not constitute a core business for industrial gas companies, all Tier 1 players active in the EEA do supply refrigerants in a number of countries to complement their product portfolio.

research and development by gas companies in specialty gases mostly relates to application technologies.[35]

(31) **Helium**: helium is a scarce and high value product, with a very specific sourcing modality. It is a by-product of natural gas production extracted from a very limited number of sources worldwide (namely, natural gas fields with high concentrations of carbon dioxide and/or nitrogen), located in the United States of America ('USA'), Qatar, Algeria, Poland, Russia, Canada and Australia. Helium producers are, consequently, natural gas producers. They are typically not active in the commercialisation of helium but rather enter into long-term contracts or joint ventures with integrated industrial gas companies (such as the Notifying Parties) that bring helium to the market. Helium is used in a wide range of industries, including the medical, research, diving, automotive, chemical, electronics, balloon and aerospace industries. Although helium accounts for a limited share of industrial gas companies' overall turnover, it is generally perceived as a highly strategic and 'must-have' product, as it enables them to sell other gases (notably industrial and specialty gases).[36] Indeed, many customers favour suppliers that can provide them with a full portfolio of products, including helium.[37]

### 6.2. The supply chain of gases

(32) With the exception of helium, gases are **highly interlinked products** as they are the result, in full or in part, of the same production processes. For example, neon, krypton and xenon are produced in small quantities in the largest ASUs, together with oxygen, nitrogen and argon. After separation, they are purified (and blended together in an exact mixture) and sold to the aerospace and other industries. Oxygen separated by the same process can be sold to, for example, steel producers, providers of surface coating technologies[38] and (if the level of purity is suitable and the production facilities certified) hospitals, or else it can be used to provide oxygen-based respiratory homecare services.[39]

(33) There are three **distribution modes** of gases which are in turn **highly interlinked** as Figure 1 illustrates.

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35 Form CO, Chapter C, Section 8, paragraph 959.

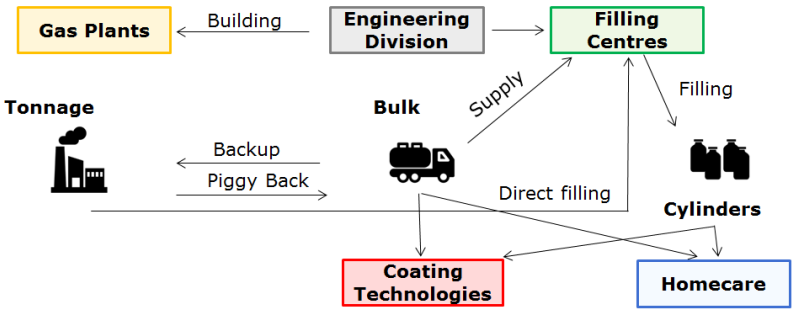
36 Customers of industrial, medical, and specialty gases often also require helium and, thus, tend to favour gas suppliers which have helium in their product portfolio. For instance, in 2017, […]% of Praxair's total helium sales in the EEA and […]% of Linde's total helium sales in the EEA were made to customers to which they deliver helium, as well as other gases (Annex Q73 to the Notifying Parties' reply to RFI 48). It follows that helium is often sold together with other gases as part of the same sale process (notably when used in mixtures). For example, […] "*generally stipulates contracts with suppliers which cover the delivery of helium together with other gases*" (agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID 5990, paragraph 8). Also, Linde's internal presentation, "[…]", […], slide […] [[…]] [ID4834-38229] ("[…]").

37 Notably, agreed non-confidential minutes of the conference calls (i) with Messer of 15 March 2018, ID 6230, paragraph 25; (ii) with SIAD of 21 March 2018, ID 6257, paragraph 36; (iii) with [a competitor] of 11 April 2018, ID 6302, paragraph 33; (iv) with […] of 22 March 2018, ID 5990, paragraph 8; (v) with Air Liquide of 22 March 2018, ID 6404, paragraph 21; and (vi) with SOL of 16 March 2018, ID 6923, paragraphs 19 to 23.

38 Used for example to apply protective or decorative coatings to metals.

39 In relation to specialty gases other than noble gases and noble gas mixtures, and calibration and other specialty mixtures, that is to say, ESGs, chemical gases and refrigerants, as explained in Section 6.1, these are generally not produced by industrial gas companies but the relevant molecules are sourced from third parties for further processing (purification, transfilling and/or mixing). Specialty gases are generally processed in dedicated facilities which may be located or not at the same sites of industrial gases (Form CO, Chapter C, Section 8, paragraph 902). For more details on the links between the supply chain of specialty gases and industrial gases, notably at distribution level, see Section 6.2.

**Figure 1: Overview of the supply chain of gases**




*Source: Commission's analysis based on the Form CO.*

(34) **Tonnage**: this distribution mode refers to the supply of large volumes of gases in gaseous form either (i) via a **pipeline** connected to large gas plants serving multiple customers or (ii) through a dedicated gas plant built under the supervision of the engineering division of a gas company on the production site of the customer, for example, a steel or chemical factory (a "**large on-site plant**"). Only industrial gases (with the exception of acetylene and nitrous oxide) are supplied in this mode.[40] Contracts for the tonnage supply of gases are long term (15 to 20 years) to factor in the high capital expenditure needed to build the gas plant. They are normally procured by customers through a tender process.[41] As regards pricing, customers usually pay a monthly facility charge, as well as a charge per unit of volume of gas delivered for a specified minimum volume of gas per hour.[42] If the supplier cannot satisfy this minimum volume due to outages, it supplies back-up volumes in bulk.[43] Tonnage contracts typically also contain "take-or-pay" conditions.[44]

(35) **Bulk**: this distribution mode refers to the supply of smaller volumes of gas in liquid form,[45] delivered by road or rail tankers. Volumes sold in bulk are lower than volumes sold via large (and sometimes small) on-site plants. Gas produced at large gas plants is liquefied to make transportation cost-effective. The gas plant can be either (i) a gas plant dedicated to distribution in bulk or (ii) a tonnage gas plant dedicated to a particular customer but where any excess in production is sold into the bulk market (a practice called "piggy-back" in the industry). At a customer site, the liquefied gas is stored in tanks normally owned by the gas supplier, and transformed back to gaseous form for its final use. All industrial and medical gases (with the exception of medical nitric oxide and medical argon that are generally supplied in cylinders) can be supplied in bulk. Occasionally, some specialty gases are also supplied through this distribution mode. Contracts for the bulk supply of industrial gases normally last 3 years and are assigned as a result of a tender or bilateral negotiations.[46] As regards medical gases, the duration of the contracts and the way contracts are awarded primarily depends on the type of customer (rather than on the

40 However, with respect to hydrogen and argon see Section 7.1.1.3.
41 Form CO, Chapter A, Section 6, paragraph 142.
42 Form CO, Chapter A, Section 8, paragraph 345.
43 Form CO, Chapter A, Section 8, paragraph 346.
44 Clauses whereby the customer agrees to pay for the portion of the plant capacity dedicated to it at the maximum turndown level even if the customer's actual offtake is lower (Form CO, Chapter A, Section 8, paragraph 348).
45 With the exception of hydrogen which is typically transported in gaseous trailers and not in liquid form (Form CO, Chapter A, Section 7, footnote 175).
46 Form CO, Chapter A, Section 8, paragraphs 352 and 386.

mode of supply).[47] For larger customers such as hospitals (who are the main customers of medical gases in bulk),[48] contracts are normally concluded for a 3-year period (with an option to extend up to 2 years) and are awarded through tenders, while contracts with smaller customers have a shorter duration and can be contracted through non-public country specific price lists or bilateral negotiations.[49] With respect to prices, prices of industrial gases usually contain a variable part for the gas, and a fixed part for the rental of the storage facility and vaporiser installation at the client's premises.[50] The prices charged for medical gases are higher than the prices charged for industrial gases due to the additional regulatory requirements, higher transport costs (because of the smaller volumes of gases sold to medical customers) and higher ancillary charges (for example rental charges).[51] Given the significance of transportation costs for bulk deliveries, suppliers of industrial gases may enter into **wholesale or swap agreements** with their competitors in order to optimise logistics.[52] [53] These links between competitors of industrial gases are a relevant feature of the industry.[54]

(36) **Cylinders**: this distribution mode refers to the supply of very small volumes of gas, in gaseous form, in cylinders. Cylinders are filled up by gas companies with industrial gases, medical gases or specialty gases in filling centres located either at the bulk production facility where the gas is produced or at a facility receiving bulk supplies.[55] All categories of gases are sold in cylinders.[56] Contracts for the cylinder

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47 Form CO, Chapter B, Section 8, paragraph 563.

48 Form CO, Chapter B, Section 8, paragraph 559.

49 Form CO, Chapter B, Section 8, paragraph 563.

50 Form CO, Chapter A, Section 8, paragraph 356.

51 Form CO, Chapter B, Section 8, paragraph 566.

52 In the context of a swap agreement, two or more gas companies exchange an agreed volume of product within an agreed period of time (typically 2 to 3 years). The respective volumes supplied under the swap agreement are normally the same. If not, a compensation payment may be envisaged. Swap agreements do not exist for tonnage and are rare for cylinder supplies (Form CO, Chapter A, Section 8, paragraphs 460-465).
Gas suppliers exceptionally also enter into back-up or frame agreements, whereby the suppliers offer to back each other up on an ad-hoc basis in case a need arises (often at an "if available" basis and/or at a pre-determined price). These agreements typically do not include a specific volume commitment, which is what differentiate back-up or frame agreements from swap agreements (Form CO, Chapter A, Section 8, paragraphs 474-475).

53 As regards medical gases, to the extent gas suppliers enter into swap agreements involving plants certified for the production of medical gases, these swap agreements may also cover medical gases. The competitor receiving medical gases pursuant to a swap agreement, in order to supply its medical customers in a specific country, also has to comply with the regulatory requirements applicable to the production and sale of medical gases (Form CO, Chapter B, Section 8, paragraph 631). In view of the more limited volumes of gases supplied and of the higher regulatory requirements involved, swap agreements between medical gas suppliers are however not the norm. In this respect, Messer explained that: "[..] *swap contracts between competitors are less frequent for medical gases than for industrial gases and almost never relate supplies across border. This is because of the stricter regulatory requirements for the supply of medical gases, which are subject to national marketing authorizations*" (Agreed non-confidential minutes of conference call with Messer of 15 March 2018, paragraph 27, ID6240). This is in line with the data submitted by the Notifying Parties. […] (Form CO, Annex 47). As regards specialty gases, they are generally not produced (with the exception of noble gases) by industrial gas suppliers, but are rather sourced from third parties. As regards noble gases, they are not produced on a standalone basis but constitute by-products of the production process of oxygen and nitrogen. In light of this, swap agreements for specialty gases appear not be relevant.

54 See Section 8.2.2.2.3.b.vi.

55 According to the information submitted by the Notifying Parties, many specialty gases (which are not produced internally by industrial gas companies) are filled at the production site by the producer of the relevant molecules supplying industrial gas companies. Hereto, industrial gas companies often provide

supply of industrial and specialty gases have short duration (normally one year, but sometimes longer)[57] [58] and prices are generally set through negotiation.[59] [60] With respect to medical gases, the duration of the contracts and the way contracts are awarded primarily depends on the type of customer (rather than on the mode of supply). Large customers often source medical gases in bulk and in cylinders together from the same supplier under one supply agreement. Smaller customers (such as clinics and medical professionals), which generally only purchase medical gas in cylinders, conclude contracts for shorter durations. Normally, customers of industrial, medical and specialty gases purchase cylinders of different gases, which are delivered together on a pallet. As for bulk supplies, transport costs are a major component for cylinder supplies too.[61] This means that delivery network optimisation, customer density and capacity of supplying customers with all the types of gases that they require are important factors in determining the efficiency and competitiveness of gas companies.[62] To achieve this efficiency, it is not uncommon to use third party **depots**, or "hubs", depending on the size of the customer's requirements. Sales to customers whose requirements are large enough to amortise the costs associated with truck delivery are typically carried out directly by the gas supplier without relying on any third party. Supplies to smaller customers, in contrast, are often carried out via partners operating local depots. These depots concentrate the demand of all small customers in the vicinity so that the depots can be served economically by truck. Depot operators primarily function as a logistics partner of the gas company and are typically paid on a commission basis. Most of the time, these third party depots only cooperate with a single gas producer and the cylinders they supply will normally bear the brand of the relevant gas producer.[63]

(37) With respect to industrial oxygen, nitrogen and hydrogen,[64] a fourth mode of supply is relevant, namely **small on-site plants.** This distribution mode refers to the supply

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the empty packages to the supplier who fills and analyses the gas and ships it back to the industrial gas company (Form CO, Chapter C, Section 8, paragraph 898).

56 Cylinder quantities of carbon dioxide are also supplied in solid form, in small pellet or larger blocks (Form CO, Chapter A, Section 6, paragraph 175).

57 Form CO, Section 8, Chapter A, paragraph 390.

58 The contract terms for the cylinder supply of specialty gases typically range between one and three years. Delivery may also occur on a spot or ad-hoc basis without fixed contract terms, particularly in relation to gas mixtures required in small volumes (Form CO, Chapter C, Section 8, paragraph 897).

59 Form CO, Section 8, Chapter A, paragraph 368. This has been widely confirmed by the market investigation, during which the overwhelming majority of customers and competitors indicated that prices for cylinders are set as result of negotiation (responses to RFI Q17 to customers of industrial gases, question 88, and RFIQ31 to competitors in industrial and medical gases, question 74).

60 This has been widely confirmed by the market investigation, where customers and competitors indicated that generally prices for cylinders are set as result of negotiation (responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 33; responses to RFI Q23 to customers of electronic specialty gases, question 33; responses to RFI Q24 to customers of chemicals, question 34; responses to RFI Q27 to customers of calibration and other gas mixtures, question 34; responses to RFI Q25 to customers of refrigerants, question 34; and RFI Q28 to suppliers of specialty gases, question 23).

61 As indicated in recital (35) above, this is even more the case with respect to medical gases, due to the more limited volumes of gas that is sold to medical gas customers.

62 See below Section 8.2.1.2.1.

63 Form CO, Section 8, Chapter A, paragraph 381.

64 Form CO, Chapter A, Section 6, Tables 19 to 21.

of smaller volumes of gas in gaseous form via "standardised" gas plants[65] of limited capacity built under the supervision of the engineering division of the gas company on the production site of the customer. Contract terms and contract formation process are similar to those for tonnage supply, as is pricing, which is based on an operational service model where the customer pays a fixed fee for operating the on-site plant irrespective of actual consumption.[66]

### 6.3. The specificities of the helium supply chain

(38) The helium supply chain differs from that of the other gases on account of the fact that helium is sourced globally from a few natural gas producers and then supplied both at wholesale and retail level by gas companies.

(39) As explained in Section 6.1, helium is produced by natural gas producers which enter into long-term supply contracts (up to 20 years)[67] or joint ventures with industrial gas companies. In most cases, natural gas producers are not only operating the helium source but also the refinery in which the crude helium is purified and refined and the liquefaction plant. However, in some cases the refineries and liquefaction plants are run by gas companies on their own or jointly with the owner of the helium sources.[68] Sourcing or joint venture agreements with helium producers are typically assigned as a result of tender processes.[69]

(40) Gas companies bring helium to the market, selling it either to other distributors (wholesale supply) or directly to end-customers (retail supply).

(41) At wholesale level, helium is transported worldwide, from the production site to transfill centres located in the areas of consumption, in liquid form in special low temperature containers ("cryogenic portable tanks"). Wholesale supply agreements typically last between two and seven years and are assigned as a result of a tender process or bilateral negotiations.[70]

(42) At retail level, the supply of helium to end-customers is made from transfill centres by retailers that are either (i) vertically integrated with wholesalers or (ii) independent players which buy helium on the wholesale market. At a transfill centre, the liquid helium is removed from the cryogenic portable tanks and transferred into smaller containers called cryogenic dewars for deliveries of liquid helium to end-customers, or into high-pressure cylinders or tube trailers for supplies of helium in compressed gaseous form. At retail level, helium may also, to a much more limited extent, be delivered in cryogenic portable tanks to end-customers. Retail supply agreements are usually short or mid-term contracts (between one and five years) and are concluded as a result of a tender process or bilateral negotiations. For smaller customers, prices may be set by reference to the supplier's pricing list.[71] As explained

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65 While large on-site plants are engineered specifically for the need of the tonnage customer, small on-site plants are not (Form CO, Chapter A, Section 6, Tables 19 to 21 for an overview of the Notifying Parties' and their competitors' small on-site plant offering in the EEA).

66 Form CO, Chapter A, Section 6, paragraph 159.

67 Helium sourcing agreements may also, to a limited extent, be short-term agreements (in Poland notably) (Form CO, Chapter D, paragraph 1191 and Annex 94).

68 Form CO, Chapter D, paragraph 995.

69 Responses to RFI Q33 to helium producers of 12 January 2018, question 8.

70 Responses to RFI Q34 to helium competitors of 12 January 2018, questions 7 and 8. According to the Notifying Parties, wholesale supply agreement may last up to 15 years (Form CO, Chapter D, paragraph 1233).

71 Responses to RFI Q22 to helium retail customers of 12 January 2018, questions 11 to 13; and RFI Q34 to helium competitors of 12 January 2018, questions 39 to 41.

in Section 6.1, helium is a 'must-have' product which end-customers often procure together with other gases.[72]

### 6.4. Relative size of the different categories of gases and modes of supply

(43) Table 1 shows the relative importance of the different categories of gases and modes of supply in the EEA, in sales volume and value, in 2016.

**Table 1: Relative size of the different categories of gases and modes of supply in the EEA (2016)**

| Gas category | Mode of supply | Sales value ('000 EUR) | Sales volume ('000 KG) |
|---|---|---|---|
| Oxygen and nitrogen | Tonnage | […] | […] |
| | Small on-site plants | […] | […] |
| | Bulk | […] | […] |
| | Cylinders | […] | […] |
| Other industrial gases | Tonnage carbon monoxide[73] | […] | […] |
| | Hydrogen on-site plants | […] | […] |
| | Bulk[74] | […] | […] |
| | Cylinders | […] | […] |
| Medical gases | Bulk | […] | […] |
| | Cylinders | […] | […] |
| Noble gases and noble gas mixtures | Cylinders | […] | […] |
| ESGs | Bulk | […] | […] |
| | Cylinders | […] | […] |
| Refrigerants | Cylinders | […] | […] |
| Chemical gases | Cylinders | […] | […] |
| Calibration gases and other mixtures | Cylinders | […] | […] |

72 Customers of industrial, medical, and specialty gases often also require helium and, thus, tend to favour gas suppliers which have helium in their product portfolio. It follows that helium is often sold together with other gases as part of the same sale process, notably when used in mixtures (notably, Annex Q73 to the Notifying Parties' reply to RFI 48; responses to RFI Q22 to helium retail customers of 12 January 2018, question 5; and responses to RFI Q34 to helium competitors of 12 January 2018, question 38).

73 Data for carbon dioxide, where the Notifying Parties' activities do not overlap, were not available.

74 Including all supplies of argon not undertaken in cylinders.

| Gas category | Mode of supply | Sales value ('000 EUR) | Sales volume ('000 KG) |
|---|---|---|---|
| Helium | Retail[75] | […] | […] |
| | Wholesale *(worldwide 2017)*[76] | […] | […] |

*Source: Responses to RFIs 48, 56 and 57*

(44) As Table 1 shows, industrial gases, and among them oxygen and nitrogen for tonnage and bulk, account for the largest part of sales in the gas industry, in both value and volume terms.

### 6.5. Industry structure

(45) In the EEA, the supply of gases is a **high margin**[77] industry featuring a heterogeneous competitive landscape in which three types of company are active.

(46) **"Tier 1" players**: this tier of the EEA industry consists essentially of four large companies (the Notifying Parties, Air Liquide and Air Products) active worldwide across the whole supply chain and able to bid for the largest tonnage projects.[78] Air Liquide S.A. ("Air Liquide") of France is the largest of the four, with over EUR 17 billion revenues in 2016 from the supply of gases and related services (of which 38% achieved in Europe),[79] closely followed in terms of revenues by Linde, and then Praxair and lastly the US company Air Products and Chemical, Inc. ("Air Products") which had around EUR 7 billion revenues in 2016 from the sale of gases (of which 18% achieved in the Europe and Middle East region).[80] Tier 1 players are also active in the wholesale and retail supply of helium and have extensive in-house engineering capabilities.[81]

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75 The size of the helium retail business in the EEA is computed on the basis of sales figures provided by market participants (replies to RFI 56 - Helium market reconstruction and Annex Q24 to the Notifying Parties' replies to RFI 57).

76 Including sales to other wholesalers (and excluding captive sales of vertically integrated players). Excluding sales to other wholesalers, the wholesale market would be more limited: EUR […] / […] at worldwide level in 2017 (Form CO, Annex 88).

77 In 2016, in the EEA, Linde's EBIT margins amounted to around […]% and […]% of its revenues for, respectively, the sale of industrial/helium/specialty gases and of medical gases/homecare respiratory services. Based on the information provided in the Annex 31 to the Form CO, the sale of gases and homecare services were […] profitable for Linde as the gross profit margins ranged from […]% to […]% in 2016 in the EEA countries in 2016, with the majority of countries recording gross profit margins of […]%. In particular, the sale of gases and homecare services were profitable in […], where the gross profit margin figures exceeded […]% in 2016.
Praxair's EBIT margins amounted to around […]% and […]% of its revenues for, respectively, the sale of gases (industrial, medical, specialty and helium) and homecare services in Spain and Portugal. Based on the information provided in the RFI48, the sale of gases were […] profitable for Praxair as the gross profit margins ranged from […]% to […]% in the EEA. The gross profit margins were particularly high for Homecare Services in Spain and Portugal, with […]% and […]% respectively.

78 The strong position of the four Tier 1 companies is a well-known fact in the industry and recognised by analysts. For example, the Société Générale report "Linde AG, 'Praxairing Linde' of 13 January 2017, Annex 24 to the Form CO, page 25: […].

79 Air Liquide's 2016 annual report, available at: https://www.airliquide.com/sites/airliquide.com/files/2016-annual-report.pdf [ID 6287].

80 Air Products' 2016 annual report, available at: http://investors.airproducts.com/phoenix.zhtml?c=92444&p=irol-reportsannual [ID 6288].

81 See below Sections 8.9 and 8.2.

(47) **"Tier 2" players**: this tier of the EEA industry features medium size companies with a regional or national presence, offering gases across three of the relevant distribution modes (tonnage, bulk and cylinder), but with limited scale and financial capability, which can prevent them from bidding for the largest tonnage and most capital intensive projects. Examples in the EEA are Messer Group GmbH of Germany ("Messer") and SOL S.p.A. of Italy ("SOL"). The market capitalization of these companies is significantly lower compared with Tier 1 players. For example, Messer, the largest Tier 2 player in the EEA, had worldwide revenues of EUR 1.1 billion in 2016 (of which 743 million in the EEA).[82] Tier 2 players typically do not have extensive in-house engineering capabilities and rely, at least in part, on third party engineering services for the construction of gas plants. [83]

(48) **"Tier 3" players**: this tier consists of local players active mainly as distributors of cylinders (whose numbers vary depending on the country or region). They only operate filling centres (including sometimes for helium) and have no production or engineering capabilities. Examples of Tier 3 players are Oy Woikoski Ab in Finland, Società Italiana Carburo Ossigeno S.p.A. ("SICO") in Italy and Oxigen Salud S.A. in Spain.

(49) The high margins achieved by the gas companies have attracted the attention of financial investors. Notably, all four Tier 1 players are listed companies. However, their shareholding structure is quite concentrated, so that, for example, […] shareholders of Praxair and […] shareholders of Air Products own […]% respectively of the company's share capital.[84] Moreover, there appears to be a significant number of **common shareholders** among the Tier 1 players. For example, all equity holders of Air Liquide reported in S&P Global Market Intelligence (accounting for […]% of Air Liquide's share capital) own in aggregate […]% of Air Products, […]% of Linde and […]% of Praxair, and […] shareholders with shares in both Linde and Praxair and an overall portfolio of shares in the industrial gases sector above USD 500 million own shares that in total account for […]% of Linde, […]% of Praxair, and […]% of Air Products.[85]

(50) The links between the Tier 1 players are not limited to their common shareholdings. Indeed, in several countries, the Notifying Parties, Air Liquide and Air Products operate through joint ventures (**JVs**) in which they are shareholders in various configurations. Such JVs are primarily active at production level. For example, in France, Lida SAS and Limes SAS are both JVs operating […]. Their shareholders are, for Lida SAS, Air Products (owning […]% of the company), Linde ([…]%) and Messer ([…]%)[86] and, for Limes SAS, Linde and Messer (both owning […]% of the company).[87] A similar situation occurs in Spain.[88]

(51) The gases industry is characterised by strong positive externalities, notably **economies of density**, which grant players with a dense network of gas plants and filling centres the benefit of a very competitive cost structure, enabling them to reach the critical (financial)

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82 Messer's 2016 annual report, available at: https://www.messergroup.com/documents/20182/611482/CSR-Management+Report+2016+EN/4e83d9d0-da89-dad5-b604-b467539bfbbc?version=1.1 [ID 6289].

83 See below Section 8.2.

84 Commission's analysis of S&P Global Market Intelligence (Capital IQ) data [ID 6304].

85 Commission's analysis of S&P Global Market Intelligence (Capital IQ) data [ID 6304].

86 Contrary to what is indicated in Annex 7 to the Form CO, Praxair has sold its shares in LIDA SAS in 2014 to Messer (Response to European Commission's 6(1)(c) Decision. Residual Topics, paragraph 38).

87 Annex 7 to the Form CO.

88 For example, Oxígeno de Sagunto, S.L. Carburo del Cinca S/A, Oxígeno de Andalucía, S.L. and Química Básica, S/A are all production JVs owned by Tier 1 players, in different configurations (Annex 7 to the Form CO). Annex 8 to the Form CO lists other examples of production JVs in Spain, where Praxair is a shareholder.

size to bid for the expensive capital-intensive large tonnage projects or pipelines. In this respect **economies of scope** are also important in the supply of cylinders, which, as explained in Section 6.2, is driven by portfolio effects, in particular in relation to the sale of industrial and specialty gases together with helium access.[89] Access to helium is largely influenced by Tier 1 (and 2) players, which either are active in the wholesale market or are strong buyers on that market.

(52) Such economies of density and scope are so strong that new entry of a Tier 1 player, or expansion of Tier 2 or 3 players, is rare, and typically only occurs as a result of mergers and acquisitions and not as a result of organic growth. This was the case for the Notifying Parties. For example, Linde expanded its geographic scope into North/Western Europe through the acquisition of AGA AB ("AGA")[90] and BOC Group plc ("BOC").[91]

(53) In fact, the gases industry in the EEA has experienced a **history of consolidation** whereby, from seven Tier 1 players in 1999 (AGA, Linde, Air Liquide, Air Products, BOC, Messer, Praxair), today it features only the four mentioned in recital (46). The demotion of Messer from a Tier 1 to Tier 2 player in the EEA is the result of it selling its US, German and UK businesses to Air Liquide in 2004 and its Italian business to Praxair, via Rivoira S.p.A. ("Rivoira"), in 2014.

(54) Consolidation has not only brought about a reduction in the number and an increase of the size of the Tier 1 players, but also a variation of their geographic footprint. Indeed, today's Tier 1 players, together with Messer, have been engaging in various exchanges of assets and businesses among them, also at worldwide level, often with the corollary of a non-compete clause included in the sale and purchase agreement, in relation to the territory of the divested business. For example, the 2014 acquisition of Messer's Italian business by Praxair was undertaken in parallel with the acquisition, in the same year, of Praxair's French businesses by Messer.

(55) This history of consolidation and asset exchanges (relating also to the downstream homecare business[92]) is summarised in Table 2 below.

**Table 2: Merger and acquisition activity of EEA Tier 1 players**

| Year | Tier 1 players | Developments |
|---|---|---|
| 1999 | AGA, Linde, Air Liquide, Air Products, BOC, Messer, Praxair | |
| 2000 | Linde, Air Liquide, Air Products, BOC, Messer, Praxair | Linde acquires AGA. |
| 2004 | Linde, Air Liquide, Air Products, BOC, Praxair | - Messer's German, UK and U.S. businesses sold to Air Liquide with 4-year non-compete clause.<br>- Praxair buys the German business of Messer from Air Liquide. |
| 2006 | Linde, Air Liquide, Air Products, Praxair | - Linde acquires BOC.<br>- Linde acquires Praxair's Turkish business. |
| 2007 | | - Praxair acquires Mexican AGA from Linde.<br>- Air Liquide acquires from Linde the Polish BOC and Linde UK gases as well as Allied Healthcare in the UK. |
| 2012 | | - Linde acquires several homecare businesses: continental European business of Air Products[93] and Lincare Holdings in the |

89 On portfolio effect see also Sections 6.1, 8.4.2.2.a.iii, 8.5.2.2.a.ii, 8.6.2.2.a.ii and 8.7.2.2.a.ii.
90 Commission decision of 9 February 2000 in case M.1641 – *Linde/AGA*.
91 Commission decision of 6 June 2006 in case M.4141 – *Linde/BOC*.
92 See Section 6.6 below.

| Year | Tier 1 players | Developments |
|---|---|---|
| | | USA.<br>- Air Products acquires a majority stake in Indura, largest South American gas producer.<br>- Air Liquide acquires the homecare business of Gasmedi in Spain. |
| 2014 | | - Praxair acquires Messer's Italian business.<br>- Messer acquires Praxair's French industrial gas businesses and Praxair's shares in LIDA SAS. |
| 2015 | | Air Liquide acquires Messer's Turkish industrial gas business |
| 2016 | | - Messer acquires Air Liquide's Hungarian industrial gas business.<br>- Air Liquide acquires Airgas in the U.S., subject to a remedy sold to Matheson Tri-Gas, Inc.[94]<br>- Praxair acquires Yara International ASA's European carbon dioxide business |

*Source: Commission's compilation based on Capital IQ and Commission's decisions.*

(56) Finally, consolidation has not only occurred through acquisition of sole control over Tier 1 competitors or their assets, but also through acquisition of significant stakes in smaller competitors, notably Tier 2 players. For example, in Italy and Eastern Europe[95] Praxair is mainly active through two JVs with the family owned company Flow Fin S.p.A. ("Flow Fin"), namely Società Italiana Acetilene e Derivati S.p.A. ("SIAD") and Rivoira (active only in Italy) and their subsidiaries, over which it enjoys joint control.[96] These JVs are active both in the production and distribution of gases. Likewise, in Italy, Air Products has a significant stake in Sapio Produzione Idrogeno Ossigeno Srl ("Sapio"), also active both in the production and distribution of gas.

### 6.6. Respiratory homecare services

(57) As mentioned in recitals (29) and (32), there is a specific application of medical gases in the context of homecare assistance services to patients, in particular respiratory homecare services.

(58) The term "respiratory homecare" is used to describe a service offering delivered at home to patients with medical conditions that require the administration of medical oxygen, assistance with breathing or administration of drugs via the respiratory system. This type of care is provided not only in hospitals but also, especially in case of chronic ailments, in the patient' homes so that they can lead as normal a life as their condition allows. The Notifying Parties install, maintain and repair respiratory equipment in patients' homes,

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93 Commission decision of 18 April 2012 in Case M.6504 – *Linde/Air Products Homecare*.

94 Matheson Tri-Gas, Inc. ("Matheson") is wholly owned by Taiyo Nippon Sanso Corporation ("TNSC") of Japan, the fifth Tier 1 player in the gas industry at worldwide level, with very limited presence in the EEA. TNSC is active in the USA, Japan, Taiwan, Korea, China, Singapore, Malaysia, Thailand, and Australia and worldwide revenues of EUR 4.8 billion in 2016 (Japanese Yen 641.5 billion) -TNSC's 2016 annual report, available at: https://www.tn-sanso.co.jp/en/ir/pdf/annual/2016_e.pdf [ID6303].

95 Austria, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia.

96 With a […]% stake, Praxair is a minority shareholder of SIAD (with the remaining of the shares being held by Flow Fin). However, SIAD can be considered to be jointly controlled by Praxair and Flow Fin, as Praxair […]. Conversely, Praxair and Flow Fin hold respectively a […]% and […]% stake in Rivoira. Rivoira can be considered to be jointly controlled by Praxair and Flow Fin in view of […] (Annex 3 to the Form CO).

collect it at the end of service, provide medical oxygen and are active in a number of related support services.[97]

(59) Respiratory homecare services may be segmented into oxygen and non-oxygen therapies.

(60) **Oxygen-based therapies** are provided by means of (i) liquid oxygen ("LOX"), supplied in a cryogenic container, (ii) gaseous oxygen ("GOX"), compressed in steel/aluminium cylinders of various sizes or (iii) oxygen produced by concentrators ("COX"), including a stationary or portable device. LOX and GOX require regular provision of medical grade oxygen to the patient's home whereas COX involves concentrating oxygen from the air in a machine located at the patient's home.

(61) **Non-oxygen based therapies** include (i) ventilation therapy (provision of ventilator support through the patient's upper airway by means of a mask or similar device), which can be non-invasive, using a mask that covers both the patient's mouth and nose, and invasive, which is delivered through a tracheotomy, (ii) sleep therapy (delivery of ambient air to prevent apnoea), which unlike oxygen therapy is not concerned with the concentration of oxygen in the air that is supplied, and (iii) aerosol therapy (inhalation of a drug directly to the lungs). Only oxygen therapy involves the administration of medical oxygen and only oxygen therapy based on GOX and LOX involves medical oxygen that the Notifying Parties produce themselves.[98]

(62) The Notifying Parties (and their vertically integrated competitors) source the majority of the medical oxygen required for the provision of oxygen-based respiratory homecare services (specifically GOX and LOX) internally (i.e. from their own ASUs).[99] Other suppliers that are not vertically integrated in the production of medical oxygen are also active in the market. These companies source medical oxygen in bulk (if they own their own filling station) or in cylinders from suppliers of medical oxygen.[100] On the other hand, neither Praxair nor Linde manufactures concentrators used for COX therapies and therefore the ones offered by the Notifying Parties are sourced from third parties.[101]

(63) Providers of respiratory homecare services normally do not offer only medical oxygen (in the case of oxygen therapies), but also hardware (such as cylinders, masks and other devices) that they purchase from third parties[102] and a range of services (such as maintenance, training, and patients' assistance).[103]

(64) Both Praxair and Linde are active in the supply of respiratory homecare services. While Linde is active in a large number of countries in the EEA, Praxair's respiratory homecare activities in the EEA are limited to Spain, Portugal and Italy.

(65) The markets for respiratory homecare services vary largely depending on the specific national legal framework. Despite the different regulatory and reimbursement systems, a common feature in the majority of EEA countries is that patients do not bear the cost of the different respiratory homecare services. Other entities, mainly national health authorities, are the ones bearing the cost through a variety of reimbursement methods.[104] Thus, the

97 Form CO, Chapter E, Section 6, paragraphs 1322 and 1329.
98 Commission's decision of 18 April 2012 in Case M.6504 - *Linde/Air Products Homecare*, paragraph 7.
99 Form CO, Chapter E, Section 6, paragraphs 1379 to 1380.
100 Form CO, Chapter E, Section 6, paragraph 1450.
101 Form CO, Chapter E, Section 6, paragraph 1333.
102 Form CO, Chapter E, Section 6, paragraphs 1401 to 1403.
103 Form CO, Chapter E, Section 6, paragraph 1334.
104 Form CO, Chapter E, Section 6, paragraph 1415.

relationship between the provider and the patient is not strictly a supplier/customer relationship in the sense that the patient does not pay directly as a user of the service.[105]

## 7. RELEVANT MARKETS

### 7.1. Industrial gases

*7.1.1. Product market definitions*

7.1.1.1. Commission's precedents

(66) In its previous decisions, the Commission took the view that there is no substitutability between the various industrial gases, either from the demand or from the supply side. Therefore, each individual gas (oxygen, nitrogen, argon, hydrogen, acetylene, carbon monoxide, carbon dioxide and nitrous oxide) has been considered as a separate product market.[106]

(67) Moreover, the Commission considered that tonnage (defined as sales of large quantities of gas, exceeding 100 tons per day ("tpd") through pipelines or large on-site plants), bulk (defined as sales of quantities between 20 to 100 tpd delivered by road or rail tankers) and cylinders (defined as sales of quantities from 1 metric ton per month to 1 000 metric tons per month delivered in cylinders) give rise to separate product markets. However, the Commission acknowledged the strong links between the three methods of supply. Indeed, as explained in Section 6.2., large quantities supplied in bulk are produced from piggy-back plants, gases supplied in cylinders are derived from bulk gas supplies and tonnage customers may receive back-up supply in bulk form. As regards tonnage, the Commission considered that the two tonnage modes of supply (large on-site plant and pipeline supply) compete with each other and constitute, together, a single product market. As regards bulk, the Commission considered that gas supplied in bulk and gas produced in small on-site plants compete with each other and constitute, together, a single product market. [107]

(68) Finally, a distinction based on the physical state of the supplied gas (liquid or gaseous) has not been considered relevant, also because the segmentation between delivery modes already distinguishes between supplies in liquid or gaseous form (for example, tonnage and cylinder supply is always in gaseous form, bulk supply by tanker is in liquid form).

7.1.1.2. Notifying Parties' view

(69) In the Form CO, the Notifying Parties agreed with the Commission's precedents.[108] However, they pointed out that a tonnage market for argon would not be meaningful because (i) the quantities usually supplied are far below 100 tpd and can be supplied as bulk and (ii) in the last ten years there has been no single tender for an ASU in which argon was the lead product.

(70) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition,

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105 Form CO, Chapter E, Section 6, paragraph 1416.

106 Commission's decision of 9 February 2000 in Case M.1641 - *Linde/AGA*, Commission's decision of 18 January 2000 in Case M.1630 – *Air Liquide/BOC*, Commission's decision of 15 March 2004 in Case M.3314 – *Air Liquide/Messer Targets* and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*.

107 Commission's decision of 9 February 2000 in Case M.1641 - *Linde/AGA*, Commission's decision of 18 January 2000 in Case M.1630 – *Air Liquide/BOC*, Commission's decision of 15 March 2004 in Case M.3314 – *Air Liquide/Messer Targets* and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*.

108 Form CO, Chapter A, Section 6, paragraphs 114 ff.

neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.1.1.3. Results of the market investigation and Commission's assessment

(71) As regards the segmentations by type of gas and physical state of supply, the evidence in the Commission's file has generally not provided any indication which would suggest that departing from the precedents would be appropriate subject to a number of exceptions and clarifications set our below relating to purity grades and to distribution modes for some types of industrial gases.[109]

(72) As regards the **purity** grades of the gas,[110] the Commission notes the following. In the past, the Commission has considered high purity grades to give rise to separate markets only in relation to carbon monoxide[111] and nitrous oxide[112] sold in cylinders and categorised them as specialty gases (as a type of chemicals and ESGs respectively).[113] In the present case, during the first market investigation, a few customers have indicated the importance of quality or purity of the gas as a relevant parameter of competition also for other industrial gases.[114] Moreover, the Commission notes that the production of gases of higher grades[115] requires additional investments in equipment. These investments are often difficult to justify commercially, given the small, and rather sporadic, demand for high purity gases, especially as regards air gases. This means that gas suppliers, including the Notifying Parties, often purchase the higher grades from each other to achieve economies of scale.[116] Finally, the Commission notes that the Notifying Parties' sales of higher purity grades are performed only in cylinders.[117] For the purposes of the assessment of the Transaction there is no need to conclude on the question whether supplies of standard and high purity grades of industrial gases other than carbon monoxide and nitrous oxide are separate markets or not, as the Transaction would significantly impede effective competition in either scenario.

(73) As regards the segmentation by distribution mode, the Commission notes the following.

(74) First, as explained at recital (34), **acetylene** and **nitrous oxide** are not supplied in tonnage mode. This has been confirmed by the market investigation, during which the overwhelming majority of responding customers indicated that they source these gases in cylinders and no customers stated that they receive acetylene or nitrous oxide through a pipeline, large on-site plant or small on-site plant.[118] Moreover, on the basis of the information provided by the Notifying Parties, no small on-site plant offered in the market

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109 For the distinction between industrial and medical gases, see Section 7.2.1.

110 Gases of different grades differ in terms of concentration of the lead molecule compared to molecules of other gases (so called "impurities"). For example, high purity oxygen contains a greater concentration of oxygen molecules and a lower volume of impurities. Purity levels are expressed in percentages of the lead molecule (for example, 99.5%) or, more commonly, in "grades" (for example, 2.5 is the equivalent of 99.5%). With respect to grades, the first number refers to the "number of nines" in the percentage and the second number refers to the number following "the nines". For instance, a 2.0 gas is 99% (two nines) pure and a 6.0 gas is 99.9999% (six nines) pure; a 2.5 gas is 99.5% pure and a 6.4 gas is 99.99994% pure.

111 Carbon monoxide of grades above 3.0.

112 Nitrous oxide of grades above 3.0.

113 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 19 and 42.

114 Responses to RFI Q17 to customers of industrial gases, in particular question 87. Also, agreed non-confidential minutes of the conference call with […] of 6 September 2017, paragraph 7 [ID704].

115 Acetylene of grades above or equal to 2.6; argon of grades above or equal to 5.5; carbon dioxide, excluding dry ice, of grades above or equal to 4.5; hydrogen of grades above or equal to 5.5; nitrogen of grades above or equal to 5.5; and oxygen of grades above or equal to 5.0.

116 Form CO, Chapter A, Section 6, paragraphs 106 ff.

117 Form CO, Chapter A, Section 7.

118 Responses to RFI Q17 to customers of industrial gases, question 3.

produces acetylene and nitrous oxide.[119] For these reasons, the Commission considers that, with respect to acetylene and nitrous oxide, the only relevant supply modes are bulk and cylinders.

(75) Second, with respect to **argon**, in line with the Notifying Parties' submission, the Commission notes that the boundaries between tonnage and bulk are blurred. Indeed, not only are there normally no tenders for an ASU in which argon is the lead product for quantities around or above 100 tpd, but also […].[120]

(76) Moreover, in the market investigation roughly two thirds of the responding customers purchasing argon indicated that they source this product in cylinders, one third indicated that they source this product in bulk and only a very small minority indicated that they receive argon via a pipeline or a (large) on-site plant.[121] In this regard, it should be noted that argon results as co-product from the cryogenic air separation production process in the largest ASUs which produce oxygen and nitrogen in significantly larger quantities compared to argon.[122] In that context, if a customer is already supplied with oxygen or nitrogen in tonnage mode, it is normally more economical and practical to also supply that customer with argon in tonnage mode. However, argon is a more expensive product which can be distributed economically over very long distances (because the transport costs represent a small proportion compared to the overall high price of argon). In this context, a customer in the EEA, whose needs of argon exceed what could be satisfied by cylinders, always has the choice between on-site supply through an ASU or bulk supply.[123]

(77) Finally, on the basis of the information provided by the Notifying Parties, no small on-site plant offered in the market produces argon.[124]

(78) For these reasons, the Commission considers that, with respect to argon, the only relevant supply modes are bulk (which only for the purpose of assessing the effects of the Transaction will be considered to include also the limited deliveries occurring via pipeline/large on-site plants) and cylinders.

(79) Third, with respect to **hydrogen**, the Commission notes that the tonnage mode of supply defined as supplies exceeding 100 tpd appears not to be relevant. Indeed, the nameplate capacity even of large on-site plants producing hydrogen is normally below 100 tpd.[125] Moreover, the first phase market investigation provided indications of the existence of very limited on-site plants producing hydrogen with nameplate capacity above 100 tpd.[126] The tender data submitted by the Notifying Parties indicate that, over the period 2007-2017, there were only […] closed tenders for hydrogen plants with capacity above 100 tpd out of

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119 Responses to RFI Q31 to competitors in industrial and medical gases, question 51. Also, responses to RFI Q17 to customers of industrial gases, questions 3 and 57.

120 Form CO, Chapter A, Section 6, paragraphs 149 and 150. The Notifying Parties' largest tonnage nameplate production capacity for argon in the EEA is Linde's […] ASU, with a nameplate capacity of […] tpd.

121 Responses to RFI Q17 to customers of industrial gases, question 3.

122 Form CO, Chapter A, Section 6, Table 13 and paragraphs 148 and 273. It should be noted that, by volume, dry air (from which air gases are produced) contains on average approximately 78.09% nitrogen, 20.95% oxygen, and only 0.93% argon.

123 Form CO, Chapter A, Section 6, paragraph 150.

124 Responses to RFI Q31 to competitors in industrial and medical gases, question 51. Also, responses to RFI Q17 to customers of industrial gases, questions 3 and 57.

125 Form CO, Section 7, Chapter A, paragraph 273.

126 Responses to RFI Q31 to competitors in industrial and medical gases. Also, responses to RFI Q17 to customers of industrial gases.

a total of […].[127] This is true also for ongoing tenders: out of […] tenders, […] are for hydrogen plants with capacity above 100 tpd.[128]

(80) In the Form CO the Notifying Parties proposed 0.3 tpd as threshold to distinguish tonnage supplies from bulk supplies of hydrogen, the latter including also supplies through small on-site plants.[129]

(81) As regards the threshold, there is no compelling evidence in the Commission's file suggesting that the Notifying Parties' proposal is not appropriate with respect to bulk. In fact, it appears that the largest deliveries of bulk hydrogen to customers do not exceed 0.3 tpd.[130]

(82) However, the second phase investigation provided some indications that with respect to small on-site plants, the relevant threshold may not correspond to the one relevant for bulk.[131] Notably, the analysis of Linde's and its competitors' small on-site plant offering,[132] as well as some internal documents of Linde,[133] suggest that a more appropriate threshold could be above 0.3 tpd. However, no precise threshold could be identified. Moreover, Praxair […];[134] thus its offering to the on-site supply of hydrogen appears to be best categorised as tonnage, i.e. supply through a plant engineered specifically for the need of the customer, regardless of the plant capacity.[135] Finally, the Commission notes that tender data submitted by the Notifying Parties indicate that, over the period 2007-2018, Praxair has mainly participated in tenders for the on-site supply of hydrogen though plants of capacity equal to […] tpd or greater, which account for […] out of the total […] tenders for supply of hydrogen where Praxair participated.[136] This is true also for ongoing tenders, where Praxair is participating in tenders for the on-site supply of hydrogen though plants of capacity above […] tpd.[137] In this context, considering all supplies through plants with capacity above 0.3 tpd as tonnage supplies of hydrogen appears to be conservative and in favour of the Notifying Parties, as it would increase the overall size of the tonnage market against which the Notifying Parties' combined position is benchmarked.

(83) Therefore, the Commission considers that, for the purposes of the assessment of the Transaction, 0.3 tpd can be considered the relevant capacity threshold to distinguish tonnage supplies of hydrogen from both bulk supplies and supplies through small on-site plants of the same gas.

(84) As regards the distinction between bulk and small on-site plants, in the market investigation, the overwhelming majority of the responding customers which purchase hydrogen indicated that supplies through small on-site plants are not a suitable alternative to bulk supplies and vice versa.[138] The reasons for that are, on the one hand, the higher costs of small on-site plants, which do not make them a cost-effective alternative to bulk for smaller quantities, but also logistics (greater space on-site needed to install small on-

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127 Revised tender data submitted in Annex Q.1.1. to the response to RFI 57.
128 Response to RFI 57, Annex 5.
129 Form CO, Section 7, Chapter A, paragraph 273.
130 Form CO, Section 7, Chapter A, paragraph 273.
131 As it is the case for oxygen and nitrogen according to the Commission's precedents and the Notifying Parties' submissions, see below recital (80).
132 Form CO, Section 6, Tables 19-21.
133 For example, Linde's internal document […] [ID 4760-92268].
134 Form CO, Section 6, footnote 99.
135 See footnote 65 above: small on-site supply is defined as on-site supply through standardised plants of small capacity.
136 Revised tender data submitted in Annex Q.1.1. to the response to RFI 57.
137 Response to RFI 57, Annex 5.
138 Responses to RFI Q17 to customers of industrial gases, questions 3, 34 and 58.

site plants) and the greater flexibility of bulk deliveries, which allows better catering for demand variations for a given customer[139] (also considering the difference in the typical duration of the contracts and pricing clauses[140]). On the other hand, small on-site plants allow for greater security of supply, which is important for customers with more constant needs of gas.[141]

(85) Likewise, the overwhelming majority of the responding competitors explained that, in relation to hydrogen, bulk deliveries are not substitutable with supplies through small on-site plants, in particular for Tier 2 players, which do not have the engineering capabilities to build the plants.[142] All competitors, however, indicated that supplies through small on-site plants can be satisfied with bulk deliveries,[143] so at best substitutability between the two delivery modes is one-way.

(86) For these reasons, the Commission considers that, with respect to hydrogen, the relevant supply modes are tonnage (including plants with name plate capacity above 0.3 tpd), small on-site plants (including plants with nameplate capacity below 0.3 tpd), bulk and cylinders.

(87) Fourth, the same considerations on the distinction between bulk and small on-site plants apply also with respect to **oxygen** and **nitrogen**. Notably, in the market investigation, the overwhelming majority of the responding customers which purchase oxygen or nitrogen indicated that supplies through small on-site plants are not a suitable alternative to bulk supplies, essentially for the same reasons as indicated at recital (84).[144] The overwhelming majority of customers purchasing oxygen also stated that bulk supplies are not a suitable alternative to supplies through small on-site plants, again for similar reasons to those referred in recital (84).[145] On the contrary the views of customers of nitrogen were mixed on whether bulk supplies would be a suitable alternative to supplies through small on-site plants.[146] The views of competitors were similar to the ones referred at recital (85) in relation to hydrogen, so that at best substitutability between the two delivery modes is one-way, in particular for nitrogen.[147]

(88) For these reasons, the Commission considers that, with respect to oxygen and nitrogen, the relevant supply modes are tonnage,[148] small on-site plants, bulk and cylinders.

(89) Fifth, with respect to **carbon dioxide**, the Commission notes that this is the only industrial gas which is also supplied in solid form, known as dry ice. In previous cases the Commission has not considered the question whether dry ice forms a separate product market. In the present case the Commission notes that, just like gaseous carbon dioxide sold in cylinders, dry ice is produced from bulk carbon dioxide, but the manufacturing process is different from the one used to produce gaseous carbon dioxide sold in

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139 Responses to RFI Q17 to customers of industrial gases, questions 3 and 34.

140 See Section 6.2.

141 Responses to RFI Q17 to customers of industrial gases, questions 3 and 58.

142 Responses to RFI Q31 to competitors in industrial and medical gases, question 32. For example, Messer stated that "*Except for Linde/Praxair, AL and AP all smaller competitors do not have their own production of On-Site-units and have to purchase them at higher costs*" [ID3201]. Likewise SOL explained that, to satisfy a demand for gas in bulk with a small on-site plant "*We need to invest in a proper on site unit (usually we do not keep them on stock) and wait for the delivery time of it*" [ID4396].

143 Responses to RFI Q31 to competitors in industrial and medical gases, question 54.

144 Responses to RFI Q17 to customers of industrial gases, questions 3 and 34.

145 Responses to RFI Q17 to customers of industrial gases, questions 3 and 58.

146 Responses to RFI Q17 to customers of industrial gases, questions 3 and 58.

147 Responses to RFI Q31 to competitors in industrial and medical gases, questions 32 and 54.

148 Including also bulk deliveries when the supply is used a temporary back-up for a tonnage customer, for example in case of maintenance of the gas plant. This is because the supply is performed in the context of a tonnage contractual relationship (Form CO, Section 7, Chapter A, paragraph 273).

cylinders.[149] Moreover, dry ice is used for specific applications, relying on its cooling agent properties.[150] Finally, the Commission notes that the Notifying Parties, as well as their competitors, market dry ice as a separate product.[151] Therefore, for the purpose of the assessment of the Transaction, supplies of gaseous carbon dioxide in cylinders and supplies of dry ice are considered as separate markets. For these reasons, the Commission considers that, with respect to carbon dioxide, the relevant supply modes are tonnage, bulk, cylinders (excluding dry ice) and dry ice.

(90) Sixth, with respect to **carbon monoxide**, the evidence in the Commission's file has not provided any indication which would suggest that departing from the precedents would be appropriate. This is in line with the Notifying Parties' views. Therefore, the Commission considers that, with respect to carbon monoxide, the relevant supply modes are tonnage, bulk and cylinders.

7.1.1.4. Conclusion on product market definition

(91) For the reasons set out in the preceding recitals in Section 7.1.1, the Commission considers that, for the assessment of the Transaction, the relevant product markets are:

(a) Markets related to the **tonnage** supply of each of the following gases: **oxygen, nitrogen, carbon monoxide, and carbon dioxide** (for all of which, including both supplies via pipeline and through large on-site plants exceeding 100 tpd) as well as **hydrogen** (including both supplies via pipeline and through plants with name plate capacity above 0.3 tpd);

(b) Markets related to the supply through **small on-site plants** of each of the following gases: **oxygen, nitrogen** (including plants with nameplate capacity below 100 tpd), as well as **hydrogen** (including plants with nameplate capacity below 0.3 tpd);

(c) Markets related to the **bulk** supply of each of the following gases: **oxygen, nitrogen, argon, acetylene, carbon monoxide, carbon dioxide and nitrous oxide** (including supplies of volumes between 20 and 100 tpd by road or rail tankers, and excluding the supplies through small on-site plants for oxygen and nitrogen) as well as hydrogen (including supplies of volumes below 0.3 tpd by road or rail tankers, and excluding the supplies through small on-site plants);

(d) Markets related to the **cylinder** supply of each of the following gases (including supplies of volumes between 1 and 1 000 metric tons per month through cylinders): **oxygen, nitrogen, argon, hydrogen, and acetylene,** as well as, for each gas, the potential segments for **standard purity** grades[152] and **high purity** grades;[153]

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149 Form CO, Chapter A, Section 6.

150 Form CO, Chapter A, Section 6

151 The following Internet pages presenting the dry ice offering of the Notifying Parties, Air Liquide and ASCO Carbon Dioxide, a Messer subsidiary: http://www.linde-gas.com/en/products_and_supply/food_chilling_cooling/dry_ice_sol.html; [ID 6292]; http://www.praxair.com/gases/buy-dry-ice-solid-carbon-dioxide [ID 6291], http://www.airliquide-iupcgases.co.uk/dry-ice/dry-ice.php [ID 6293], https://www.ascoco2.com/en/co2-production-and-co2-recovery-plants/general-information-about-co2/solid-co2-dry-ice/ [ID 6290].

152 Acetylene of grades below 2.6; argon of grades below 5.5; hydrogen of grades below 5.5; nitrogen of grades below 5.5; and oxygen of grades below 5.0.

153 Acetylene of grades above or equal to 2.6; argon of grades above or equal to 5.5; hydrogen of grades above or equal to 5.5; nitrogen of grades above or equal to 5.5; and oxygen of grades above or equal to 5.0.

(e) Markets related to the cylinder supply of **standard purity** grades of each of **carbon monoxide** and **nitrous oxide** (high purity grades for these products being specialty gases constituting separate markets);[154]

(f) A market related to the **cylinder** supply of **carbon dioxide**, excluding supplies in solid form, as well as the potential segments for carbon dioxide, excluding supplies in solid form, delivered in **standard grades[155]** and **high purity** grades;[156]

(g) A market related to the supply of **carbon dioxide in solid form.**

*7.1.2. Geographic market definition*

7.1.2.1. Commission's precedents

(92) In its previous decisions,[157] the Commission considered the markets for tonnage as EEA-wide in scope. With respect to the bulk (which, in those decisions included small on-site plants) and cylinder supplies of industrial gases, while it noted that these markets are likely to be local, the Commission considered a national scope as proxy for the geographic dimension of the markets, in view of the overlapping catchment areas and the existence of swap agreements between suppliers to reduce transportation costs, which allow competition to take place also at national level.

7.1.2.2. Notifying Parties' view

(93) In the Form CO, the Notifying Parties agreed with the approach taken by the Commission in its precedents.[158]

(94) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.1.2.3. Results of the market investigation and Commission's assessment

(95) As regards the geographic market definition, the evidence in the Commission's file has generally not provided any indication which would suggest that departing from the precedents would be appropriate. A few exceptions are discussed in the following recitals.

(96) First, with respect to **small on-site plants**, the Commission notes that in many respects this mode of supply is very similar to tonnage. In particular, as explained at recital (37), the contract formation mechanism for these supplies is normally a tender. In this respect the Commission notes that the requirements to supply a customer located in a certain area through bulk deliveries or via a small on-site plant are different. For bulk, a production plant needs already to exist within a certain distance from the customer's site for the supplier to be able to offer a competitive price. For small on-site plants, the production plant is built specifically for the customer and the presence of other production plants of a given bidder within a certain (likely greater) distance from the customer's site is relevant only as back-up supply. This means that a gas supplier is less constrained in its ability to bid (and price) across the EEA for small on-site plant projects. Indeed, the supplier is

154 Carbon monoxide and nitrous oxide of grades below 3.0.

155 Carbon dioxide, excluding dry ice, of grades below 4.5.

156 Carbon dioxide, excluding dry ice, of grades above or equal to 4.5.

157 Commission's decision of 15 March 2004 in Case M.3314 - *Air Liquide/Messer Targets*, Commission's decision of 18 January 2000 in Case M.1630 - *Air Liquide/BOC*, Commission's decision of 9 February 2000 in Case M.1641-*Linde/AGA* and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC.*

158 Form CO, Section 6, Chapter A, paragraphs 181-186.

likely to enjoy greater operational flexibility to organise temporary and occasional back-up bulk deliveries under a small on-site plant contract, compared to regular track or rail deliveries under a bulk contract. While network density and proximity can constitute a competitive advantage also for small on-site plants,[159] it is not an element that appears to justify the segmentation of the EEA market based on national borders. Therefore, the Commission considers that, with respect to small on-site plants, the relevant geographic scope of the markets is EEA-wide.

(97) Second, with respect to the **bulk** supply of **argon**, the Commission notes that, although the vast majority of bulk argon is shipped within 750 km (more than double of the distance at which other industrial gases bulk deliveries are normally performed), argon is a high value product that can travel up to 3,000 km.[160] Indeed, the higher the production cost of a gas, the lower the percentage that transportation costs account for of the total cost borne by the customer and the longer a product can travel. Data submitted in the Form CO shows that, in a very large number of EEA countries where the Notifying Parties sell bulk argon ([…] out of 29 EEA countries), the percentage of bulk argon supplied by the Notifying Parties in those countries is sourced for more than […]% from outside that country.[161] However, for the purposes of the assessment of the Transaction, there is no need to conclude on the question whether the bulk supply of argon is national or EEA-wide, as the Transaction would significantly impede effective competition in either scenario.[162]

(98) Third, with respect to the **bulk** supply of **nitrous oxide**, the Commission notes that, on the basis of the data submitted in the Form CO, there appear to be intensive trades across the EEA. […].[163] In this context, despite the constraints in terms of transport cost, it cannot be excluded that the geographic scope of the relevant product market is broader than national. However, for the purpose of the assessment of the Transaction there is no need to conclude on the question whether the bulk supply of nitrous oxide is national or EEA-wide, as the Transaction would not significantly impede effective competition in either scenario.

(99) Fourth, with respect to the **cylinder** supply of **high purity** grades of oxygen, nitrogen, argon, hydrogen, acetylene, and carbon dioxide, the Commission notes that these are high value products, for which production capabilities are limited in the EEA and suppliers purchase from each other some quantities of high purity gases for reselling purposes across the EEA.[164] In this context, it is likely that the geographic scope of the relevant product markets is broader than national. However, for the purpose of the assessment of the Transaction, there is no need to conclude on the question whether the cylinder supply of high purity grades is national or EEA-wide, as the Transaction would significantly impede effective competition in either scenario.

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159 See below Section 8.2.1.2.1.

160 Form CO, Section 6, Chapter A, paragraph 184.

161 […]. In […] and [...] the import ratio is also significant, respectively […]% and […]% (Form CO, Annex 29).

162 Even though liquid bulk hydrogen is transported as far as argon, as mentioned in footnote 45, bulk hydrogen is commonly transported in gaseous form due to the very high cost of liquefying hydrogen. Gaseous bulk hydrogen can be economically delivered over a distance of only 150 km, less than the distance travelled by liquid bulk oxygen and nitrogen (Form CO, Section 6, Chapter A, paragraphs 183-184). For these reasons the Commission considers that it would not be appropriate to depart from the precedents and to consider the market for the supply of bulk hydrogen broader than national.

163 Form CO, Annex 29. In the EEA Praxair has no bulk sales of nitrous oxide and only cylinder sales of the standard grade of this gas in […].

164 Form CO, Section 6, Chapter A, Tables 10 and 11, showing the example of the Notifying Parties' purchases of high-purity gases from third-party suppliers in the EEA in 2016.

(100) Fifth, for the purposes of the assessment of the Transaction, the Commission considers that the territories of Belgium, the Netherlands and Luxembourg ('**Benelux**') constitute together a single regional market for bulk and cylinder supplies of industrial gases (with the possible exceptions of bulk argon, nitrous oxide and carbon dioxide and cylinder supplies of high purity grades, to the extent that these relevant product markets are defined EEA-wide in scope). Indeed, the Commission notes that there are very intense links and trades between the Benelux countries. For example, Praxair's cylinders supplied to customers in […]. Likewise, the sources of Praxair's bulk supplies for the […].[165] In turn, Linde […].[166] In fact, looking at the Notifying Parties' asset portfolio, Praxair has limited presence in the Netherlands, and Linde has limited presence in Belgium.[167] Moreover, both Praxair's and Linde's accounting systems […].[168] Other elements supporting a finding of a market broader than national are the topography of the Benelux and the presence of a highly industrialised area across the borders, in particular between Belgium and the Netherlands.

(101) With respect to the **bulk** supply of **carbon dioxide**, in the Article 6(1)(c) Decision the Commission observed the existence of intensive trades across the EEA.[169] On that basis, the Commission considered that, despite the constraints in terms of transport cost, it could not be excluded that the geographic scope of the relevant product market was broader than national.

(102) During the second phase investigation the Commission further assessed the geographic scope of the bulk market for the supply of carbon dioxide. The investigation has revealed that, despite it is transported a somewhat longer distances than other gases such as nitrogen and oxygen (that is 300-500 km against 250 km for the former gases), bulk carbon dioxide is the second most expensive industrial gas to transport (when benchmarking transport cost with the final price paid by the customer), the most expensive being oxygen.[170]

(103) Moreover, the Commission has undertaken a more detailed assessment of carbon dioxide trades across the EEA, looking at the countries of destination of the bulk carbon dioxide processed by each plant of the Notifying Parties[171] and their competitors.[172] The analysis has shown the overwhelming majority of the carbon dioxide produced in a country is delivered in the same country where the process plant is located, with the remainder being sold in the bordering countries.

(104) For these reasons, for the purpose of the assessment of the Transaction, in line with past precedents and the Notifying Parties' view, the Commission considers that the geographic scope of the bulk market for the supply of carbon dioxide is national.

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165 Note on the viability of the Divestiture Business' activities in the Netherlands of 22 December 2017. Also, Form CO, Section 6, Chapter A, footnote 161.

166 Form CO, Annex 29.

167 Form CO, Annex 27.

168 Form CO, Annex 31.

169 On the basis of the data submitted in the Form CO, Annex 29, the Commission observed that in the large majority of EEA countries where the Notifying Parties sell bulk carbon dioxide ([…] out of […] EEA countries), the percentage of bulk carbon dioxide supplied by the Notifying Parties in those countries is sourced for more than […]% from outside that country. This is the case for […]. In […] and […] the import ratio is also significant, respectively […]% and […]%.

170 Data on average prices for bulk industrial gases and estimated average transport cost submitted in response to RFI 57, question 1.

171 Form CO, Annex 29.

172 Responses to RFI 16, available in the data room.

7.1.2.4. Conclusion on geographic market definition

(105) For the reasons set out in the preceding recitals in Section 7.1.2, the Commission considers that, for the assessment of the Transaction, the geographic scope of the relevant markets is the following:

(a) **EEA-wide** for the markets related to the **tonnage** supply and the supply through **small on-site plants**, as well as, possibly for the **bulk** supply of **argon** and **nitrous oxide** and for the hypothetical segments or sub-segments for the **cylinder** supply of **high purity** grades of **oxygen, nitrogen, argon, hydrogen, acetylene, and carbon dioxide**;

(b) **national**, alongside country borders, for all other markets and segments identified in recital (91), with the exception of the region encompassing **Belgium, Luxembourg and the Netherlands** ("the Benelux"), which should be considered a single geographic dimension of those other markets and segments identified in that recital.

## 7.2. Medical gases

*7.2.1. Product market definitions*

7.2.1.1. Commission's precedents

(106) In its previous decisions,[173] the Commission made a distinction between industrial gases and medical gases. Although the question as to whether those two types of gases belong to separate markets was ultimately left open, the Commission acknowledged that there exists very limited demand-side substitutability between medical and industrial gases, as customers of medical gases, (for instance hospitals) can only use gases to the extent they are labelled "medical", which ensures the quality and traceability of the gases.[174] On the other hand, the Commission acknowledged that there appears to be a degree of supply-side substitutability between medical and industrial gases since medical gases are produced in the same plants and from the same source as industrial gases.[175]

(107) The Commission also took the view that, similarly to industrial gases, each individual medical gas constitutes a separate product market as there is no substitutability between the various medical gases, from either the demand or the supply side.

(108) Finally, as regards the mode of supply, medical gases can generally be supplied either in bulk or in cylinders. In its previous decisions,[176] the Commission considered that the bulk and cylinder supply of gases (including medical gases) as defined in recital (67) give rise to separate product markets.

7.2.1.2. Notifying Parties' view

(109) In the Form CO, the Notifying Parties generally agreed with the market definition set out in the Commission's precedents.[177] In relation to the distinction between industrial gases and medical gases, the Notifying Parties indicated that, in view of the precedents and the differences in the demand and supply of industrial and medical gases, they consider that they constitute distinct product markets. In this respect, the Notifying Parties acknowledged that, although there is a certain degree of supply-side substitutability

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173 Commission's decision of 15 March 2004 in Case M.3314 - *Air Liquide/Messer Targets* and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*.

174 Commission's decision of 6 June 2006 in Case M.3314 - *Air Liquide/Messer Targets*, recital 13 and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, recital 12.

175 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, recital 12.

176 Commission's decision of 15 March 2004 in Case M.3314 - *Air Liquide/Messer Targets* and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*.

177 Form CO, Section 6, Chapter B, paragraphs 497 ff.

between medical and industrial gases as the gases used for medical and industrial applications are physically and chemically identical and are produced in the same facilities, the supply chains of industrial gases and of medical gases are distinct and, from a demand perspective, the gases belonging to these two segments are not interchangeable. As regards the mode of supply, the Notifying Parties specified that medical nitric oxide and medical argon are not supplied in bulk.[178]

(110) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.2.1.3. Results of the market investigation and Commission's assessment

(111) As regards the distinction between industrial gases and medical gases, the market investigation generally confirmed the Notifying Parties' claim as laid out in recital (109) that, due to the intrinsic differences between the demand and supply of industrial gases and medical gases, they indeed constitute separate markets.

(112) In relation to the segmentation by type of gas and the segmentation by distribution mode (bulk and cylinders), the evidence in the Commission's file has generally not provided any indication which would suggest that departing from the precedents would be appropriate.

(113) With respect to the mode of supply, in the Article 6(1)(c) Decision, the Commission noted that the market investigation had not fully confirmed the Notifying Parties' claim that medical nitric oxide and medical argon are generally only supplied in cylinders on the basis of the fact that during the first phase investigation some customers had indicated that they purchased these gases in bulk.[179] In the Article 6(1)(c) Decision, the Commission also stressed that none of the competitors had indicated that they supply medical nitric oxide and medical argon in bulk.[180]

(114) The second phase investigation did not provide any evidence that would contradict the Notifying Parties' claim that these gases are generally only supplied in cylinders. The Commission also notes that the Notifying Parties do not supply medical nitric oxide and medical argon in bulk in the EEA.[181] On this basis, the Commission considers that, with respect to medical argon and medical nitric oxide, the relevant supply mode is cylinders.

7.2.1.4. Conclusion on product market definition

(115) For the reasons set out in the preceding recitals in Section 7.2.1, the Commission considers that, for the assessment of the Transaction, the relevant product markets are:

(a) markets for the **bulk supply** of each of the following medical gases: medical oxygen, medical nitrogen, medical nitrous oxide, medical carbon dioxide;[182]

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178 Form CO, Section 6, Chapter B, footnote 275. This was also confirmed by the Notifying Parties in their response to RFI 45, question 5, where they also specified that: "*Although argon is also supplied in bulk form for industrial applications, in the healthcare sector argon is used only in very small quantities and hence supplied solely in cylinders.*"

179 Also, responses to RFI Q18 to customers of medical gases, question 3.

180 Responses to RFI Q31 to competitors of industrial and medical gases, question 3.

181 Form CO, Chapter B, Section 6, footnote 276 and Notifying Parties' response to RFI 45, question 5.

182 There is no overlap between the Notifying Parties' activities in the bulk supply of carbon dioxide in the EEA. (Form CO, Table 57 and Notifying Parties' response to Commission RFI 45, question 7, Annex 3).

(b) markets for the **cylinder supply** of each of the following medical gases: medical oxygen, medical nitrogen, medical nitrous oxide, medical carbon dioxide, medical nitric oxide, and medical argon.

*7.2.2. Geographic market definition*

7.2.2.1. Commission's precedents

(116) As regards geographic market definition, the Commission, in its precedents, took the same approach for medical gases as for industrial gases and concluded that the markets for the bulk and cylinder supply of medical gases are national in scope.[183] The Commission also recognised in its precedents that, with respect to some high value products (including ethylene oxide sold in cylinders used mainly for medical applications), the geographic markets appear to be national, with a clear development toward broader markets, on the basis in particular of the fact that transport costs are of minor importance, the gases in question are transfilled centrally by each gas company and distributed in cylinders from one or two filling sites throughout the EEA.[184]

7.2.2.2. Notifying Parties' view

(117) The Notifying Parties generally agree with the Commission's precedents that the markets for each medical gas should be national in scope.

(118) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards geographic market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.2.2.3. Results of the market investigation and Commission's assessment

(119) As regards the supply of medical oxygen (in bulk and cylinders), medical nitrogen (in bulk and cylinders), medical carbon dioxide (in bulk and cylinders) and medical argon (cylinders), the evidence in the Commission's file has not provided any indication which would suggest that departing from the precedents would be appropriate.

(120) With respect to the cylinder and bulk supply of medical nitrous oxide and the cylinder supply of medical nitric oxide, the Commission considered, in the Article 6(1)(c) Decision, the possibility that the markets for the supply of these medical gases (which are mostly sold in the EEA as mixtures)[185] could be wider than national (i.e. EEA wide) on the basis of the fact that these gases are supplied throughout the EEA from a few locations or purchased by gas suppliers from each other for reselling purposes across the EEA[186] and appear to be marketed by some suppliers throughout the EEA under a single EEA wide market authorisation.[187]

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183 Commission's decision of 15 March 2004 in Case M.3314 - *Air Liquide/Messer Targets*, Commission's decision of 18 January 2000 and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC.*

184 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 83.

185 Medical nitric oxide is supplied to customers as a nitric oxide-nitrogen mixture and nitrous oxide is supplied by the Notifying Parties as mixtures of nitrous oxide and oxygen (Notifying Parties' response to RFI 36, question 45).

186 Form CO, Annex 56 (facilities from which the Notifying Parties supply nitrous oxide in the EEA), Notifying Parties' response to RFI 36, question 42.

187 This is the case of Linde that markets medical nitric oxide in the EEA on the basis of a single marketing authorisation issued by the European Commission following the recommendation of the European Medicines Agency without the need to comply with additional national requirements. Notifying Parties' response to RFI 45, question 6.

(121) In this respect, the second phase investigation revealed that, although there are elements which may point to the existence of EEA-markets, the relevant markets are likely to be national in scope.

(122) With respect to the elements possibly pointing to the existence of wider markets, the second phase investigation indicated that medical nitrous oxide and medical nitric oxide are transported economically for longer distances compared to other medical gases and are supplied from a smaller number of certified facilities. More specifically, as regards medical nitrous oxide, based on the information provided by the Notifying Parties,[188] medical bulk nitrous oxide can be transported economically over a distance of 1000 km (four times the distance at which (bulk) standard medical gases can be transported[189]) and medical nitrous oxide in cylinders can economically travel for distances above 800 km (while the maximum shipping distance for other gases is usually around 200 km). Furthermore, the Notifying Parties' competitors also indicated that they supply medical nitrous oxide throughout the EEA for longer distances and from a few certified production sites.[190] With respect to medical nitric oxide, the Notifying Parties were not in a position to provide an estimation of the maximum distance at which these gases can economically be transported.[191] The second phase investigation however provided indications that this gas can be transported economically even further than medical nitrous oxide and that is supplied from fewer locations.[192] During the second phase investigation, with respect to medical nitric oxide and medical nitrous oxide, Air Liquide stated that: "*Compared to other medical gases, these gases (which are called "therapeutic gases") have different supply chains, and are supplied from a smaller number of facilities and require a very high level of engineering capabilities and critical skills and competences* […]. *As a result, […] the markets for medical nitrous oxide and for medical nitric oxide have a broader geographic scope than other medical gas markets.*"[193]

(123) Despite the elements pointing to a potential EEA geographic market for medical nitric oxide and medical nitrous oxide, the second phase investigation indicated that, also with respect to the supply of these medical gases, the markets have a strong national dimension and are therefore likely to be national in scope. First, these medical gases classify as medicinal products.[194] As a result, as all other medicinal products, they are subject to national regulatory and reimbursement schemes. With respect to the regulatory aspects, the

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188 Notifying Parties' response to RFI 48, question 3.

189 The Notifying Parties submit that within the EEA medical liquid bulk oxygen and nitrogen can typically be distributed economically over distances of approximately 250 km. Bulk medical carbon dioxide can be transported for longer distances (i.e. 300-500 km). (Notifying Parties' response to RFI 48, question 3).

190 In this respect, SOL explained that: "*SOL supplies medical nitrous oxide in the EEA from few locations from […]. SOL supplies this gas in the EEA only from these locations. SOL explained that it is not necessary to have plants producing this gas in every country since this gas can be transported for long distances*." (Agreed non-confidential minutes of conference call with SOL of 23 March 2018, paragraph 21 [ID 6243]). Also, agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, paragraph 26, ID 6404.

191 In this respect, the Notifying Parties in the Form CO claim that the average selling price for this gas is not available as it is typically supplied to hospitals together with services and billed on an hourly basis. Therefore no information on the average transport cost is available.

192 In this respect, SOL stated that: "*SOL produces nitric oxide and mix it with nitrogen, […] and supplies medical nitric oxide in the EEA from a few locations (even though less than the ones used to supply medical nitrous oxide)"* (Agreed non-confidential minutes of the conference call with SOL of 23 March 2018, paragraph 2, ID 6243)

193 Agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, paragraph 26. ID 6404.

194 Directive 2001/83/EC.

production and marketing of these products (as for all other medical gases) are subject to certifications and authorisations by the local competent authorities of the EEA country in which the gas is sold.[195] The market investigation did not provide indications that this would be different for any specific medical gas. In addition, from a demand-side perspective, medical gases (including medical nitrous oxide and medical nitric oxide) are generally purchased by hospitals and/or regional health authorities through public tender systems that vary from country to country.[196] For this reason, competition between suppliers of these gases still predominantly takes place at national level. Lastly, based on the information provided by the Notifying Parties, prices for both medical nitric oxide and medical nitrous oxide tend to vary across EEA countries.[197]

(124) In view of these elements, the Commission considers that the markets for the bulk and cylinder supply of medical nitrous oxide and for the cylinder supply of medical nitric oxide are national in scope. Therefore, for the purpose of the assessment of the Transaction in this Decision, the Commission will assess these markets at national level.

7.2.2.4. Conclusion on geographic market definition

(125) For the reasons set out in the preceding recitals in Section 7.2.2, the Commission considers that, for the assessment of the Transaction, the geographic scope of the relevant markets (bulk and cylinder supply of medical oxygen, medical nitrogen, medical carbon dioxide and medical nitrous oxide and cylinder supply of medical argon and medical nitric oxide) is **national.**

## 7.3. Specialty gases

### *7.3.1. Product market definitions*

7.3.1.1. Commission's precedents

(126) In its previous decisions,[198] the Commission identified five groups of specialty gases: (i) noble gases[199] and noble gas mixtures, (ii) ESGs, (iii) refrigerants, (iv) chemicals, and (v) calibration and other gas mixtures. However, the Commission stated that the proposed segmentation was introduced in order to facilitate the competition analysis but does not correspond to the respective relevant product markets. In fact, the Commission took the view that the different individual specialty gases within each group are generally not interchangeable because of their different chemical and physical properties and therefore each gas constitutes a separate relevant product market. This applies to ESGs, refrigerants

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195 In general, in order to promote and sell medical gases, gas suppliers must obtain a Marketing Authorisation (one for each gas sold), which are issued by the competent authorities in each Member State. However, for companies that are active in several Member States, Marketing Authorisations can be obtained under three procedures: (i) the mutual recognition procedure, (ii) the decentralised recognition procedure or (iii) the centralised procedure, the latter involving the submission of a single marketing authorisation application directly to the European Medicines Agency. As described above Linde has a single EEA market authorisation, whereas Praxair […]. Whether to opt for one procedure or not amounts to a strategic choice of the company. Further details about the relevant market authorisation are provided in footnote 830 below.

196 Form CO, Chapter B, Table 81.

197 Notifying Parties' response to RFI 48, questions 4 and 5.

198 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*.

199 Noble gases, as a sub-category of specialty gases, encompass: (i) krypton, (ii) neon, and (iii) xenon. Argon is part of the industrial gases group, as discussed in Section 7.1, while helium is assessed separately, as discussed in Section 7.4. Radon is also a noble gas but is not sold commercially (Form CO, Section 6, Chapter C, footnote 389).

and chemical gases. However, for noble gases and calibration gases, the Commission concluded differently.

(127) As regards noble gas mixtures, these can be divided into (i) mixtures that comprise only inert components (mainly neon, krypton, and/or xenon), and (ii) mixtures comprising also reactive components such as bromine, fluorine or hydrogen chloride. In this regard, the Commission found that the various inert noble gas mixtures are part of the same relevant product market in view of strong supply-side substitutability.[200] In addition, the Commission found a high degree of supply-side substitutability in relation to mixtures containing a reactive component, depending on the identity of such component. First, brominated compound gas mixtures utilise bromine atoms and may include different inert gases. In this respect, the Commission considered that brominated compound gas mixtures are part of the same relevant product market.[201] Second, fluorine gas mixtures utilise fluorine atoms and they further include either different noble gases or nitrogen as an inert component. In this respect, the Commission considered that fluorine gas mixtures are part of the same relevant product market, but left open whether fluorine noble gas mixtures and fluorine nitrogen mixtures constitute two separate markets.[202] Third, hydrogen chloride gas mixtures utilise hydrogen chloride molecules and may include different noble gases, or nitrogen and hydrogen. The Commission considered that hydrogen chloride noble gas mixtures and hydrogen chloride-nitrogen/hydrogen mixtures each constitute a relevant product market, but also found evidence that the relevant product market might include all hydrogen chloride mixtures. Ultimately, the Commission left the question open.[203]

(128) As regards calibration and other gas mixtures, the Commission identified three relevant product markets: environmental mixtures, special application mixtures, and other calibration mixtures.[204]

(129) In its previous decisions,[205] the Commission considered that specialty gases can be supplied in bulk or cylinders and that these two supply modes constitute separate relevant product markets. However, the Commission also found that specialty gases and specialty gases mixtures are usually sold in much smaller quantities than industrial gases. Therefore, they are predominantly supplied in cylinders and only to a small extent in bulk.[206]

7.3.1.2. Notifying Parties' view

(130) The Notifying Parties generally agree with the Commission's past precedents and provide market share data on that basis.[207] In relation to noble gas mixtures including a reactive component, they argue that, in view of strong supply-side substitutability, all mixtures including fluorine may be part of the same relevant product market, and that all mixtures including hydrogen chloride may be part of the same relevant product market.[208] However, as regards noble gas mixtures, they provide market shares on the basis of fluorine noble gas mixtures and hydrogen chloride noble gas mixtures, in line with Commission precedents.

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200 Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, paragraph 14.
201 Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, paragraph 18.
202 Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, paragraphs 19 to 23.
203 Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, paragraphs 24 to 25.
204 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 42.
205 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*.
206 Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, paragraph 5.
207 Form CO, Sections 6 and 7, Chapter C.
208 Form CO, Section 6, Chapter C, paragraph 675.

(131) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.3.1.3. Results of the market investigation and Commission's assessment

(132) As regards the segmentations by type of gas or group of gases, the evidence in the Commission's file has not provided any indication which would suggest that departing from the precedents would be appropriate.[209] The Commission's findings are in line with the Notifying Parties' views.

(133) As regards potential market segmentations for fluorine gas mixtures and hydrogen chloride gas mixtures, the evidence in the Commission's file has not provided any clear cut indications. For the purpose of the assessment of the Transaction in this Decision, the Commission will assess the markets on the basis of the narrowest product market definition (that is to say, fluorine noble gas mixtures and hydrogen chloride noble gas mixtures).[210]

(134) Therefore, for the purpose of the assessment of the Transaction in this Decision, the Commission will assess specialty gases on the basis of the following relevant markets: (i) for noble gases and noble gas mixtures, separate markets for each noble gas (xenon, neon and krypton) and the following separate markets for noble gas mixtures: inert noble gas mixtures, brominated compound gas mixtures, fluorine noble gas mixtures and hydrogen chloride noble gas mixtures; (ii) for ESGs, separate markets for each gas; (iii) for refrigerants, separate markets for each gas; (iv) for chemical gases, separate markets for each gas; (v) for calibration and other gas mixtures, separate markets for environmental mixtures, special application mixtures and other calibration mixtures.

(135) In relation to the modes of supply, the market investigation confirmed that specialty gases are predominantly sold in cylinders, rather than in bulk.[211] In addition, the Notifying Parties' activities related to bulk supplies overlap in the EEA only in relation to ESGs. Neither Linde nor Praxair supply noble gases and noble gas mixtures, and calibration and other gas mixtures in bulk in the EEA. While Linde supplies refrigerants and chemical gases in bulk in the EEA, Praxair does not.[212]

(136) Finally, there are different steps in the supply chain of specialty gases, notably: generation, purification, transfilling, and blending. Generation consists of the production of the raw material from which the specialty gas is created (for example, through air separation in relation to noble gases, or chemical synthesis for the other specialty gases). Purification is the process of upgrading the overall purity of a molecule. Transfilling refers to the process of pushing a molecule from a container into another one (typically, a smaller size container). Blending refers to mixing one or more gases together to form a homogeneous

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209 It should be noted that certain gases, such as ammonia, boron trichloride, chlorine, hydrogen chloride, hydrogen bromide, sulphur hexafluoride, tetrafluoromethane, trifluoromethane, fall into several categories depending on the respective purity and application (Form CO, Chapter C, Section 6, paragraph 646 and Annex 61 to Form CO).

210 As regards non-noble gas mixtures (that is to say, fluorine nitrogen gas mixtures and hydrogen chloride-nitrogen/hydrogen mixtures which do not include noble gases), these are considered part of other specialty gas categories depending on their use, namely ESGs.

211 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 2; RFI Q23 to customers of electronic specialty gases, question 2; RFI Q25 to customers of refrigerants, question 3; RFI Q24 to customers of chemicals, question 3; RFI Q27 to customers of calibration and other gas mixtures, question 3; RFI Q28 to suppliers of specialty gases, question 2.

212 Form CO, Table 87.

mixture. Depending on the specialty gases considered, the Notifying Parties are active at different levels of the supply chain. However, all their intermediary activities are almost entirely captive and are not offered to third parties on the market.[213] In view of this, for the purpose of the assessment of the Transaction in this Decision, the various steps of the supply chain will not be considered as separate product markets.

7.3.1.4. Conclusion on product market definition

(137) For the reasons set out in the preceding recitals in Section 7.3.1, the Commission considers that, for the assessment of the Transaction, **each specialty gas supplied in cylinders** constitutes a relevant product market, with the exception of the groups of gases indicated in the following as (a)(i), (a)(ii), (a)(iii), (a)(iv), (b)(i), (b)(ii) and (b)(iii) which constitute relevant product markets:

(a) as regards **noble gases and noble gas mixtures**: (i) inert noble gas mixtures, (ii) brominated compound gas mixtures, (iii) fluorine noble gas mixtures, and (iv) hydrogen chloride noble gas mixtures (all in cylinders);

(b) as regards **calibration and other gas mixtures**: (i) environmental mixtures, (ii) special application mixtures, and (iii) other calibration mixtures (all in cylinders).

(138) As regards **gases supplied in bulk mode**, each different gas belonging to the group of ESGs constitutes a relevant product market.

*7.3.2. Geographic market definition*

7.3.2.1. Commission's precedents

(139) In previous decisions,[214] the Commission found that in view of their high value, the relatively modest transportation costs and the absence of barriers to trade, the markets for noble gases and noble gas mixtures, and for ESGs are at least EEA-wide.

(140) As regards the relevant geographic market for the supply of refrigerants, chemicals and calibration and other gas mixtures, the Commission has previously concluded that the markets appear to be national in scope even though it recognised a growing tendency towards EEA-wide markets.[215]

7.3.2.2. Notifying Parties' view

(141) The Notifying Parties submit that the scope of the relevant geographic markets for noble gases and noble gas mixtures as well as for ESGs is at least EEA-wide and potentially global, because these gases are being traded worldwide due to their higher value compared to industrial gases. In particular, the Notifying Parties explain that certain steps of the production process of these specialty gases, in particular the purification and/or the enrichment stages, may be performed outside the EEA.

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213 Praxair's intermediary activities are […]. Linde's intermediary activities are […]. The Notifying Parties submit that Linde […]. Moreover, the Notifying Parties submit that Linde […] (Form CO, Section 6, Chapter C, paragraph 711). In view of that, the Commission notes that the intermediary activities performed by the Notifying Parties in relation to specialty gases are predominantly captive.

214 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, and Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*.

215 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, Commission's decision of 20 September 2006 in Case M.4091 – *Linde/Spectra*, and Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*.

(142) As regards the geographic market definition for the supply of refrigerants, chemicals and calibration and other gas mixtures, the Notifying Parties acknowledge the Commission's precedents and provide market shares on the basis of a national market definition.

(143) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards geographic market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.3.2.3. Results of the market investigation and Commission's assessment

(144) The evidence in the Commission's file has not provided any indication which would suggest that departing from the precedents would be appropriate. In relation to noble gases and noble gas mixtures, and ESGs, the Commission found, in the context of its second phase investigation, that the markets are likely to be EEA in scope. The Commission's findings are in line with the Notifying Parties' views.

(145) As regards the supply of **noble gases and noble gas mixtures**, in the Statement of Objections the Commission left open the geographic scope of the markets concerned between EEA and global. For the purpose of the assessment of the Transaction in this Decision, the Commission nonetheless considers that although there are elements which may point to the delineation of global markets, the most compelling evidence in the Commission's file points to the existence of EEA-wide markets.

(146) In relation to the potential delineation of global markets, the Commission acknowledges the Notifying Parties' submission that (i) average prices for noble gases and noble gas mixtures are generally comparable in the different regions of the world, notably: the EEA, North America, South America, Asia, and Oceania; (ii) transportation costs are comparable at global level and generally represent between […]% and […]% of the final price of the products; (iii) the Notifying Parties' sales of noble gases and noble gas mixtures are […]; notably, both Praxair and Linde have […] (with Linde also having […]).[216] Moreover, the second phase market investigation revealed that the supply chain of noble gases and noble gas mixtures has a worldwide dimension. Sourcing typically occurs at global level, since a relevant part of noble gases sold in the EEA are either produced or purified outside the EEA (notably in Ukraine, Russia, China, and the USA)[217], and delivery of noble gases and noble gas mixtures, in view of their very high value, can take place over long distances directly into cylinders (typically, of large size), both by ship and air transportation.[218]

(147) However, there are elements that strongly point to the delineation of EEA-wide markets. On the supply-side, it appears that having a regional presence is very important for suppliers to be able to compete on the market. For example, while competitors like Messer and Air Products source noble gases from outside the EEA, they do perform transfilling activities in the EEA, especially in order to supply customers that require the products in lower volumes (and thus in smaller cylinders). The same holds true for blending activities

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216 Notifying Parties' reply to RFI 48, question 7.

217 For example, agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 8, ID 6198; agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 14, ID 6108.

218 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraphs 4 and 7, ID 6230; agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 7, ID 6198; agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 33, ID 6402.

in relation to noble gas mixtures, which are also performed locally.[219] In particular, Messer explained that:

> *"A company could in theory rely on third parties for the transfilling and/or blending of noble gases and noble gas mixtures, but this would constitute a major competitive disadvantage. Therefore, in order to be active on the EEA market, it is important for a provider to have local transfilling and blending capabilities. Importing smaller size cylinders of noble gases and noble gas mixtures directly in the EEA from outside the region (e.g. from China) would be only theoretically possible; it would not be a practical and commercially viable option."*[220]

(148) On the demand-side, the majority of customers responding to the second phase market investigation believe that suppliers need to be present in the EEA to be considered credible sources of supply in the region. Notably, suppliers should have a regional distribution network to guarantee the required lead times and local personnel for customers support. In addition, even some of the respondents that would not require suppliers to be present in the EEA, do express a preference for providers that have activities and/or infrastructure in the EEA.[221]

(149) Customers explained that they generally do not import noble gases and mixtures from outside the EEA directly, but they rather rely on their supplier(s) – typically, large industrial gas companies active globally, with presence in the EEA – to import gases from outside the region, taking care of the related logistics (including, for example, customs clearance and direct delivery to customers' sites).[222] In response to a small but permanent increase in prices (that is to say, in the order of 5-10%) for noble gases and noble gas mixtures in the EEA, only about one third of respondents would consider to start sourcing these gases from outside the EEA directly. For many respondents, this depends on whether foreign suppliers would be able to (i) supply adequate quality products, (ii) meet their specifications, and (iii) provide the gases within the required lead times at reasonable costs.[223] The market investigation was inconclusive as regards the geographic scope of customers' procurement strategy and contracts.[224]

(150) In view of all these elements, the Commission considers that, on balance, the most compelling evidence in the Commission's file points to the delineation of EEA-wide markets for the supply of noble gases and noble gas mixtures. Therefore, for the purpose of the assessment of the Transaction in this Decision, the Commission will assess the markets at EEA level.

(151) As regards the supply of **ESGs**, the second phase investigation has revealed that although there are elements which may point to the existence of global markets, the relevant markets are likely to be EEA in scope.

(152) With respect to the possible existence of global markets for ESGs, the Commission acknowledges the Notifying Parties' submission according to which, similarly to noble gases and noble gas mixtures, (i) average EEA prices for ESGs are generally comparable to

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219 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 7, ID 6230; agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 11, ID 6198.

220 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 7, ID 6230.

221 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 8.

222 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 9.

223 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 10.

224 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, questions 6 and 7.

the average prices in North America, South America and Oceania (while they may be lower in Asia); (ii) transportation costs do not significantly vary on a worldwide basis and generally represent between […]% and […]% of the final price of the products.[225]

(153) Without prejudice to what is mentioned in the preceding recital, the second phase market investigation provides strong indications that the markets for ESGs are likely to be EEA-wide.

(154) On the demand side, while some respondents to the second phase market investigation pointed out that certain ESGs are imported from outside the EEA, namely from China, Russia, and the USA, they explained that they generally do not import the molecules themselves. Rather, their suppliers do, by taking care of all the logistics aspects.[226] With respect to the ability of switching to suppliers outside the EEA in response to a small but permanent increase in price (that is to say, in the order of 5-10%) the responses of customers of ESGs are split between those who declare that they would switch and those who state that they would not.[227] Among the reasons for not switching, customers mentioned the fact that logistics for these gases are complex, as customers need to source products from suppliers which are able to ensure an effective and safe delivery of products directly to their plants in the EEA.[228] They also stressed the importance of having suppliers that can ensure timely deliveries and that have representatives within the EEA that can provide comprehensive support with respect to import/export formalities. However, two thirds of the respondents to the second phase market investigation consider that suppliers' presence in the EEA is of utmost importance. In particular, customers mentioned that it is either highly desirable or necessary for suppliers to have one or more of the following assets: a local distribution network; warehousing facilities, to be able to ensure short time delivery; an infrastructure that provides sales support, in the event that a quality issue with the ESG supplied arises; and ability to deal with formalities, such as those related to imports and to the REACH regulation.[229] [230] In addition, contrary to the Notifying Parties' submission, a significant number of customers responding to the second phase market investigation explained that prices across different regions of the world are generally not homogeneous. With the exception of a few molecules for which a globally harmonised price seems to exist, prices for ESGs are said to be mostly regional and transport costs are considered to have a relevant impact on the final price for the gases.[231] In addition, prices

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225 Notifying Parties' reply to RFI 48, question 7.

226 Responses to RFI Q53 to customers of electronic specialty gases, question 11.

227 Responses to RFI Q53 to customers of electronic specialty gases, question 12.

228 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 14, ID 6233.

229 Responses to RFI Q53 to customers of electronic specialty gases, questions 1, 10 and 12. Also, […]' responses to RFI Q53 to customers of electronic specialty gases, question 1, ID 5730: "*If an ESG would not be available it will cause a line stop directly and the consequence are significant.*" […]'s responses to RFI Q23 to customers of electronic specialty gases, question 32.5.2, ID 3819: "*On time delivery is very important for the whole planning process.*" Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 14, ID 6233.

230 Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EC, 93/105/EC and 2000/21EC (OJ L 396, 30.12.2006, p. 1) ("the REACH Regulation").

231 Responses to RFI Q53 to customers of electronic specialty gases, question 7. According to […] "*For phosphine and arsine, a globally harmonised price applies. Prices for ammonia are different for Regensburg and Malaysia.*", ID 5687.

in Asia are generally lower than in other regions of the world, EEA included.[232] This is in line with the submission by the Notifying Parties.

(155) From the supply-side perspective, the market investigation highlighted the need for suppliers to have transfilling centres in the EEA to be able to transfill ESGs into smaller cylinders and deliver them to customers. Air Liquide explained that "*Most companies active on the European market import the relevant molecules from outside Europe and then utilise local transfilling centres to transfill the gases into smaller cylinders to meet customers' demand.*"[233] Moreover, given that this industry is characterised by high fixed costs, reaching a critical mass is considered necessary to be able to operate the business profitably.[234] Foreign suppliers with no local presence in the EEA do not currently represent a competitive constraint, nor would they be able to respond to a price increase by current EEA suppliers quickly and with no significant increase in their costs. First, given the time needed to ship ESGs from other continents to the EEA, foreign suppliers would unlikely meet customers' required lead time. Second, suppliers with no transfill capabilities in the EEA would not be able to supply cylinders, which represent a relevant part of the ESGs demand. ESGs are generally not shipped in the EEA from outside the region directly into cylinders (not even of relatively large size), but they are rather delivered in large containers (bulk) to minimise transportation costs.[235] Since a relevant part of customers for ESGs source them in small quantities, transfilling operations need to be undertaken at least at regional level. Third, unlike noble gases (which do not contain chemical components), ESGs to be sold in Europe must typically comply with strict regulations including the REACH regulation, which provides for costly and long approval procedures in relation to particularly complex molecules.

(156) Finally, the Notifying Parties' sales of ESGs are […].[236]

(157) In view of all these elements, the Commission considers that the markets for the supply of ESGs are EEA-wide in scope. Therefore, for the purpose of the assessment of the Transaction in this Decision, the Commission will assess the ESGs markets at EEA level.

(158) As regards the supply of refrigerants, chemicals, and calibration and other gas mixtures, the market investigation revealed that the conditions of competition appear to be relatively homogenous across the EEA.[237] However, transport costs appear to play an important role in the final price for these specialty gases. This is in line with the Notifying Parties' submission, according to which for refrigerants, chemicals, and calibration and other gas mixtures, transport costs represent a relatively high portion of the final price, especially compared to higher value products such as noble gases and ESGs.[238] This was also confirmed by competitors in the context of the second phase investigation, which explained that these three categories of specialty gases are relatively less high-value and

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232 Responses to RFI Q53 to customers of electronic specialty gases, question 7.

233 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 23, ID 6402.

234 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 23, ID 6402.

235 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 24, ID 6402.

236 Notifying Parties' replies to RFI 48, question 7.

237 Responses to RFI Q25 to customers of refrigerants, for example, question 31; RFI Q24 to customers of chemicals, for example, question 32; RFI Q27 to customers of calibration and other gas mixtures, for example, question 32.

238 Notifying Parties' response to RFI 48, question 11.

thus travel shorter distances.[239] Furthermore, the Commission notes that the Notifying Parties' generally […].[240] In view of these elements, for the purpose of the assessment of the Transaction, the markets for the supply of refrigerants, chemicals, and calibration and other gas mixtures should be assessed at national level.

7.3.2.4. Conclusion on geographic market definition

(159) For the reasons set out in the preceding recitals in Section 7.3.2, the Commission considers that, for the assessment of the Transaction, the relevant geographic markets are:

(a) **EEA-wide** for each product market within **noble gases and noble gas mixtures**, and within **ESGs;**

(b) **national** for each product market within **refrigerants, chemicals, and calibration and other gas mixtures.**

## 7.4. Helium

### *7.4.1. Product market definitions*

7.4.1.1. Commission's precedents

(160) In its previous decisions[241], the Commission distinguished (i) the market for the wholesale supply of helium, that is to say the supply of (liquid) helium sourced from helium producers and transported in cryogenic portable tanks over long distance from the helium source to transfill centres located in the areas of consumption, and (ii) the market for the retail supply of helium, that is to say the supply of helium from the transfill centres to end-customers in cryogenic dewars (liquid helium), cylinders or tube trailers (gaseous helium).

(161) At wholesale level, the Commission's analysis included an assessment of the parties' access to helium sources.[242]

(162) At retail level, the Commission envisaged to further segment the market depending on the modes of supply (*i.e.* dewars, cylinders, or tube trailers).[243] The Commission found that substitutability was limited from the demand-side but significant from the supply-side and, finally, left open the exact scope of the market.[244]

(163) The Commission also considered the existence of a distinct retail market for the supply of high purity helium (that is to say helium with a purity grade of 6.0 and above[245]) but ultimately left the question open.[246]

7.4.1.2. Notifying Parties' view

(164) As regards helium sourcing, the Notifying Parties claimed, in the Form CO, that it is not relevant to assess the competitive effects of the Transaction on a hypothetical market for the procurement of helium and that, consistent with past decisional practice, the Commission's analysis should focus on the supply of helium at wholesale and retail levels.

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239 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraphs 17 and 20, ID 6230.

240 Notifying Parties' response to RFI 48, question 11.

241 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 34 to 36 and Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*, paragraph 16.

242 Notably, Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 157 and 192.

243 The Commission's precedents do not refer to the retail supply of helium in cryogenic portable tanks.

244 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 37 to 40.

245 In the gas industry, purity is expressed by two digits separated by a dot to express the percentage of the relevant gas in the product. The first digit indicates the number of 9s, the second the digit after the 9s. Purity 6.0 means 99.9999%; purity 3.5 means 99.95%.

246 Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair*, paragraph 17.

More specifically, the Notifying Parties argued that helium sourcing is irrelevant on the grounds that (i) most helium sourced by them is used captively for their own retail operations and that (ii) industrial gas companies have no ability to restrict or expand output. The Notifying Parties also alleged that the size of an industrial gas supplier's global helium sourcing portfolio alone does not indicate its strength as a competitor for the supply of helium to customers.[247]

(165) As regards the distinction between wholesale and retail supply of helium, the Notifying Parties agreed in the Form CO with the approach taken by the Commission in its precedents.

(166) The Notifying Parties contested however any further segmentation of the retail market depending on the supply modes or the helium purity grade (mainly on the ground that the level of supply-side substitutability is significant) but considered that the exact delimitation of the retail market could remain open.[248]

(167) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition for helium.

7.4.1.3. Results of the market investigation and Commission's assessment

(168) As regards **helium sourcing**, in the Article 6(1)(c) Decision the Commission departed from the precedents, considering the procurement of helium as a distinct product market (instead of assessing it as part of the wholesale supply of helium). However, in the second phase investigation, the Commission did not find compelling evidence suggesting that such approach would be appropriate. For this reason, helium procurement is not further assessed as a distinct product market in this Decision.

(169) Without prejudice of the foregoing conclusion, the second phase investigation confirmed that helium sourcing is paramount and that the arguments raised by the Parties in this respect are not convincing.

(170) First, contrary to what is alleged by the Notifying Parties, in its previous decisions, the Commission did not "focus" on the supply of helium and fully assessed helium sourcing (as part of its assessment of the wholesale market). For instance, in case M.4141 – *Linde/BOC*, the Commission found that the combination of Linde's and BOC's access to helium sources would likely raise competition concerns.[249]

(171) Second, the fact that helium is, to a large extent, a vertically integrated business, where most of the volumes sourced by the Notifying Parties are used captively for their own retail sales, does not undermine the relevance and importance of helium sourcing. In any event, the market investigation revealed that sales to competitors are substantial (see Section 8.9.1). For example, in 2017, Linde's global sales to competitors accounted for […]% of Linde's total sourcing of helium worldwide ([…] tons).[250]

(172) Third, the Commission found that helium is a scarce resource, which (i) is produced by third-parties as a by-product of natural gas production, (ii) lock-in by long-term sourcing agreements, and (iii) regularly subject to shortages affecting the whole supply chain of

247 Form CO, Chapter D, paragraphs 1027 to 1029.
248 Form CO, Section 6, Chapter D, paragraphs 1011 to 1023.
249 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, notably paragraphs 157 and 192.
250 Notifying Parties' reply to RFI 57, Annex Q13.

helium.[251] In this context, access to helium sources is paramount, which has been confirmed by end-customers,[252] and all competitors interviewed during the second phase investigation.[253]

(173) Fourth, the market investigation confirmed that the size and the diversity of a gas supplier's helium sourcing portfolio are crucial and highly relevant elements in assessing its strength as a competitor for the supply of helium to customers. For instance, several market participants referred to "*access to helium sources*" in order to estimate the Notifying Parties' market position.[254] Moreover, both customers[255] and competitors[256] confirmed the necessity of having a balanced helium sourcing portfolio, with access to various sources so as to be able to respond to (or to mitigate) major or minor supply disruptions. This analysis is also corroborated by the Notifying Parties' internal documents,[257] which show that, when prospecting for new end-customers, Linde and Praxair highlight and promote their diverse helium sourcing portfolio, using it as a selling point.[258]

(174) Finally, the fact that helium is a by-product of natural gas production and is difficult to store does not mean that reduction of supply is not possible. In particular, there are currently two locations, at worldwide level, for storing significant volumes of helium in

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251 Responses to RFI Q22 to helium retail customers, question 15 and responses to RFI Q34 to helium competitors, question 68. See also Annex 01-05 to the Helium Paper submitted by the Notifying Parties on 15 March 2018 (the 'Helium Paper'), slide 21 ("*industry SvD [Supply vs Demand] […]* […]"); and agreed non-confidential minutes of the conference call with SIAD of 21 March 2018, ID 6257, paragraph 39 ("*helium is a scarce resource, which is extracted from a limited number of sources worldwide and subject to regular shortages*").

252 Notably, agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID 5990, paragraph 5 ("*Access to sources is one of the most relevant factors that* […] *consider[s] when selecting a supplier*").

253 Agreed non-confidential minutes of the conference calls (i) with Air Liquide of 22 March 2018, ID 6404, paragraph 4 ("*Competition in the helium business is driven by access to sources*"); (ii) with Air Products of 15 March 2018, ID6198, paragraph 20 ("*In order to be competitive on the downstream markets, it is […] paramount to secure access to helium sources"*); (iii) with Messer of 15 March 2018, ID 6230, paragraph 26 ("*It is fundamental to be vertically integrated with direct access to helium sources*"); (iv) with Uniper of 26 February 2018, ID 5244, paragraph 5 ("*the first step to enter the global helium business is securing access to helium sources*"); (v) with SOL of 16 March 2018, ID 6226, paragraph 24 ("*Companies need to be able to gain access to these helium sources in order to be a reliable and competitive player*").

254 Notably, Matheson's response to RFI Q34 to helium competitors, question 84.1, ID 4245: "*the combined entity will control nearly 50% of the global direct sourced helium.*"

255 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 5, ID 5990 ("*It is in fact important that providers have direct access to more than one helium source in order to have control of the supply chain and thus guarantee the delivery of the product to customers*").

256 Agreed non-confidential minutes of the conference calls (i) with Air Liquide of 22 March 2018, paragraph 7, ID 6404 (*"Having a large and diversified helium sourcing portfolio constitutes a huge competitive advantage*"); (ii) with Westfalen of 19 March 2018, paragraph 6, ID 6108 ("*Westfalen believes that relying on just two sources seriously affects its competitiveness and that it is essential to have a least three sources*"); (iii) with Air Products of 15 March 2018, paragraph 20, ID 6198 ("*In order to be competitive on the downstream markets, it is […] paramount […] to have a diversified sourcing portfolio. A player sourcing helium from one or two locations may experience supply disruption"*); (iv) with SIAD of 21 March 2018, paragraph 39, ID 6257, and (v) with [a competitor] of 11 April 2018, ID 6302, paragraph 28.

257 For example, Praxair's internal presentation, "[…]" of […], slide […] [[…]], ID 4599-26066 ("[…]"); and Praxair's internal presentation, "[…]" of […] [[…]], ID4598-65604 ("[…]").

258 Notably, Praxair's draft email to be addressed to […], of […] [[…]], ID4591-44341: "[…]."

gaseous form (which can thus be withheld from supply): the Bureau of Land Management ("BLM") system in the USA[259] and Air Liquide's new storage facility in Germany.[260]

(175) Despite its depletion, the BLM system is the third largest helium source worldwide and still accounts for [10-20]% of the global supply in 2017.[261] The Notifying Parties have direct and privileged access to this source as they control together 60% of the refining capacities connected to the BLM pipeline and own [40-60]% of the private-owned helium stored in the BLM reservoir.[262] This gives them a considerable supply flexibility compared to most of their competitors.[263] Helium suppliers interviewed during the second phase investigation emphasized the importance of the BLM system, which provides "*tremendous flexibility*"[264] and which will continue to be a key asset in the helium industry in the coming years (at least until 2021 and potentially beyond).[265] The flexibility provided by the BLM system is also corroborated by the Notifying Parties' internal documents. Indeed, according to Praxair, *"*[…].*"*[266] Similarly, Linde considers that its BLM access "[…]" and "[…]."[267] In any event, in a growing market characterised by a tightening of the supply rather than oversupply,[268] access to helium sources remains an important parameter to gauge competitive strength, irrespective of the gas suppliers' capability to build and release inventory.

(176) In view of the foregoing, and consistent with past decisional practice, the Commission will assess the Notifying Parties' access to helium sources as part of its analysis of the wholesale supply of helium.

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259 The BLM is an agency of the US Department of the Interior and manages public land in the USA. The BLM owns and operates a helium pipeline and storage system (the "BLM system"). The helium storage and transportation system consists of the storage reservoir in the Bush Dome, Cliffside Field, and a 425-mile pipeline system originating at Cliffside, Texas and ending near Bushton, Kansas. The pipeline connects privately owned crude helium plants and helium purification plants to the Bush Dome at Cliffside Gas Field. In 2013, the US congress enacted the Helium Stewarship Act providing for the privatisation of the BLM system by 30 September 2021. The disposal of the BLM system is still at a very early stage and its conditions remain unclear (Notifying Parties' reply to RFI 48, question 63 and agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID 6198, paragraph 29).

260 Notifying Parties' response to RFI 36, question 30.

261 Notifying Parties' reply to RFI 48, Annex Q44, according to which, in 2021, the BLM will remain the third largest helium source worldwide and represent […]% of the global supply.

262 Notifying Parties' response to RFI 48, questions 51 and 55.

263 Gas companies with refineries connected to the BLM system have the ability to adjust the amount of helium they source from the BLM system and its existing underground storage facility. They may flex their production, and in certain cases, even reinject helium into the storage system (Form CO, Chapter D, footnote 565 and Notifying Parties' response to RFI36, question 30).

264 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 25, ID 6198. Also, agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 32, ID 6230: "*Linde, Air Products, and Praxair have a strong advantage due to their privileged access to the BLM storage facility, which grants them a lot of flexibility.*"

265 Agreed non-confidential minutes of the conference calls (i) with Air Products of 15 March 2018, paragraph 28, ID 6798 ("*there are still large quantities of helium stored in the BLM storage facility. [Air Products] expects the BLM system to remain operational after its privatisation which is scheduled in September 2021*"), and (ii) with Air Liquide of 22 March 2018, paragraphs 14-15, ID 6404 (the US BLM system "*still plays a key role at worldwide level"* and "*will keep running for at least four more years"*). Also, Helium Paper, Annex 01-02, "*BLM annual helium conference*", dated 20 July 2017, slides 67 to 72, providing BLM production forecasts for 2021-2029.

266 Praxair's internal email of […] [[…]] [ID4591-2834]. Also, Praxair's internal email exchanges of […] [[…]], ID4598-65603 ("[…]").

267 Linde's internal presentation, "[…]" of […], slide […] [[…]], ID4762-28877. Also, Linde's internal presentation, "[…]"; dated […], slide […] [[…]], ID4834-73413.

268 Notifying Parties' response to RFI 48, question 69. Also, Helium Paper, Annex 01-05, slide 21: "[…]."

(177) As regards the distinction between **wholesale and retail supply**, the evidence in the Commission's file has generally not provided any indication which would suggest that departing from the precedents would be appropriate. The Commission's findings are in line with the Notifying Parties' views.

(178) As regards a possible segmentation of the retail market depending on the **supply modes and/or the helium purity grade**, the Commission notes the following.

(179) First, with respect to the segmentation based on the supply mode, the market investigation has confirmed the Commission's previous finding in case M.4141 – *Linde/BOC.*[269] From the demand-side point of view, substitutability appears to be limited: customers' needs clearly differ with respect to the different supply modes and thus customers cannot easily switch from one mode of supply to another. Liquid helium (supplied in dewars or cryogenic portable tanks) and gaseous helium (supplied in cylinders or tube trailers) are used for different applications. Moreover, due to the highly different quantities supplied with cylinders and tube trailers, customers procuring gaseous helium cannot easily switch between these two forms of supply.[270] The same applies with respect to the supply of liquid helium in dewars and cryogenic portable tanks.[271]

(180) On the supply-side, the fact that a majority of retailers are active in all modes of supply (to the exception of cryogenic portable tanks) corroborates a large supply-side substitutability with respect to the helium supply in dewars, cylinders, and tube trailers. Conversely, the number of suppliers delivering helium in cryogenic portable tanks at retail level is limited and most suppliers that are not present in this specific supply mode have indicated that they would not be able to start delivering helium in cryogenic portable tanks promptly and without significant investment since they would need to acquire such cryogenic portable tanks,[272] which are costly and constitute a high barrier to entry.[273]

(181) Second, with respect to the segmentation based on the helium purity grade, the market investigation has shown a low demand-side substitutability between high purity helium and standard purity helium. For instance, high purity helium is required for specific applications, such as magnetic resonance imaging ("MRI"), gas chromatography, and medical research, which could support the existence of a different market segment. As regards high purity helium, only cylinder supply is specifically considered because the distinction between standard and high purity helium is only relevant with regard to this mode of supply, given that (i) liquid helium (delivered in cryogenic dewars and portable tanks) is high purity helium due to its high purity grade (99.9999% pure helium) and (ii) high purity helium is not supplied in tube trailers.

(182) For the purposes of the assessment of the Transaction, however, there is no need to conclude on the question whether the different supply modes and/or helium purity grades in which helium is delivered at retail level are separate markets or not, as the Transaction would significantly impede effective competition in either scenario.

7.4.1.4. Conclusion on product market definition

(183) For the reasons set out in the preceding recitals in Section 7.4.1, the Commission considers that, for the assessment of the Transaction, the relevant product markets are:

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269 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 37 to 40.

270 High-pressure cylinders' size typically ranges from 0.15 to 2.25 kg, whereas t**ube trailers** have capacities of up to 835 kg.

271 Dewars' capacities typically range from 3.75 to 56.21 kg, whereas cryogenic portable tanks' most common capacity is 4 690.24 kg.

272 Responses to RFI Q34 to helium competitors, question 34.

273 Linde's internal presentation, "[…]", dated […] [[…]], ID4834-75123: "[…]"

(a) the market for the **wholesale** supply of helium (including the sourcing of helium);

(b) the market for the **retail** supply of helium, as well as, the following potential sub-markets: retail supply in **cryogenic portable tanks**, retail supply in **dewars**, retail supply in **tube trailers**, retail supply of **standard purity** helium in **cylinders,** and retail supply of **high purity** helium in **cylinders**.

*7.4.2. Geographic market definition*

7.4.2.1. Commission's precedents

(184) In its previous decisions,[274] the Commission concluded that the market for the wholesale supply of helium should be regarded as global, even though it exhibited important regional aspects. This conclusion mainly relied on the fact that helium sold in the EEA was to a large extent sourced from the USA. The Commission indicated that if, in the future, the importance of US sources in the EEA were to shrink, to the benefit of helium sources located closer to Europe, the market would then tend towards an EEA-wide scope.

(185) As regards retail supply of helium, the Commission concluded in its precedents[275] that the market was national in scope. In particular, the Commission found that transportation of helium for retail sales across the whole EEA was not generally feasible and that price levels could differ significantly depending on the Member State.

7.4.2.2. Notifying Parties' view

(186) As regards wholesale supply of helium, in the Form CO, the Notifying Parties agreed with the Commission's precedents, considering that the market is global or potentially EEA-wide.[276] In particular, the Notifying Parties did not contest the fact that helium is sourced on a global basis as it is procured and shipped cross-border and across continents. Nevertheless, they claimed that there is a significant regional element to the sourcing of helium, which is illustrated by the fact that EEA wholesalers and retailers tend to source their helium requirements from the most proximate sources (for transportation cost reasons), in particular Algeria, Qatar, and Poland.[277]

(187) As regards the retail market, the Notifying Parties distinguished, in the Form CO, (i) the retail supplies of helium in dewars, cylinders and tube trailers, which are regarded as national in scope, in line with the precedents,[278] and (ii) the retail supplies of helium in cryogenic portable tanks, which, in the Notifying Parties' view, should be defined as global in scope given that, similarly to wholesale supplies, retail supplies in cryogenic portable tanks are not significantly affected by transportation costs and prices are negotiated at global level and do not differ regionally.[279]

(188) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

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274 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 59 to 70 and Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*, paragraph 19.

275 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 71 to 78 and Commission's decision of 28 November 2007 in Case M.4823 – *Yara/Praxair/JV*, paragraph 19.

276 Form CO, Section 6, Chapter D, paragraphs 1034 and 1036.

277 Form CO, Section 6, Chapter D, paragraph 1037.

278 Form CO, Section 6, Chapter D, paragraph 1030.

279 Form CO, Section 6, Chapter D, paragraphs 1031 and 1033.

7.4.2.3. Results of the market investigation and Commission's assessment

(189) As regards the **wholesale supply of helium**, the evidence in the Commission's file has generally not provided any indication which would suggest that departing from the precedents would be appropriate. In particular, the market investigation confirmed that US imports in the EEA still exert significant competition constraints in the EEA, corroborating the worldwide dimension of the market despite the existence of regional specificities.

(190) First, as detailed in Table 3 below, the helium is extracted from a handful of locations worldwide, most of them being located outside the EEA (only one source, with limited capacities, is located within the EEA, namely in Poland).[280]

**Table 3: Helium sources worldwide**

| 2017 | | | |
|---|---|---|---|
| **Source** | **Country** | **tons** | **% of global output** |
| **ExxonMobil** | USA | […] | […] |
| **Qatar II** | UAE | […] | […] |
| **BLM** | USA | […] | […] |
| **Qatar** | UAE | […] | […] |
| **Linn Jayhawk** | USA | […] | […] |
| **DCP - Liberal** | USA | […] | […] |
| **Skikda** | Algeria | […] | […] |
| **Doe Canyon** | USA | […] | […] |
| **Darwin** | Australia | […] | […] |
| **DCP Rock Ridge** | USA | […] | […] |
| **Arzew** | Algeria | […] | […] |
| **Linn Satanta** | USA | […] | […] |
| **Orenburg** | Russia | […] | […] |
| **PGNiG Poland** | Poland | […] | […] |
| **Duke energy** | USA | […] | […] |
| **Nagadoches** | USA | […] | […] |
| **Sunray** | USA | […] | […] |
| **Weil - Mankota** | USA | […] | […] |
| **Pioneer Fain** | USA | […] | […] |
| *undefined* | *n.a.* | […] | […] |
| | **Total** | […] | **100%** |

| 2021 | | | |
|---|---|---|---|
| **Source** | **Country** | **tons** | **% of global output** |
| **Qatar II** | UAE | […] | […] |
| **ExxonMobil** | USA | […] | […] |
| **BLM** | USA | […] | […] |
| **Qatar** | UAE | […] | […] |
| **Qatar III** | UAE | […] | […] |
| **Linn Jayhawk** | USA | […] | […] |
| **Amur** | Russia | […] | […] |
| **DCP - Liberal** | USA | […] | […] |
| **Skikda** | Algeria | […] | […] |
| **Doe Canyon** | USA | […] | […] |
| **Darwin** | Australia | […] | […] |
| **Tenawa** | USA | […] | […] |
| **DCP Rock Ridge** | USA | […] | […] |
| **Orenburg** | Russia | […] | […] |
| **Nagadoches** | USA | […] | […] |
| **PGNiG Poland** | Poland | […] | […] |
| **Duke energy** | USA | […] | […] |
| **Sunray** | USA | […] | […] |
| **Weil - Mankota** | USA | […] | […] |
| **Pioneer Fain** | USA | […] | […] |
| **Molopo** | S. Africa | […] | […] |
| *undefined* | *n.a.* | […] | […] |
| | **Total** | […] | **100%** |

*Source: response to RFI 48 (Annex Q44).*

(191) It follows that helium sold in the EEA is mostly sourced from outside the EEA, especially from the USA. These US sources are depleting[281] and tend to be replaced by sources located closer to Europe (namely Qatar and Algeria), which are more competitive for sale in the EEA in terms of transportation costs. However, in 2017, US sources still accounted

280 In its past decisional practice, the Commission concluded that the market for the production of helium could be defined as being worldwide or at least wider than the EEA in scope and that it was not necessary to further delineate the relevant geographic market (Commission's decision of 23 December 2002 in case M.2868 – *Linde/Sonatrach/JV,* paragraphs (12) and (13)).

281 Responses to RFI Q33 to helium producers, question 23 and responses to RFI Q34 to helium competitors, question 76.

for more than [50-60]% of the global supply of helium[282] and imports from the USA remain significant, exerting strong constraints in the EEA. This is notably corroborated by the Notifying Parties' internal documents. For instance, an internal presentation of Praxair, dated […], states: "[…]."[283] More recently, in […], Praxair indicated in a sales pitch addressed to a French customer ([…]): "[…]."[284] US sources are also perceived by market players as being (i) more reliable than Qatar and Algeria in terms of security of supply,[285] (ii) more flexible due to the BLM storage facility, and (iii) low cost compared to Qatar,[286] which compensates, at least partially, the higher transportation costs. As a matter of fact, […]% of the helium sold by Praxair in the EEA is sourced from the USA[287] and Matheson, which competes with the Notifying Parties in the EEA at wholesale level, mostly sources helium from the USA.[288]

(192) Second, the market investigation confirmed that, at worldwide level, prices for crude helium are, still today,[289] often influenced and linked to prices set by the US BLM.[290] Linde estimates that "[…]"[291] and considers that […] "[…]."[292] Similarly, in November 2017, Praxair notified to its "[…]" […] justified by the "[…]".[293]

(193) Third, the existence of swap agreements, on the basis of which gas companies with direct access to helium sources may shift quantities across world-regions without the need for physical transport,[294] shows that the location of a company's source does not necessarily reflect the places where the company exercises competition pressure on the downstream markets.

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282 Annex Q44 to the Notifying Parties reply to RFI 48, according to which, in 2021, US sources will still account for more than half of the global supply of helium.

283 Praxair's internal presentation, "[…]" of […], slide […] [[…]], ID4592-23246. Also, Praxair's draft internal presentation, "[…]" of […], slide […] [[…]], ID4601-367 ("[…]"). According to Praxair's internal forecasts, in […], US sources would represent no less than […]% of Praxair's total sourcing of helium ("[…]", dated […], slide […] [[…]], ID 4599-26066.

284 Praxair's internal email exchange dated […] [[…]], ID4598-65603.

285 Responses to RFI Q34 to helium competitors, where many respondents referred to a helium shortage in 2017 due to the geopolitical crisis in Qatar. Also, Matheson's reply to RFI Q34 to helium competitors, question 17.1, ID4245 ("*Helium supplied to the EEA from Algeria is usually competitively priced, however, the lack of reliability of this source reduces its value*").

286 Notably, agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, ID 6404, paragraph 6: "*US sources are easily accessible and low-cost compared to sources located in Qatar, which are more expensive and subject to geopolitical instability, as illustrated by the Qatar embargo in July 2017*."

287 Notifying Parties' reply to RFI 48, question 43.

288 Matheson's reply to RFI Q34 to helium competitors, question 13.4, ID4245.

289 BLM prices are currently based on the results of the yearly BLM auction and sales. The FY 2019 BLM auction and sales (to be held in 2018) will be the last one. Even though there is some uncertainty about whether the BLM will keep publishing prices beyond 2019, some market participants do not exclude it (notably, agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 30, ID 6198).

290 Notifying Parties' response to RFI 45, question 8: "*BLM helium price index, which still is the main price index for many sourcing agreements.*" Also, BLM's reply to RFI Q33 to helium producers, question 10.1, ID03120: "*We post our crude helium price on our web site at (...) on October 1 of each year. This price is used by many global helium contracts as an index*."

291 Linde's internal presentation, "[…]", dated […] [[…]], ID4834-75123.

292 Annex 01-05 to the He paper, dated […]. Also, Linde's internal presentation, "[…]", dated […], slide […] [[…]], ID4762-28877.

293 Notifying Parties' reply to RFI 48, question 72, and Praxair's press release of 15 November 2017, ID6130 (http://www.praxair.com/news/2017/praxair-announces-helium-price-increases).

294 Notably, Form CO, Chapter D, paragraph 1293.

(194) As regards the **retail supply of helium**, the evidence in the Commission's file has generally not provided any indication which would justify to depart (i) from the Commission's precedents with respect to the retail supply of helium in dewars, cylinders, and tube trailers (that is to say national in scope), and (ii) from the Notifying Parties' view with respect to retail supply of helium in cryogenic portable tanks (that is to say global in scope). In particular, the market investigation confirmed that the retail supply in cryogenic portable tanks takes place at a global level and is not affected to a significant degree by transportation costs due to much higher volumes shipped. This finding is in line with the Notifying Parties' views.

7.4.2.4. Conclusion on geographic market definition

(195) For the reasons set out in the preceding recitals in Section 7.4.2, the Commission considers that, for the assessment of the Transaction, the geographic scope of the relevant markets is as follows:

(a) **global** for the helium wholesale market, as well as for the potential market for the retail supply of helium in cryogenic portable tanks;

(b) **national** for the helium retail market and its potential sub-markets (with the exception of the potential market for the retail supply of helium in cryogenic portable tanks).

## 7.5. Supply of process plants and plant components

*7.5.1. Product market definition*

(196) The term 'process plants' refers to plants being used for the production and processing of raw materials in a variety of industries, including the industrial gases sector. Process plants in this sector range from air separation plants (including ASUs,[295] membrane plants[296] and adsorption plants[297]) to HCS plants[298] (including hydrogen plants, syngas plants, ammonia plants, carbon dioxide plants, HCS-type adsorption plants and HCS-type membrane plants) and automated cylinder filling stations.

(197) The term process plant component relates to parts used for producing a process plant.

7.5.1.1. Commission's precedents

(198) In the Commission's precedents, the market for the supply of process plants has been distinguished from the supply of plant components.

(199) While in its decisional practice, the Commission has not considered the supply of components for industrial gas plants, in other industries it has made a distinction between the supply of complete plants and plant components in other industries.[299]

(200) In terms of supply of process plants, the Commission analysed the supply of plants for the production of industrial gases in a previous case,[300] considering the existence of two market segments. Based on the differences in technology and the differing circle of suppliers, the Commission found it appropriate to distinguish between the market for the

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295 Gas ASUs are plants used for the production of air gases (oxygen, nitrogen, argon, krypton, neon, and xenon) in gaseous or liquid form.

296 Membrane plants are typically used for the production of oxygen and nitrogen for volume requirements below 1,000 nm3/h.

297 Adsorption plants are the preferred option for the production of low purity oxygen and nitrogen for volume requirements between 1,000 to 10,000 normal cubic meters per hour (nm3/h).

298 These are gas plants used to produce non-atmospheric gases (i.e. hydrogen, carbon monoxide, carbon dioxide, syngas, ammonia, and methanol) in gaseous or liquid form.

299 Commission's decision of 5 December 2007 in Case M.4647 – *AEE/Lentjes*, paragraph 10.

300 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 41.

sale of ASUs and the market for the sale of HCS plants. However, the exact market definition was left open, since the competition analysis did not change under either alternative market definition.

7.5.1.2. Notifying Parties' view

(201) In the Form CO, the Notifying Parties indicated that the supply of ASUs and HCS plants constitute separate product markets, as it is the case for automated cylinder filling stations. Moreover, the Notifying Parties submitted that the following plant component market segments can be distinguished: air-heated vaporisers[301], coldboxes[302] and plate-fin heat exchangers (PFHEs),[303] compressors, cryogenic storage tanks,[304] coil-wound heat exchangers (CWHEs),[305] helium cryogenic tanks (including both helium storage tanks[306] and UN portable tanks[307]), pumps,[308] spiral-welded aluminium pipes[309] and turbines.[310]

(202) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.5.1.3. Results of the market investigation and Commission's assessment

(203) As regards the distinction between process plants and process plant components, and potential segmentations of the process plants market, the evidence in the Commission's file has not provided any indication which would suggests that, for the purposes of the assessment of the Transaction, departing from the precedents would be appropriate. As regards process plant components, the evidence in the Commission's file has not provided any indication which would suggests that, for the purposes of the assessment of the Transaction, the segmentation suggested by the Notifying Parties would not be appropriate.

(204) In any event, the Transaction would not significantly impede effective competition under any possible alternative market definition.

7.5.1.4. Conclusion on product market definition

(205) For the reasons set out in the preceding recitals in Section 7.5.1, the Commission considers that, for the assessment of the Transaction, the product market definition for the supply of process plants and process plant components can be left **open** as the Transaction would not lead to a significant impediment of effective competition under either alternative plausible market definition:

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301 Air-heated vaporisers use ambient heat to evaporate and superheat cryogenic fluids such as oxygen, nitrogen, argon, hydrogen, carbon dioxide, and liquefied natural gas.

302 Coldboxes are custom designed and, among other things, used in air separation plants (specifically ASUs) to cryogenically distil air gases such as oxygen, nitrogen and argon.

303 PFHEs are a component of a coldbox.

304 Cryogenic storage tanks are large vessels ranging in capacity from 3,000 litres to more than 100,000 litres for cryogenic storage of liquefied gases such as nitrogen, hydrogen oxygen, natural gas and carbon dioxide.

305 CWHEs are primarily used in natural gas plants as coolers, heaters, vaporisers, and isothermal reactors.

306 Helium storage tanks are distinct from other gas storage tanks as they have to be designed to strict specifications and built to very high quality standards due to the physical characteristics of helium.

307 UN portable tanks ("cryogenic portable tanks") are tanks designed for the transportation and delivery of liquid helium by sea or road.

308 Pumps are used to induce flow or pressurize gases in ASUs.

309 Spiral welded aluminium pipes are standardised commodity subcomponents used for coldboxes.

310 Turbines are a component used in ASUs which provide the refrigeration necessary to separate gases.

(a) the market for the **supply of process plants**, as well as the following potential sub-markets: the supply of ASUs, the supply of adsorption plants and the supply of HCS adsorption plants;

(b) the market for **automated cylinder filling stations**; and

(c) the following markets for plant components: **air-heated vaporisers**, **coldboxes** and **plate-fin heat exchangers**, **compressors**, **cryogenic storage tanks**, **coil-wound heat exchangers**, **helium cryogenic tanks (including both helium storage tanks and UN portable tanks)**, **pumps**, **spiral-welded aluminium pipes** and **turbines**.

*7.5.2. Geographic market definition*

7.5.2.1. Commission's precedents

(206) In terms of supply of process plants, in previous cases,[311] the Commission left the precise geographic market delineation for the sale of industrial gas plants open, in particular as to whether it would be global or EEA-wide in scope.

7.5.2.2. Notifying Parties' view

(207) In the Form CO, the Notifying Parties indicated that the relevant geographic market for the sale of process plants, in particular industrial gas plants, and the market for plant components are worldwide in scope. Nonetheless they provided market share data also for the EEA-wide market.

(208) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.5.2.3. Results of the market investigation and Commission's assessment

(209) As regards process plants, the evidence in the Commission's file has not provided any indication which would suggest that, for the purposes of the assessment of the Transaction, departing from the precedents would be appropriate. As regards process plant components, the evidence in the Commission's file has not provided any indication which would suggest that, for the purposes of the assessment of the Transaction, the scope of the relevant markets should not be in line with that for process plants.

(210) In any event, the Transaction would not significantly impede effective competition under any possible alternative market definition.

7.5.2.4. Conclusion on geographic market definition

(211) For the reasons set out in the preceding recitals of Section 7.5.2, the Commission considers that, for the assessment of the Transaction, the scope of the relevant markets can be left **open** as the Transaction would not significantly impede effective competition under either alternative plausible market definition:

(a) the **EEA market for the supply of process plants**, as well as the following potential sub-markets: the **EEA supply of ASUs**, the **EEA supply of adsorption plants** and the **EEA supply of HCS adsorption plants**;

(b) the **global market for automated cylinder filling stations**; and

311 Commission's decision of 22 November 2016 in Case M.8132 – *FMC Technologies/Technip*, paragraph 52 and Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraphs 85-86.

(c) the **EEA and global markets** for the following plant components: **air-heated vaporisers, coldboxes and plate-fin heat exchangers, compressors, cryogenic storage tanks, coil-wound heat exchangers, helium cryogenic tanks (including both helium storage tanks and UN portable tanks), pumps, spiral-welded aluminium pipes** and **turbines**.

### 7.6. Respiratory homecare services

*7.6.1. Product market definition*

7.6.1.1. Commission's precedents

(212) In its previous decisions,[312] the Commission considered that respiratory homecare services and non-respiratory homecare services should be considered as separate product markets.[313] Within the market for respiratory homecare services, the Commission left open the question as to whether a segmentation between oxygen-based and non-oxygen based therapies (possibly each further segmented on the basis of the therapy, i.e. for oxygen-based therapies: LOX, COX and GOX and for non-oxygen therapies: sleep, ventilation and aerosol) would be appropriate.[314]

7.6.1.2. Notifying Parties' view

(213) The Notifying Parties submit that the relevant product market includes all respiratory homecare services due to the following supply-side substitutability considerations:

(a) Respiratory homecare is mainly a distribution business which combines offering of equipment and services, and suppliers who are able to set up the logistics network required for one therapy can easily expand and deliver the entire spectrum of respiratory homecare services;

(b) Devices and products which form part of a combined offering are generally sourced from different third parties and providers of respiratory homecare services are usually not vertically integrated;

(c) In countries where respiratory homecare services are procured through tenders, purchasers typically require suppliers to offer the full spectrum of respiratory homecare services.

(214) As regards demand-side substitutability, the Notifying Parties claim that GOX, LOX and COX are generally interchangeable for most patients. They acknowledge, however, that there are some instances where one oxygen therapy is more suitable than the others (for example, in case of certain pathologies that require a specific oxygen flow rate, whereby LOX is the most suitable therapy in terms of mobility).

(215) The Notifying Parties also acknowledge that the three oxygen-based therapies do not have similar maintenance systems and that the costs associated with each therapy are significantly different (with COX requiring limited costs, the provision of GOX requiring higher costs and the provision of LOX requiring the highest costs).[315]

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312 Commission's decision of 18 April 2012 in Case M.6504 - *Linde/Air Products Homecare*, paragraph 17.

313 Since the Notifying Parties only have very limited activities in non-respiratory homecare services and their activities do not overlap in any therapy, the impact of the Transaction in relation to these services will not be further discussed in this Decision.

314 Commission's decision of 18 April 2012 in Case M.6504 - *Linde/Air Products Homecare*, paragraphs 24 to 26.

315 Form CO, Chapter E, Section 6, paragraphs 1345 ff.

(216) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.6.1.3. Results of the market investigation and Commission's assessment

(217) As regards the distinction between respiratory homecare services and non-respiratory homecare services, the evidence in the Commission's file has generally not provided any indication which would suggest that departing from the precedents would be appropriate.

(218) In relation to the question as to whether **oxygen and non-oxygen therapies** should be considered separate product markets, the Commission preliminarily notes that, from a demand-side perspective, there are, from the outset, inherent differences between oxygen-based therapies (involving the administration of medical oxygen) and non-oxygen therapies (involving the administration of ambient air sometimes combined, in the case of aerosol therapy, with drugs). In addition, oxygen and non-oxygen therapies also appear to be used to cure different types of diseases. For example, chronic respiratory failure, carbon monoxide poisoning and pulmonary fibrosis require oxygen based therapies as opposed to sleep apnoea disorders and asthma for which non-oxygen based therapies seem to be more appropriate.[316] On the supply side, the Commission notes that, on the one hand, suppliers of these services generally provide the full range of respiratory homecare services (oxygen and non-oxygen) and, in some EEA countries such as Spain and Portugal, are even required to provide all therapies. On the other hand, in other EEA countries, not all providers are active in all therapies.[317]

(219) With respect to a possible **segmentation between different oxygen-based therapies**, the market investigation revealed that there is indeed limited demand-side substitutability between the different oxygen therapies, namely LOX, GOX and COX. For the same treatment, the degree of substitutability between these different oxygen therapies depends on the clinical condition of each patient and their mobility needs. In particular, respondents to the market investigation indicate that LOX, GOX and COX therapies do not have the same characteristics as they have different flow levels and do not allow for the same degree of mobility.[318] Similarly, as **regards non-oxygen therapies**, including sleep, ventilation (invasive and non-invasive) and aerosol therapies, the second phase investigation provided indications that, at least from a demand-side perspective, each therapy should be considered separately, notably as the costs associated to the therapies are generally different and the use of each therapy mainly depends on the patient and on the specific pathology.[319]

(220) As regards supply-side substitutability, the same considerations set out [320] with respect to a potential distinction between oxygen and non-oxygen therapies also apply in relation to therapies within each category.

(221) In any event, for the purposes of the assessment of the Transaction, the question as to whether a distinction should be made between oxygen and non-oxygen based therapies and the question as to whether different types of therapies within these categories constitute

316 Form CO, Chapter E, Annex 111.
317 Form CO, Chapter E, Table 149.
318 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 6.
319 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 7 and 8, ID 6302.
320 Recital (219).

separate markets can be left open since the competition analysis does not change under either alternative market definition.

7.6.1.4. Conclusion on product market definition

(222) For the reasons set out in the preceding recitals of Section 7.6.1, the Commission considers that, for the assessment of the Transaction, the relevant product markets are:

(a) a potential market comprising **all respiratory homecare therapies**;

(b) a potential market comprising **all oxygen-based therapies** and a possible separate market for each oxygen-based therapy separately, that is to say **LOX, GOX and COX**.

(c) a potential market comprising **all non-oxygen therapies** and a potential separate market for each non-oxygen based therapy, namely **sleep, ventilation and aerosol**.

*7.6.2. Geographic market definition*

7.6.2.1. Commission's precedents

(223) In its precedents, the Commission considered the markets for respiratory homecare services to be national in scope, notably as (i) respiratory services are typically covered by public healthcare reimbursement systems, which are generally national, (ii) regulatory regimes and market organisation (tenders by healthcare authorities or insurer) are different in each Member States, (iii) suppliers of respiratory homecare services tend to operate on a national level and (iv) sales forces and marketing are organised at national level even in case of multinational companies.[321]

7.6.2.2. Notifying Parties' view

(224) The Notifying Parties agree with the Commission's conclusion in its precedents.[322]

7.6.2.3. Results of the market investigation and Commission's assessment

(225) The evidence in the Commission's file has not provided any indication which would suggest that, for the purposes of the assessment of the Transaction, departing from the precedents would be appropriate.

(226) The Commission has focused its investigation on the geographic scope of the markets where the Notifying Parties' activities in respiratory homecare services overlap in the EEA, that is Spain, Portugal and Italy.

(227) As regards Spain, the legal framework appears to be homogeneous across different regions, notably with respect to the reimbursement system as well as the respiratory homecare therapies which are covered by the tenders.

(228) Similarly, in Portugal, respiratory homecare services for all Portuguese regions are tendered though a nationwide process, notably to ensure quality of products and services to patients as well a single price for the entire country.

(229) Finally, with respect to Italy, the Article 6(1)(c) Decision considered whether a geographic market narrower than national, and possibly regional would be appropriate. The second phase market investigation provided indications that a geographic market narrower than national would not be appropriate. In particular, respondents to the second phase investigation emphasized the role of the Italian National Health Service, which provides universal coverage for the essential level of care for the whole population. In addition, as is

321 Commission's decision of 18 April 2012 in Case M.6504 - *Linde/Air Products Homecare*.

322 Form CO, Chapter E, Section 6, paragraph 1419.

the case for Spain, the legal framework applicable to Italy also appears to be homogeneous across different regions.

7.6.2.4. Conclusion on geographic market definition

(230) For the reasons set out in the preceding recitals in Section 7.6.2, the Commission considers that, for the assessment of the Transaction, the scope of the relevant geographic markets for Spain, Portugal and Italy is **national**.

## 7.7. Surface coating services

*7.7.1. Product market definition*

(231) The term surface coating services refers to services for the application of coverings to the surface of an object. The purpose of a coating can be decorative, functional, or both. Coatings may be applied as liquids, gases or solids.

7.7.1.1. Commission's precedents

(232) In its decisional practice[323] the Commission defined the supply of coating services as a distinct product market. The Commission also considered thin-film coatings as a distinct market from other coatings as far as transmission and textile machinery manufacturers were concerned. It further suggested that the provision of services related to thicker coatings can be distinguished from thin film coating services. However, this possible sub-segmentation was ultimately left open.

7.7.1.2. Notifying Parties' view

(233) In the Form CO, the Notifying Parties agreed with the Commission's precedents. Nonetheless, they submitted that a market segmentation by thermal spraying method, end-industry or process form should not be considered. The Notifying Parties indicated that competition takes place across different thermal spraying methods, the attribution of certain coating types to a particular industry is impractical and that all processes are interconnected and required in the application of coating services.

(234) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.7.1.3. Results of the market investigation and Commission's assessment

(235) As regards a potential segmentation in relation to the supply of surface coating services, the evidence in the Commission's file has not provided any indication which would suggest that, for the purposes of the assessment of the Transaction, departing from the precedents would be appropriate. In any event, the Transaction does not give raise to any horizontally affected markets with respect to the supply of surface coating services under any possible alternative market definition and only vertically affected markets arise in view of the Notifying Parties' market shares in the supply of industrial gases in bulk and cylinders, used as input for coating services. However, the Transaction would not significantly impede effective competition in the vertically affected market under any possible alternative market definition for the supply of surface coating services.[324]

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323 Commission's decision of 22 November 2006 in Case M.4432 – *Oerlikon/Saurer*, paragraphs 9-16 and Commission's decision of 17 June 2009 in Case M.5469 – *Renova Industries/Sulzer*, paragraphs 7 to 19.

324 See footnote 330.

7.7.1.4. Conclusion on product market definition

(236) For the reasons set out in the preceding recitals of Section 7.7.1, the Commission considers that, for the assessment of the Transaction, the product market definition for the supply of surface coating services can be left open as the Transaction would not significantly impede effective competition under either alternative, regardless of the definition of the market.

*7.7.2. Geographic market definition*

7.7.2.1. Commission's precedents

(237) The Commission identified the market for thin-film coating services as potentially national in scope in previous cases.[325] The Commission also took the view that even if national markets seem to be the most appropriate geographical framework to analyse the transactions in those cases, the exact geographic market definition could be left open.

7.7.2.2. Notifying Parties' view

(238) In the Form CO, the Notifying Parties indicated that the geographic market for coating services could be either EEA-wide or national in scope.

(239) In the Thematic Papers and in the Reply to the Statement of Objections, the Notifying Parties did not bring forward any additional argument as regards product market definition, neither did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Statement of Objections.

7.7.2.3. Results of the market investigation and Commission's assessment

(240) The evidence in the Commission's file has not provided any indication which would suggests that, for the purposes of the assessment of the Transaction, departing from the precedents would be appropriate. In any event, the Transaction does not give raise to any horizontally affected markets with respect to the supply of surface coating services under any possible alternative market definition and only vertically affected markets arise in view of the Notifying Parties' market shares in the supply of industrial gases in bulk and cylinders, used as input for coating services. However, the Transaction would not significantly impede effective competition in the vertically affected market under any possible alternative market definition for the supply of surface coating services.

7.7.2.4. Conclusion on geographic market definition

(241) For the reasons set out in the preceding recitals in Section 7.7.2, the Commission considers that, for the assessment of the Transaction, the geographic market definition for the supply of coating services (whether EEA-wide or national) can be left open as the Transaction would not significantly impede effective competition under either alternative market.

## 8. COMPETITIVE ASSESSMENT

### 8.1. Affected markets

*8.1.1. Horizontally affected markets*

(242) The Transaction gives rise to the following horizontally affected markets:[326]

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325 Commission's decision of 22 November 2006 in Case M.4432 – *Oerlikon/Saurer*, paragraph 17 and Commission's decision of 17 June 2009 in Case M.5469 – *Renova Industries/Sulzer*, paragraphs 40 to 45.

326 Affected markets are identified on the basis of the sales market shares by either value or volume submitted by the Notifying Parties, also taking into account the results of the Commission's reconstruction of market shares in volume or value (as described in Section 8.2. and Section 8.10.).

(a) The EEA tonnage markets for the supply of carbon monoxide, nitrogen, and oxygen;

(b) The EEA small on-site plant markets for the supply of nitrogen and oxygen;

(c) The EEA bulk market for the supply of argon;

(d) The EEA cylinder markets/segments for the supply of high purity grades of acetylene, argon, carbon dioxide (excluding dry ice), hydrogen, nitrogen and oxygen;

(e) Some national/Benelux bulk markets for the supply of argon, carbon dioxide, hydrogen, nitrogen and oxygen;

(f) Some national/Benelux cylinder markets for the supply of all purity grades of acetylene, argon, carbon dioxide (excluding dry ice), hydrogen, nitrogen and oxygen;

(g) Some national/Benelux cylinder markets/segments for the supply of standard purity grades of acetylene, argon, carbon dioxide (excluding dry ice), carbon monoxide, hydrogen, nitrogen, oxygen and nitrous oxide;

(h) Some national/Benelux cylinder markets/segments for the supply of high purity grades of acetylene, argon, carbon dioxide (excluding dry ice), hydrogen, nitrogen and oxygen;

(i) Some national/Benelux markets for the supply of dry ice;

(j) Some national bulk markets for the supply of medical oxygen, medical nitrogen and medical nitrous oxide;

(k) Some national cylinder markets for the supply of medical carbon dioxide, medical argon, medical nitrogen, medical nitrous oxide, medical nitric oxide and medical oxygen;

(l) The EEA cylinder markets for the supply of noble gases and noble gas mixtures;

(m) The EEA bulk and cylinder markets for the supply of ESGs;

(n) Some national cylinder markets for the supply of refrigerants, chemical gases, and calibration and other mixtures;

(o) The global market for the wholesale supply of helium;

(p) The potential global market for the retail supply of helium in cryogenic portable tanks;

(q) Some national markets for the retail supply of helium and its potential sub-markets depending on the supply mode (with the exception of cryogenic portable tanks) and the helium purity grade;

(r) Some national markets for the provision of respiratory homecare services and its sub-markets in Spain, Portugal and Italy;

(s) The EEA markets for the supply of ASUs, adsorption plants and HCS adsorption plants.

(243) A precise identification of all markets where the Notifying Parties' activities overlap as well as of all horizontal affected product and geographic markets, including market share data for those markets, is provided in Sections 8.2 and following and in Annex I, which forms an integral part of this Decision. The Notifying Parties generally provided data for 2014-2016. Unless otherwise specified, the Commission has no reason to believe that 2017 data differs significantly.

*8.1.2. Vertically affected markets*

(244) The Transaction gives rise to vertically affected markets in relation to the links between the following markets: [327]

(a) The upstream EEA/global markets for the supply of some process plants and process plant components and, at downstream level, some EEA/national/Benelux markets for industrial gases, some national markets for medical gases, some EEA/national markets for specialty gases, the global wholesale market for supply helium and the retail markets for the supply of helium (and potential sub-markets);

(b) Some upstream EEA/national/Benelux markets for the bulk supply of industrial gases and some downstream EEA/national/Benelux markets for the cylinder supply of industrial gases;

(c) Some upstream EEA/national/Benelux markets for the bulk and cylinder (all purity, standard purity and high purity grades) supply of industrial gases and some downstream EEA/national markets for the supply of bulk and cylinder specialty gas mixtures;

(d) Some upstream national markets for the bulk supply of medical gases and some downstream national markets for the cylinder supply of medical gases;

(e) Some upstream national markets for the bulk and cylinder supply of medical oxygen and some downstream national markets for the provision of (oxygen based) respiratory homecare services and possible sub-markets (GOX and LOX);

(f) Some upstream EEA/national markets for the bulk supply of specialty gases (in particular, in relation to ESGs, refrigerants and chemicals) and some EEA/national markets for the supply of specialty gases in cylinders;[328]

(g) The upstream global market for the wholesale supply of helium and the downstream national markets for the retail supply of helium (and potential sub-markets);

(h) Some upstream EEA/national/Benelux markets for industrial gas supply in bulk and cylinder and some downstream EEA/national markets for surface coating services.[329]

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327 Affected markets are identified on the basis of the sales market shares by either value or volume submitted by the Notifying Parties, also taking into account the results of the Commission's reconstruction of market shares in volume or value (as described in Section 8.2 and Section 8.10).

328 In relation to specialty gases, vertical affected markets arise having regard to the Notifying Parties' market position in cylinders, where their combined shares are above 30% in several markets. In the EEA, Praxair supplies only ESGs in bulk, while Linde supplies ESGs, refrigerants and chemicals in bulk (Form CO, Table 87). The Notifying Parties submit that they use bulk deliveries only to serve end customers which require larger volumes and thus do not ship bulk deliveries to competitors' filling centres for further processing (Form CO, Section 6, Chapter C, paragraph 726). Therefore, input foreclosure concerns are unlikely to arise. The market investigation raised no customer foreclosure concern either with regard to these markets. In any event, the Commission notes that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the non-coordinated horizontal effects of the Transaction in relation to specialty gases also exclude the possibility that the Transaction would lead to vertical effects in those markets. Indeed, those commitments will fully remove the overlaps between the Notifying Parties' activities in specialty gases in the relevant bulk and cylinder markets.

329 In these markets, the Transaction would not lead to a significant impediment of effective competition since the merged entity would neither have the ability nor the incentive to foreclose its competitors. Praxair's coating business currently purchases acetylene, argon, carbon dioxide, helium, hydrogen, nitrogen, oxygen and propylene, which for the purposes of surface coating services are defined as "process gases". As regards customer foreclosure, the value of the relevant process gases used by Praxair's business in the surface coating service is very small compared to overall demand for this type of gases in the countries concerned. For instance, Praxair's process gases demand for the surface coating services in the UK amounted to EUR […] in 2016, while the overall market sales only for carbon

(245) A precise identification of all markets where the Notifying Parties' activities are vertically related and of all vertically affected product and geographic markets, including market share data for those markets, is provided in Sections 8.2 and following and in Annex I, which forms an integral part of this Decision.

## 8.2. Industrial gases[330]

*8.2.1. Market structure and competitive parameters*

8.2.1.1. Market shares and concentration levels

(246) According to the Horizontal Merger Guidelines and the Non-Horizontal Merger Guidelines,[331] market shares constitute useful first indications of the market structure and of the competitive importance of the market players. Likewise, the overall concentration level in a market may also provide useful information about the competitive situation.[332]

(247) Market share data based on sales are, however, only one of the indicators for assessing the competitive constraint exerted by market players in the industrial gases markets. They can be complemented with other metrics in order to form a more comprehensive initial assessment about the competition in the market. These metrics are capacity shares and bidding data.

(248) In this Section the Commission presents, first, market shares based on sales (Section 8.2.1.1.1.); then market shares based on capacity (Section 8.2.1.1.2.); and finally the results of its bidding analysis (Section 8.2.1.1.3.).

8.2.1.1.1. Sales shares

(249) The sales market share data presented in this Section are based on the submissions of the Notifying Parties in the first phase investigation.[333] While the Notifying Parties provided

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dioxide bulk and acetylene cylinder amounted to approximately EUR […] in 2016. Therefore, the Notifying Parties are unlikely to have the ability or incentives to conduct a customer foreclosure strategy. As regards input foreclosure, post-Transaction there would remain a number of alternative sources of process gases to the merged entity, including Air Liquide, Air Products, Messer, Westfalen and SOL, so that full foreclosure can be excluded. As regards a possible partial foreclosure in the form of a price increase, the Commission notes that process gases account for approximately 2.2% of the total costs of a coatings business. Therefore, any foreclosure strategy aimed at raising cost specifically to downstream surface coating competitors would have very limited effect on the competitive position of those players. Thus, the Notifying Parties would not have the ability or incentives to foreclose inputs from downstream surface coating competitors. In addition, no specific concern has been raised in the market investigation in regard to this vertical relationship (responses to RFI Q29 to competitors in surface coating services). Nonetheless, the Commission notes that suppliers of surface coating services would suffer from the prices increases stemming from the horizontal unilateral effects in the markets for the supply of industrial and chemical gases, discussed in Sections 8.2. and 8.6.

330 In this section, the Commission sets out its competitive assessment in relation to the horizontally and vertically affected markets identified in Section 8.1 as regards industrial gases. In addition, the Commission's competitive assessment also covers the market for the tonnage supply of hydrogen in the EEA. This is because, despite this market not being affected, the evidence resulting from the bidding analysis carried out by the Commission suggested that the degree of competitive constraint exerted by the Notifying Parties on each other may be stronger than what their market share would suggest (see Section 8.2.1.1.3).

331 Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings ("Horizontal Merger Guidelines"), OJ C 31, 05.02.2004, paragraph 14; Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings ("Non-Horizontal Merger Guidelines"), OJ C 265, 18.10.2008, paragraph 24.

332 Horizontal Merger Guidelines, paragraph 16. See also Non-Horizontal Merger Guidelines, paragraph 24.

333 Form CO, footnote 279, and response to RFI 45.

share of sales both in value and in volume, they pointed out that the volume data is less reliable and, in general, they have no reason to expect volume shares to significantly deviate from value shares.[334] In the Thematic Papers, the Notifying Parties did not bring forward any additional arguments or information as regards sales market shares.

(250) As part of the first phase market investigation the Commission has conducted a market reconstruction to verify the accurateness of the sales volume data for industrial gases submitted by the Notifying Parties, presented in this Section. In this context the Commission has requested, from the Notifying Parties and their competitors, confidential data on their respective sales volumes in 2016 for the various tonnage, small on-site plants, bulk and cylinder/dry ice industrial gas markets with a view to reconstructing volume sales shares for each of those markets. In this respect:

(a) the Commission has taken a prudent approach in reconstructing the markets for tonnage and small on-site plants. Indeed, not all competitors responding to the market investigation have been able to provide a breakdown of their sales volumes between tonnage and small on-site plants. Therefore, on the one hand, whenever no distinction could be made in the data for a given competitor between tonnage and on-site plants, the Commission has attributed all the volume to tonnage. This means that the sales volumes (and market shares) in tonnage for such competitor have been overestimated, which is in favour of the Notifying Parties, because it reduces their market shares. On the other hand, the Commission has not attempted to reconstruct the market for small on-site plants and has instead used the estimates provided by the Notifying Parties.[335]

(b) the Commission was not able to reconstruct the volume sales shares for the cylinder and dry ice markets due to the limited number of respondents to the market reconstruction RFIs compared to the high number of players active in those markets.

(251) In the Statement of Objections, on the basis of the data collected at that stage, the Commission set out the results of its market reconstruction exercise and noted that the Notifying Parties' position appears to have been underestimated by the Notifying Parties in several instances.

(252) The Notifying Parties' economic consultants had the possibility to consult the data underlying the market reconstruction presented in the Statement of Objections and to make comments in that respect. In particular, the Notifying Parties' economic consultants argued that, notwithstanding the fact that the value shares are more reliable from the Notifying Parties' perspective than the volume shares, the methodology used by the Commission for the market share reconstruction is generally sensible with two exceptions.

(253) In this Section the Commission set out the results of its market reconstruction on the basis of a revised methodology which fully takes into account the comments made by the Notifying Parties' economic consultants. Based on such results, the Commission still considers that the market shares data provided by Notifying Parties underestimated the Notifying Parties' position in several instances, as further detailed in the following recitals.[336]

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334 In light of this explanation provided by the Notifying Parties, in those cases where there are significant discrepancies between the value and volume market shares provided by the Notifying Parties, the value market shares should be considered more informative.

335 Since tonnage sales are much larger than small on-site plant sales, attributing tonnage sales to on-site small plants would completely distort the total market size for the latter.

336 Access to the data underlying the market reconstruction has been provided to the Notifying Parties according to the data room procedure. In this Decision the Commission will only present ranges for the combined market shares of the Notifying Parties to preserve confidentiality of third party data.

a. **Horizontally affected markets**

(254) Tables 4 to 6, 11 and 12 below show the Notifying Parties' 2016 market shares based on **sales in volume and value**, as well as the concentration levels, in each of the horizontally affected market[337] categories identified in Section 8.1.1., as submitted by the Notifying Parties.

(255) Detailed market share data (based on the sales data in volume and value provided by the Notifying Parties), including on the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms integral part of this Decision. A description of the following tables is provided in Sections 8.2.2.2.1.a., 8.2.2.2.2.a., 8.2.2.2.3.a. and 8.2.2.2.4.a.

i. Tonnage

**Table 4: Sales shares for tonnage supply of industrial gases in the EEA (2016)**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.*** | **HHI PRE*** | **HHI POST*** | **Δ HHI*** |
| EEA | Carbon monoxide | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [100-200] |
| | Hydrogen (on-site plants with capacity >0.3 tpd) | [10-20]% | [0-5]% | [10-20]% | [4500-5000] | [4500-5000] | [0-100] |
| | Nitrogen | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3500-4000] | [900-1000] |
| | Oxygen | [30-40]% | [5-10]% | [40-50]% | [3000-3500] | [3500-4000] | [500-600] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.*** | **HHI PRE*** | **HHI POST*** | **Δ HHI*** |
| EEA | Carbon monoxide | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [100-200] |
| | Hydrogen (on-site plants with capacity >0.3 tpd) | [10-20]% | [0-5]% | [10-20]% | [4500-5000] | [4500-5000] | [0-100] |
| | Nitrogen | [30-40]% | [10-20]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | Oxygen | [30-40]% | [10-20]% | [40-50]% | [3000-3500] | [3500-4000] | [700-800] |

*Source: Response of 13 February 2018 to RFI 45.*

* *The abbreviations used in this table, and in the other market share tables in this Decision, have the following meaning:*
*Comb.=combined market shares;*
*HHI PRE=HHI pre-Transaction;*
*HHI POST=HHI post-Transaction;*
*Δ HHI=delta HHI.*

337 Affected markets are identified on the basis of the sales market shares by either value or volume submitted by the Notifying Parties, also taking into account the results of the Commission's reconstruction of market shares in volume.

(256) With respect to carbon monoxide, hydrogen and oxygen, the market reconstruction confirms the 2016 volume sales market shares provided by the Notifying Parties. With respect to nitrogen, instead, the market reconstruction indicates that the 2016 volume sales data provided by the Notifying Parties somewhat overestimate the Notifying Parties' market positions, their combined share being [30-40]% based on the market reconstruction.[338]

ii. Small on-site plants

**Table 5: Sales shares for supply of industrial gases through small on-site plants in the EEA (2016)**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| EEA | Nitrogen | [20-30]% | [5-10]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Oxygen | [30-40]% | [0-5]% | [40-50]% | [3000-3500] | [3000-3500] | [300-400] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| EEA | Nitrogen | [20-30]% | [5-10]% | [30-40]% | [2000-2500] | [2000-2500] | [300-400] |
| | Oxygen | [30-40]% | [5-10]% | [40-50]% | [1500-2000] | [2000-2500] | [300-400] |

*Source: Commission's compilation based on response of 13 February 2018 to RFI 45.*

iii. Bulk

**Table 6: Sales shares for bulk supply of industrial gases (2016)**[339]

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Argon | **EEA** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[600-700]** |

338 See footnote 336.

339 For an explanation of the values emphasised in bold, see recital (263).
The Notifying Parties submit that Linde sold its subsidiaries in **Croatia** and **Slovenia** on […]. As a result, they claim that Linde will no longer sell industrial gases directly to end-customers (in bulk and cylinders) in these two Member States. Therefore any horizontal overlap between the Notifying Parties' activities would cease.
[…] (Form CO, Chapter A, Section 6, footnote 123). Nonetheless, even disregarding the sale of Linde's Croatian and Slovenian business, no vertically affected market would arise, since the combined shares of Linde and Praxair (SIAD) would be below 30% in all bulk national markets in Croatia and Slovenia. Therefore, the Commission treats the Croatian and Slovenian bulk and cylinder markets for the supply of industrial gases as **neither horizontally nor vertically affected** markets and thus these markets will not be further discussed in this Decision.

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Argon | **Austria** | **[60-70]%** | **[0-5]%** | **[60-70]%** | **[5000-5500]** | **[5000-5500]** | **[100-200]** |
| | **Bulgaria** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[700-800]** |
| | **Czech Rep.** | **[50-60]%** | **[5-10]%** | **[50-60]%** | **[3500-4000]** | **[4000-4500]** | **[500-600]** |
| | **Denmark** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[500-600]** |
| | **Finland** | **[70-80]%** | **[0-5]%** | **[70-80]%** | **[5500-6000]** | **[5500-6000]** | **[0-100]** |
| | **Germany** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[800-900]** |
| | **Hungary** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[3000-3500]** | **[3500-4000]** | **[500-600]** |
| | **Italy** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[400-500]** |
| | **Norway** | **[30-40]%** | **[60-70]%** | **[90-100]%** | **[5000-5500]** | **[9500-10000]** | **[4500-5000]** |
| | **Portugal** | **[20-30]%** | **[20-30]%** | **[40-50]%** | **[2500-3000]** | **[3500-4000]** | **[1000-1500]** |
| | **Romania** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[200-300]** |
| | Slovakia | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | **Spain** | **[0-5]%** | **[40-50]%** | **[50-60]%** | **[3000-3500]** | **[3500-4000]** | **[300-400]** |
| | **Sweden** | **[80-90]%** | **[0-5]%** | **[80-90]%** | **[7000-7500]** | **[7500-8000]** | **[0-100]** |
| | Benelux | [20-30]% | [5-10]% | [20-30]% | [3000-3500] | [3000-3500] | [200-300] |
| Carbon dioxide | **Austria** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[0-100]** |
| | **Benelux** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[700-800]** |
| | Bulgaria | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | **Cyprus** | **[80-90]%** | **[5-10]%** | **[90-100]%** | **[7000-7500]** | **[8000-8500]** | **[1000-1500]** |
| | **Czech Rep.** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[3500-4000]** | **[4000-4500]** | **[100-200]** |
| | **Denmark** | **[20-30]%** | **[60-70]%** | **[90-100]%** | **[4500-5000]** | **[8000-8500]** | **[3000-3500]** |
| | **Finland** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4000-4500]** | **[0-100]** |
| | **Germany** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[800-900]** |
| | **Hungary** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[3500-4000]** | **[4000-4500]** | **[200-300]** |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | **Ireland** | **[40-50]%** | **[50-60]%** | **[90-100]%** | **[5000-5500]** | **[9500-10000]** | **[4500-5000]** |
| | **Italy** | **[0-5]%** | **[50-60]%** | **[50-60]%** | **[3000-3500]** | **[3500-4000]** | **[300-400]** |
| | **Norway** | **[20-30]%** | **[70-80]%** | **[90-100]%** | **[6500-7000]** | **[9500-10000]** | **[3000-3500]** |
| | **Portugal** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[600-700]** |
| | **Romania** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[3000-3500]** | **[3000-3500]** | **[0-100]** |
| | Slovakia | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | **Spain** | **[10-20]%** | **[30-40]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[600-700]** |
| | **Sweden** | **[70-80]%** | **[10-20]%** | **[80-90]%** | **[5000-5500]** | **[7500-8000]** | **[2500-3000]** |
| | **UK** | **[10-20]%** | **[20-30]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[800-900]** |
| Hydrogen | **Germany** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[500-600]** |
| Nitrogen | **Austria** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[3000-3500]** | **[3500-4000]** | **[100-200]** |
| | Bulgaria | [10-20]% | [5-10]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | **Czech Rep.** | **[40-50]%** | **[5-10]%** | **[50-60]%** | **[3000-3500]** | **[4000-4500]** | **[800-900]** |
| | **Denmark** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[3000-3500]** | **[4000-4500]** | **[900-1000]** |
| | **Germany** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[700-800]** |
| | **Hungary** | **[30-40]%** | **[5-10]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[300-400]** |
| | **Italy** | **[5-10]%** | **[20-30]%** | **[30-40]%** | **[1500-2000]** | **[2000-2500]** | **[200-300]** |
| | **Norway** | **[60-70]%** | **[30-40]%** | **[90-100]%** | **[4500-5000]** | **[8500-9000]** | **[4000-4500]** |
| | **Poland** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[2500-3000]** | **[2500-3000]** | **[0-100]** |
| | **Portugal** | **[20-30]%** | **[30-40]%** | **[50-60]%** | **[2500-3000]** | **[4000-4500]** | **[1500-2000]** |
| | **Romania** | **[40-50]%** | **[5-10]%** | **[50-60]%** | **[2500-3000]** | **[3000-3500]** | **[500-600]** |
| | **Slovakia** | **[20-30]%** | **[5-10]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[400-500]** |
| | **Spain** | **[10-20]%** | **[20-30]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[700-800]** |
| | **Sweden** | **[70-80]%** | **[0-5]%** | **[70-80]%** | **[5500-6000]** | **[6000-6500]** | **[600-700]** |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | **UK** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4000-4500]** | **[0-100]** |
| | **Benelux** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[400-500]** |
| Oxygen | **Austria** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[400-500]** |
| | Bulgaria | [20-30]% | [5-10]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | **Czech Rep.** | **[50-60]%** | **[5-10]%** | **[60-70]%** | **[3500-4000]** | **[4500-5000]** | **[900-1000]** |
| | **Denmark** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[200-300]** |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | **Germany** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[600-700]** |
| | **Hungary** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[400-500]** |
| | Italy | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [200-300] |
| | **Norway** | **[50-60]%** | **[40-50]%** | **[90-100]%** | **[5000-5500]** | **[9500-10000]** | **[4500-5000]** |
| | Poland | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | **Portugal** | **[10-20]%** | **[20-30]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[800-900]** |
| | **Romania** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[300-400]** |
| | **Slovakia** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[500-600]** |
| | **Spain** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[600-700]** |
| | **Sweden** | **[70-80]%** | **[5-10]%** | **[70-80]%** | **[5000-5500]** | **[6000-6500]** | **[700-800]** |
| | **Benelux** | **[10-20]%** | **[10-20]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[500-600]** |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Argon | **EEA** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[600-700]** |
| Argon | **Austria** | **[60-70]%** | **[0-5]%** | **[60-70]%** | **[5000-5500]** | **[5000-5500]** | **[100-200]** |
| | **Bulgaria** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[700-800]** |
| | **Czech Rep.** | **[50-60]%** | **[0-5]%** | **[60-70]%** | **[4000-4500]** | **[4500-5000]** | **[400-500]** |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | **Denmark** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[500-600]** |
| | **Finland** | **[70-80]%** | **[0-5]%** | **[70-80]%** | **[5500-6000]** | **[5500-6000]** | **[0-100]** |
| | **Germany** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[700-800]** |
| | **Hungary** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[3000-3500]** | **[3500-4000]** | **[400-500]** |
| | **Italy** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[400-500]** |
| | **Norway** | **[30-40]%** | **[60-70]%** | **[90-100]%** | **[5000-5500]** | **[9500-10000]** | **[4500-5000]** |
| | **Portugal** | **[20-30]%** | **[20-30]%** | **[40-50]%** | **[2500-3000]** | **[3500-4000]** | **[1000-1500]** |
| | **Romania** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[200-300]** |
| | **Slovakia** | **[20-30]%** | **[0-5]%** | **[20-30]%** | **[2000-2500]** | **[2000-2500]** | **[100-200]** |
| | **Spain** | **[0-5]%** | **[50-60]%** | **[50-60]%** | **[3500-4000]** | **[3500-4000]** | **[200-300]** |
| | **Sweden** | **[80-90]%** | **[0-5]%** | **[80-90]%** | **[7000-7500]** | **[7500-8000]** | **[0-100]** |
| | Benelux | [20-30]% | [5-10]% | [20-30]% | [3000-3500] | [3000-3500] | [200-300] |
| Carbon dioxide | **Austria** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[0-100]** |
| | **Benelux** | **[20-30]%** | **[20-30]%** | **[40-50]%** | **[1500-2000]** | **[2500-3000]** | **[800-900]** |
| | Bulgaria | [10-20]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | **Cyprus** | **[80-90]%** | **[5-10]%** | **[90-100]%** | **[7000-7500]** | **[8000-8500]** | **[1000-1500]** |
| | **Czech Rep.** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[3500-4000]** | **[3500-4000]** | **[100-200]** |
| | **Denmark** | **[20-30]%** | **[60-70]%** | **[90-100]%** | **[5000-5500]** | **[8000-8500]** | **[3000-3500]** |
| | **Finland** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4000-4500]** | **[0-100]** |
| | **Germany** | **[30-40]%** | **[10-20]%** | **[50-60]%** | **[2000-2500]** | **[3000-3500]** | **[1000-1500]** |
| | **Hungary** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[4000-4500]** | **[4000-4500]** | **[100-200]** |
| | **Ireland** | **[40-50]%** | **[50-60]%** | **[90-100]%** | **[5000-5500]** | **[9500-10000]** | **[4500-5000]** |
| | **Italy** | **[0-5]%** | **[40-50]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[200-300]** |
| | **Norway** | **[20-30]%** | **[70-80]%** | **[90-100]%** | **[6000-6500]** | **[9500-10000]** | **[3000-3500]** |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | **Portugal** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[600-700]** |
| | **Romania** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[3000-3500]** | **[3000-3500]** | **[0-100]** |
| | Slovakia | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | **Spain** | **[10-20]%** | **[30-40]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[600-700]** |
| | **Sweden** | **[60-70]%** | **[10-20]%** | **[80-90]%** | **[4500-5000]** | **[7500-8000]** | **[2500-3000]** |
| | **UK** | **[10-20]%** | **[20-30]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[800-900]** |
| Hydrogen | **Germany** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[600-700]** |
| Nitrogen | **Austria** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[3500-4000]** | **[3500-4000]** | **[100-200]** |
| | Bulgaria | [10-20]% | [10-20]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | **Czech Rep.** | **[40-50]%** | **[10-20]%** | **[50-60]%** | **[3000-3500]** | **[4000-4500]** | **[1000-1500]** |
| | **Denmark** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[3000-3500]** | **[4000-4500]** | **[900-1000]** |
| | **Germany** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[700-800]** |
| | **Hungary** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[200-300]** |
| | **Italy** | **[5-10]%** | **[20-30]%** | **[30-40]%** | **[1500-2000]** | **[2000-2500]** | **[300-400]** |
| | **Norway** | **[60-70]%** | **[30-40]%** | **[90-100]%** | **[4500-5000]** | **[8000-8500]** | **[3500-4000]** |
| | **Poland** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[2500-3000]** | **[2500-3000]** | **[0-100]** |
| | **Portugal** | **[20-30]%** | **[30-40]%** | **[60-70]%** | **[2500-3000]** | **[4000-4500]** | **[1500-2000]** |
| | **Romania** | **[40-50]%** | **[5-10]%** | **[50-60]%** | **[2500-3000]** | **[3500-4000]** | **[700-800]** |
| | **Slovakia** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[500-600]** |
| | **Spain** | **[10-20]%** | **[20-30]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[700-800]** |
| | **Sweden** | **[70-80]%** | **[5-10]%** | **[70-80]%** | **[5000-5500]** | **[6000-6500]** | **[800-900]** |
| | **UK** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4000-4500]** | **[0-100]** |
| | **Benelux** | **[20-30]%** | **[5-10]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[400-500]** |
| Oxygen | **Austria** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[400-500]** |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Bulgaria | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | **Czech Rep.** | **[50-60]%** | **[5-10]%** | **[60-70]%** | **[3500-4000]** | **[4500-5000]** | **[900-1000]** |
| | **Denmark** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[100-200]** |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | **Germany** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[700-800]** |
| | Hungary | [20-30]% | [5-10]% | [20-30]% | [2500-3000] | [3000-3500] | [200-300] |
| | Italy | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [200-300] |
| | **Norway** | **[50-60]%** | **[40-50]%** | **[90-100]%** | **[5000-5500]** | **[9500-10000]** | **[4500-5000]** |
| | Poland | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | **Portugal** | **[10-20]%** | **[20-30]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[800-900]** |
| | **Romania** | **[40-50]%** | **[0-5]%** | **[40-50]%** | **[2500-3000]** | **[3000-3500]** | **[300-400]** |
| | **Slovakia** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[600-700]** |
| | **Spain** | **[10-20]%** | **[30-40]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[800-900]** |
| | **Sweden** | **[70-80]%** | **[0-5]%** | **[70-80]%** | **[5000-5500]** | **[5500-6000]** | **[500-600]** |
| | **Benelux** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2000-2500]** | **[2500-3000]** | **[600-700]** |

*Source: response of 13 February 2018 to RFI 45.*

(257) Based on the results of the market reconstruction, the Commission notes the following, significant differences compared to the sales shares in volume submitted by the Notifying Parties.[340]

(258) With respect to the bulk supply of argon, the 2016 volume sales market shares provided by the Notifying Parties:

(a) at EEA level, underestimate the Notifying Parties' market position; in fact, the market reconstruction indicates that the combined market share of the Notifying Parties at this level was **[50-60]%**;[341] [342]

[340] Not all competitors were able to provide 2016 volume sales data at the level of the Commission's market definitions. Due to these restrictions the Commission could reconstruct only the combined market shares of Portugal and Spain.

[341] See footnote 336.

[342] For an explanation of the values emphasised in bold, see recital (263).

(b) at national level, underestimate the Notifying Parties' market positions in Austria, Benelux, Bulgaria, Denmark, Germany, Hungary, Italy, Romania, Slovakia; in fact, the market reconstruction indicates that the combined market shares of the Notifying Parties in these markets in 2016 were the following:

**Table 7: Sales shares for bulk supply of argon (volume, 2016)** [343] [344]

| Geography | Linde and Praxair (combined) |
|---|---|
| Austria | **[80-90]%** |
| Benelux | **[40-50]%** |
| Bulgaria | **[60-70]%** |
| Denmark | **[60-70]%** |
| Germany | **[50-60]%** |
| Hungary | **[60-70]%** |
| Italy | **[50-60]%** |
| Romania | **[60-70]%** |
| Slovakia | **[40-50]%** |

*Source: Commission's market reconstructions, made available in the data room.*

(c) are in line with the results of the market reconstruction in all other national markets where the Notifying Parties' activities horizontally overlap.

(259) With respect to the bulk supply of carbon dioxide, the 2016 volume sales market shares provided by the Notifying Parties:

(a) underestimate the Notifying Parties' market positions in Austria, the Czech Republic, Hungary, and Romania; in fact, the market reconstruction indicates that the combined market shares of the Notifying Parties in these markets in 2016 were the following:

**Table 8: Sales shares for bulk supply of carbon dioxide (volume, 2016)** [345] [346]

| Geography | Linde and Praxair (combined) |
|---|---|
| Austria | **[40-50]%** |
| Czech Republic | **[60-70]%** |
| Hungary | **[50-60]%** |
| Romania | **[60-70]%** |

*Source: Commission's market reconstructions, made available in the data room.*

(b) overestimate the Notifying Parties' market positions in the Benelux; in fact, the market reconstruction indicates that the combined market share of the Notifying Parties in this market in 2016 was **[40-50]%**;[347] [348]

(c) are in line with the results of the market reconstruction in all other national markets where the Notifying Parties' activities horizontally overlap.

(260) With respect to the bulk supply of nitrogen, the 2016 volume sales market shares provided by the Notifying Parties:

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343 See footnote 336.
344 For an explanation of the values emphasised in bold, see recital (263).
345 See footnote 336.
346 For an explanation of the values emphasised in bold, see recital (263).
347 See footnote 336.
348 For an explanation of the values emphasised in bold, see recital (263).

(a) underestimate the Notifying Parties' market positions in Bulgaria, Hungary, Italy and Romania; in fact, the market reconstruction indicates that the combined market shares of the Notifying Parties in these markets in 2016 were the following:

**Table 9: Sales shares for bulk supply of nitrogen (volume, 2016)** [349] [350]

| Geography | Linde and Praxair (combined) |
|---|---|
| Bulgaria | **[40-50]%** |
| Hungary | **[60-70]%** |
| Italy | **[40-50]%** |
| Romania | **[60-70]%** |

*Source: Commission's market reconstructions, made available in the data room.*

(b) are in line with the results of the market reconstruction in all other national markets where the Notifying Parties' activities horizontally overlap.

(261) With respect to the bulk supply of oxygen, the 2016 volume sales market shares provided by the Notifying Parties:

(a) underestimate the Notifying Parties' market positions in Hungary, Italy, Romania and Slovakia; in fact, the market reconstruction indicates that the combined market shares of the Notifying Parties in these markets in 2016 were the following:

**Table 10: Sales shares for bulk supply of oxygen (volume, 2016)** [351] [352]

| Geography | Linde and Praxair (combined) |
|---|---|
| Hungary | **[40-50]%** |
| Italy | **[40-50]%** |
| Romania | **[60-70]%** |
| Slovakia | **[70-80]%** |

*Source: Commission's market reconstructions, made available in the data room.*

(b) overestimate the Notifying Parties' market positions in the Czech Republic; in fact, the market reconstruction indicates that the combined market share of the Notifying Parties in this market in 2016 was **[40-50]%**;[353] [354]

(c) are in line with the results of the market reconstruction in all other national markets where the Notifying Parties' activities horizontally overlap.

(262) With respect to the bulk supply of hydrogen in Germany, the 2016 volume sales market shares provided by the Notifying Parties somewhat overestimate the Notifying Parties' market positions; in fact, the market reconstruction indicates that the combined market share of the Notifying Parties in this market in 2016 would be **[30-40]%**.[355] [356]

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349 See footnote 336.
350 For an explanation of the values emphasised in bold, see recital (263).
351 See footnote 336.
352 For an explanation of the values emphasised in bold, see recital (263).
353 See footnote 336.
354 For an explanation of the values emphasised in bold, see recital (263).
355 See footnote 336.
356 For an explanation of the values emphasised in bold, see recital (263).

iv. Cylinders

**Table 11: Sales shares for cylinder supply of industrial gases (2016)**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| **ALL PURITY GRADES** | | | | | | | |
| Acetylene | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [20-30]% | [20-30]% | [40-50]% | [1500-2000] | [2500-3000] | [800-900] |
| | Czech Republic | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Denmark | [20-30]% | [20-30]% | [40-50]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Germany | [40-50]% | [5-10]% | [50-60]% | [2500-3000] | [3500-4000] | [600-700] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [700-800] |
| | Italy | [0-5]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Lithuania | [40-50]% | [0-5]% | [40-50]% | [5000-5500] | [5000-5500] | [0-100] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4500-5000] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [50-60]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [500-600] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [500-600] |
| | Sweden | [70-80]% | [5-10]% | [70-80]% | [5500-6000] | [6000-6500] | [700-800] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [300-400] |
| Argon | Austria | [20-30]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [10-20]% | [30-40]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Denmark | [40-50]% | [10-20]% | [50-60]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |
| | Hungary | [40-50]% | [10-20]% | [60-70]% | [3500-4000] | [5000-5500] | [1000-1500] |
| | Ireland | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [300-400] |
| | Norway | [60-70]% | [10-20]% | [80-90]% | [5000-5500] | [7500-8000] | [2500-3000] |
| | Poland | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [5000-5500] | [1500-2000] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [600-700] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [200-300] |
| | UK | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [200-300] |
| Carbon dioxide – excl. dry ice | Austria | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [200-300] |
| | Bulgaria | [10-20]% | [10-20]% | [30-40]% | [1500-2000] | [2500-3000] | [500-600] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3000-3500] | [4000-4500] | [700-800] |
| | Denmark | [20-30]% | [30-40]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | France | [20-30]% | [0-5]% | [30-40]% | [3000-3500] | [3000-3500] | [100-200] |
| | Germany | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [500-600] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [600-700] |
| | Ireland | [70-80]% | [5-10]% | [70-80]% | [5000-5500] | [6500-7000] | [1000-1500] |
| | Italy | [0-5]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Norway | [50-60]% | [30-40]% | [80-90]% | [3500-4000] | [7000-7500] | [3000-3500] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Poland | [30-40]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [100-200] |
| | Portugal | [10-20]% | [20-30]% | [40-50]% | [2000-2500] | [2500-3000] | [700-800] |
| | Romania | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [300-400] |
| | Spain | [5-10]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Sweden | [60-70]% | [0-5]% | [70-80]% | [4500-5000] | [5000-5500] | [500-600] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Benelux | [10-20]% | [0-5]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| Hydrogen | Austria | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Bulgaria | [20-30]% | [30-40]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Denmark | [30-40]% | [5-10]% | [30-40]% | [3000-3500] | [3500-4000] | [300-400] |
| | Germany | [40-50]% | [5-10]% | [50-60]% | [2000-2500] | [3000-3500] | [600-700] |
| | Hungary | [20-30]% | [0-5]% | [30-40]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [0-5]% | [20-30]% | [30-40]% | [2000-2500] | [2000-2500] | [200-300] |
| | Norway | [30-40]% | [40-50]% | [70-80]% | [3000-3500] | [6000-6500] | [2500-3000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Portugal | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [2500-3000] | [400-500] |
| | Romania | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [900-1000] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3500-4000] | [700-800] |
| | Spain | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Sweden | [70-80]% | [0-5]% | [70-80]% | [6000-6500] | [6000-6500] | [100-200] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitrogen | Austria | [20-30]% | [0-5]% | [20-30]% | [2500-3000] | [2500-3000] | [0-100] |
| | Bulgaria | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [300-400] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4500-5000] | [900-1000] |
| | Denmark | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3500-4000] | [700-800] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [0-100] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [200-300] |
| | Hungary | [40-50]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [600-700] |
| | Italy | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Norway | [60-70]% | [30-40]% | [90-100]% | [5000-5500] | [9000-9500] | [4000-4500] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [40-50]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [700-800] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3500-4000] | [700-800] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [700-800] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [400-500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Oxygen | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [200-300] |
| | Bulgaria | [10-20]% | [30-40]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Czech Republic | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Denmark | [30-40]% | [20-30]% | [50-60]% | [2500-3000] | [4000-4500] | [1500-2000] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [20-30]% | [5-10]% | [30-40]% | [1500-2000] | [1500-2000] | [200-300] |
| | Hungary | [40-50]% | [10-20]% | [50-60]% | [3500-4000] | [4500-5000] | [900-1000] |
| | Ireland | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Italy | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4000-4500] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2500-3000] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [40-50]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1500-2000] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [500-600] |
| | Spain | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [60-70]% | [5-10]% | [70-80]% | [4500-5000] | [5000-5500] | [800-900] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [100-200] |
| | Benelux | [10-20]% | [5-10]% | [10-20]% | [1500-2000] | [1500-2000] | [100-200] |
| **STANDARD PURITY GRADES** | | | | | | | |
| Acetylene | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1500-2000] |
| | Czech Republic | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Denmark | [20-30]% | [20-30]% | [40-50]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Germany | [40-50]% | [5-10]% | [50-60]% | [2500-3000] | [3500-4000] | [600-700] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [700-800] |
| | Italy | [0-5]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Lithuania | [40-50]% | [0-5]% | [40-50]% | [5000-5500] | [5000-5500] | [0-100] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4500-5000] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Romania | [50-60]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [500-600] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [500-600] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Sweden | [70-80]% | [5-10]% | [70-80]% | [5500-6000] | [6000-6500] | [700-800] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [300-400] |
| Argon | Austria | [20-30]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [100-200] |
| | Bulgaria | [10-20]% | [30-40]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Denmark | [40-50]% | [10-20]% | [50-60]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [0-100] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |
| | Hungary | [40-50]% | [10-20]% | [60-70]% | [3500-4000] | [5000-5500] | [1000-1500] |
| | Ireland | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [300-400] |
| | Norway | [60-70]% | [10-20]% | [80-90]% | [5000-5500] | [7500-8000] | [2500-3000] |
| | Poland | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1500-2000] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [600-700] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [200-300] |
| | UK | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [200-300] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Carbon dioxide – excl. dry ice | Austria | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [200-300] |
| | Bulgaria | [10-20]% | [10-20]% | [30-40]% | [1500-2000] | [2500-3000] | [600-700] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3000-3500] | [4000-4500] | [600-700] |
| | Denmark | [20-30]% | [30-40]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | France | [20-30]% | [0-5]% | [30-40]% | [3000-3500] | [3500-4000] | [100-200] |
| | Germany | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [500-600] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [600-700] |
| | Ireland | [70-80]% | [5-10]% | [70-80]% | [5000-5500] | [6500-7000] | [1000-1500] |
| | Italy | [0-5]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Norway | [50-60]% | [20-30]% | [80-90]% | [3500-4000] | [6500-7000] | [3000-3500] |
| | Poland | [30-40]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [100-200] |
| | Portugal | [10-20]% | [20-30]% | [40-50]% | [2000-2500] | [2500-3000] | [700-800] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [300-400] |
| | Spain | [5-10]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Sweden | [60-70]% | [0-5]% | [70-80]% | [4500-5000] | [5000-5500] | [400-500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Benelux | [10-20]% | [0-5]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| Carbon monoxide | Czech Republic | [0-5]% | [90-100]% | [90-100]% | [8500-9000] | [9000-9500] | [500-600] |
| | Germany | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [0-100] |
| | Norway | [20-30]% | [0-5]% | [20-30]% | [6000-6500] | [6500-7000] | [0-100] |
| Hydrogen | Austria | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Czech Republic | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [200-300] |
| | Denmark | [30-40]% | [0-5]% | [30-40]% | [3500-4000] | [3500-4000] | [100-200] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Germany | [40-50]% | [5-10]% | [50-60]% | [2000-2500] | [3000-3500] | [600-700] |
| | Hungary | [30-40]% | [0-5]% | [30-40]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [5-10]% | [10-20]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Norway | [30-40]% | [30-40]% | [70-80]% | [3000-3500] | [5500-6000] | [2500-3000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Portugal | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Sweden | [70-80]% | [0-5]% | [70-80]% | [6000-6500] | [6500-7000] | [0-100] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| Nitrogen | Austria | [20-30]% | [0-5]% | [20-30]% | [2500-3000] | [2500-3000] | [0-100] |
| | Bulgaria | [20-30]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [700-800] |
| | Czech Republic | [60-70]% | [5-10]% | [60-70]% | [3500-4000] | [4500-5000] | [600-700] |
| | Denmark | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3500-4000] | [700-800] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [0-100] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [200-300] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [500-600] |
| | Italy | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Norway | [60-70]% | [30-40]% | [90-100]% | [5000-5500] | [9000-9500] | [3500-4000] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Romania | [40-50]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [600-700] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3500-4000] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [700-800] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [400-500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Nitrous oxide | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [700-800] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [700-800] |
| Oxygen | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [200-300] |
| | Bulgaria | [10-20]% | [30-40]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4000-4500] | [800-900] |
| | Denmark | [30-40]% | [20-30]% | [60-70]% | [2500-3000] | [4500-5000] | [1500-2000] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [20-30]% | [5-10]% | [30-40]% | [1500-2000] | [1500-2000] | [200-300] |
| | Hungary | [40-50]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [800-900] |
| | Ireland | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [200-300] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4000-4500] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2500-3000] | [1000-1500] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [60-70]% | [5-10]% | [70-80]% | [4500-5000] | [5000-5500] | [800-900] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [100-200] |
| | Benelux | [5-10]% | [5-10]% | [10-20]% | [1500-2000] | [1500-2000] | [100-200] |
| **HIGH PURITY GRADES** | | | | | | | |
| Acetylene | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Czech Republic | [60-70]% | [5-10]% | [60-70]% | [4000-4500] | [4500-5000] | [600-700] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Germany | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| | Hungary | [40-50]% | [10-20]% | [50-60]% | [4000-4500] | [5000-5500] | [800-900] |
| | Norway | [50-60]% | [10-20]% | [70-80]% | [4000-4500] | [6000-6500] | [2000-2500] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [0-5]% | [30-40]% | [3000-3500] | [3000-3500] | [100-200] |
| | Spain | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [0-100] |
| | Benelux | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| Acetylene | EEA | [20-30]% | [5-10]% | [20-30]% | [1500-2000] | [1500-2000] | [200-300] |
| Argon | Austria | [5-10]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [300-400] |
| | Czech Republic | [5-10]% | [70-80]% | [80-90]% | [6000-6500] | [7500-8000] | [1000-1500] |
| | Denmark | [10-20]% | [0-5]% | [20-30]% | [2500-3000] | [2500-3000] | [100-200] |
| | Germany | [20-30]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [300-400] |
| | Hungary | [0-5]% | [40-50]% | [40-50]% | [4500-5000] | [4500-5000] | [100-200] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Norway | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [5000-5500] | [1000-1500] |
| | Romania | [5-10]% | [80-90]% | [80-90]% | [6000-6500] | [7500-8000] | [1000-1500] |
| | Slovakia | [20-30]% | [40-50]% | [60-70]% | [2500-3000] | [4500-5000] | [1500-2000] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [300-400] |
| Argon | EEA | [10-20]% | [30-40]% | [40-50]% | [1500-2000] | [2000-2500] | [600-700] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Carbon dioxide – excl. dry ice | Austria | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [100-200] |
| | Czech Republic | [70-80]% | [10-20]% | [80-90]% | [5500-6000] | [7500-8000] | [2000-2500] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Germany | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Hungary | [30-40]% | [10-20]% | [50-60]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Italy | [0-5]% | [40-50]% | [50-60]% | [2500-3000] | [3000-3500] | [300-400] |
| | Norway | [0-5]% | [90-100]% | [90-100]% | [9500-10000] | [9500-10000] | [300-400] |
| | Portugal | [10-20]% | [20-30]% | [40-50]% | [2000-2500] | [2500-3000] | [700-800] |
| | Romania | [60-70]% | [5-10]% | [60-70]% | [4000-4500] | [5000-5500] | [900-1000] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | Sweden | [10-20]% | [40-50]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| Carbon dioxide – excl. dry ice | EEA | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [2000-2500] | [600-700] |
| Hydrogen | Czech Republic | [20-30]% | [50-60]% | [80-90]% | [3500-4000] | [6500-7000] | [2500-3000] |
| | Denmark | [30-40]% | [30-40]% | [60-70]% | [3000-3500] | [5000-5500] | [2000-2500] |
| | Germany | [30-40]% | [10-20]% | [50-60]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | Hungary | [0-5]% | [40-50]% | [40-50]% | [4500-5000] | [4500-5000] | [200-300] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3000-3500] | [0-100] |
| | Norway | [0-5]% | [90-100]% | [90-100]% | [9000-9500] | [9500-10000] | [600-700] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2500-3000] | [200-300] |
| | Romania | [10-20]% | [60-70]% | [80-90]% | [5000-5500] | [6500-7000] | [1500-2000] |
| | Slovakia | [10-20]% | [40-50]% | [60-70]% | [3000-3500] | [5000-5500] | [1500-2000] |
| | Sweden | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3500-4000] | [800-700] |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| Hydrogen | EEA | [5-10]% | [30-40]% | [40-50]% | [2000-2500] | [2500-3000] | [600-700] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitrogen | Austria | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Czech Republic | [5-10]% | [80-90]% | [90-100]% | [8000-8500] | [9000-9500] | [1000-1500] |
| | Denmark | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| | Germany | [40-50]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [400-500] |
| | Hungary | [20-30]% | [30-40]% | [50-60]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3000-3500] | [0-100] |
| | Norway | [40-50]% | [50-60]% | [90-100]% | [5000-5500] | [9500-10000] | [4500-5000] |
| | Romania | [20-30]% | [60-70]% | [80-90]% | [4000-4500] | [6500-7000] | [2000-2500] |
| | Slovakia | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3500-4000] | [0-100] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [600-700] |
| | Sweden | [60-70]% | [10-20]% | [70-80]% | [4500-5000] | [6000-6500] | [1500-2000] |
| Nitrogen | EEA | [10-20]% | [30-40]% | [40-50]% | [1500-2000] | [2000-2500] | [600-700] |
| Oxygen | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| | Czech Republic | [10-20]% | [70-80]% | [80-90]% | [5500-6000] | [7500-8000] | [1500-2000] |
| | Denmark | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [200-300] |
| | Germany | [40-50]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Hungary | [5-10]% | [30-40]% | [40-50]% | [3500-4000] | [4000-4500] | [600-700] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Norway | [40-50]% | [10-20]% | [50-60]% | [3000-3500] | [4500-5000] | [1500-2000] |
| | Portugal | [20-30]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| | Romania | [10-20]% | [70-80]% | [90-100]% | [5500-6000] | [8000-8500] | [2500-3000] |
| | Slovakia | [0-5]% | [30-40]% | [30-40]% | [3000-3500] | [3000-3500] | [100-200] |
| | Spain | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [300-400] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Oxygen | EEA | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [2000-2500] | [600-700] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| **ALL PURITY GRADES** | | | | | | | |
| Acetylene | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Denmark | [20-30]% | [20-30]% | [40-50]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Germany | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [800-900] |
| | Italy | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| | Lithuania | [40-50]% | [0-5]% | [40-50]% | [5000-5500] | [5000-5500] | [0-100] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4500-5000] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2500-3000] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [50-60]% | [5-10]% | [50-60]% | [3000-3500] | [4000-4500] | [500-600] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| | Sweden | [60-70]% | [5-10]% | [70-80]% | [5000-5500] | [6000-6500] | [1000-1500] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [20-30]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [300-400] |
| Argon | Austria | [20-30]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [10-20]% | [40-50]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5500-6000] | [2000-2500] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Denmark | [40-50]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [100-200] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |
| | Hungary | [40-50]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Ireland | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [200-300] |
| | Norway | [60-70]% | [20-30]% | [90-100]% | [5000-5500] | [8500-9000] | [3000-3500] |
| | Poland | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [40-50]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| | Sweden | [60-70]% | [0-5]% | [70-80]% | [4500-5000] | [5000-5500] | [500-600] |
| | UK | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [0-100] |
| | Benelux | [10-20]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |
| Carbon dioxide – excl. dry ice | Austria | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [300-400] |
| | Bulgaria | [10-20]% | [10-20]% | [30-40]% | [1500-2000] | [2500-3000] | [600-700] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4000-4500] | [800-900] |
| | Denmark | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Germany | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [2500-3000] | [700-800] |
| | Hungary | [50-60]% | [10-20]% | [60-70]% | [4000-4500] | [5000-5500] | [1000-1500] |
| | Ireland | [70-80]% | [5-10]% | [70-80]% | [5000-5500] | [6500-7000] | [1000-1500] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Italy | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| | Norway | [50-60]% | [30-40]% | [80-90]% | [3500-4000] | [7000-7500] | [3000-3500] |
| | Poland | [30-40]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [200-300] |
| | Portugal | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [700-800] |
| | Romania | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | Spain | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | Sweden | [70-80]% | [5-10]% | [70-80]% | [5000-5500] | [6000-6500] | [1000-1500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Benelux | [10-20]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [100-200] |
| Hydrogen | Austria | [10-20]% | [0-5]% | [10-20]% | [3000-3500] | [3000-3500] | [0-100] |
| | Bulgaria | [0-5]% | [40-50]% | [50-60]% | [3000-3500] | [3000-3500] | [200-300] |
| | Czech Republic | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4500-5000] | [500-600] |
| | Denmark | [20-30]% | [0-5]% | [30-40]% | [3500-4000] | [3500-4000] | [100-200] |
| | Germany | [40-50]% | [5-10]% | [50-60]% | [2000-2500] | [3000-3500] | [600-700] |
| | Hungary | [30-40]% | [0-5]% | [30-40]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [2000-2500] | [100-200] |
| | Norway | [30-40]% | [40-50]% | [70-80]% | [3000-3500] | [5500-6000] | [2500-3000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Portugal | [0-5]% | [0-5]% | [5-10]% | [3000-3500] | [3000-3500] | [0-100] |
| | Romania | [50-60]% | [0-5]% | [50-60]% | [3000-3500] | [3000-3500] | [100-200] |
| | Slovakia | [40-50]% | [0-5]% | [40-50]% | [3000-3500] | [3000-3500] | [100-200] |
| | Spain | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Sweden | [70-80]% | [0-5]% | [70-80]% | [6000-6500] | [6500-7000] | [0-100] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | UK | [40-50]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [3500-4000] | [4500-5000] | [500-600] |
| Nitrogen | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Bulgaria | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4000-4500] | [600-700] |
| | Denmark | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [0-100] |
| | France | [30-40]% | [0-5]% | [30-40]% | [3000-3500] | [3000-3500] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2000-2500] | [300-400] |
| | Hungary | [40-50]% | [10-20]% | [50-60]% | [3500-4000] | [4500-5000] | [900-1000] |
| | Italy | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Norway | [60-70]% | [20-30]% | [90-100]% | [4500-5000] | [8500-9000] | [3500-4000] |
| | Portugal | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [3000-3500] | [700-800] |
| | Romania | [40-50]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [500-600] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [400-500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Oxygen | Austria | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Bulgaria | [10-20]% | [30-40]% | [50-60]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Denmark | [30-40]% | [20-30]% | [60-70]% | [2500-3000] | [5000-5500] | [2000-2500] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [20-30]% | [5-10]% | [30-40]% | [1500-2000] | [1500-2000] | [300-400] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Hungary | [40-50]% | [5-10]% | [50-60]% | [3500-4000] | [4500-5000] | [800-900] |
| | Ireland | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4000-4500] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [300-400] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [60-70]% | [5-10]% | [70-80]% | [4500-5000] | [5000-5500] | [800-900] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |
| **STANDARD PURITY GRADES** | | | | | | | |
| Acetylene | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Denmark | [20-30]% | [20-30]% | [40-50]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Germany | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Hungary | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [800-900] |
| | Italy | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| | Lithuania | [40-50]% | [0-5]% | [40-50]% | [5000-5500] | [5000-5500] | [0-100] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4500-5000] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2500-3000] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Romania | [50-60]% | [5-10]% | [50-60]% | [3000-3500] | [4000-4500] | [500-600] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| | Sweden | [60-70]% | [5-10]% | [70-80]% | [5000-5500] | [6000-6500] | [1000-1500] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [20-30]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [300-400] |
| Argon | Austria | [20-30]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [200-300] |
| | Bulgaria | [10-20]% | [40-50]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5500-6000] | [2000-2500] |
| | Denmark | [40-50]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [100-200] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |
| | Hungary | [40-50]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Ireland | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [200-300] |
| | Norway | [60-70]% | [20-30]% | [90-100]% | [5000-5500] | [8500-9000] | [3000-3500] |
| | Poland | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | Romania | [40-50]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| | Sweden | [60-70]% | [0-5]% | [70-80]% | [4500-5000] | [5000-5500] | [500-600] |
| | UK | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [0-100] |
| | Benelux | [10-20]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Carbon dioxide – excl. dry ice | Austria | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [300-400] |
| | Bulgaria | [10-20]% | [10-20]% | [30-40]% | [1500-2000] | [2500-3000] | [600-700] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4000-4500] | [800-900] |
| | Denmark | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Germany | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [2500-3000] | [700-800] |
| | Hungary | [50-60]% | [10-20]% | [60-70]% | [4000-4500] | [5000-5500] | [1000-1500] |
| | Ireland | [70-80]% | [5-10]% | [70-80]% | [5000-5500] | [6500-7000] | [1000-1500] |
| | Italy | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| | Norway | [50-60]% | [20-30]% | [80-90]% | [3500-4000] | [6500-7000] | [3000-3500] |
| | Poland | [30-40]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [200-300] |
| | Portugal | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [700-800] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | Spain | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | Sweden | [70-80]% | [5-10]% | [70-80]% | [5000-5500] | [6000-6500] | [1000-1500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Benelux | [10-20]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [100-200] |
| Carbon monoxide | Czech Republic | [0-5]% | [90-100]% | [90-100]% | [8500-9000] | [8500-9000] | [0-100] |
| | Germany | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Norway | [20-30]% | [0-5]% | [20-30]% | [6000-6500] | [6500-7000] | [0-100] |
| Hydrogen | Austria | [10-20]% | [0-5]% | [10-20]% | [3000-3500] | [3000-3500] | [0-100] |
| | Czech Republic | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [200-300] |
| | Denmark | [20-30]% | [0-5]% | [30-40]% | [3500-4000] | [3500-4000] | [100-200] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Germany | [40-50]% | [5-10]% | [50-60]% | [2000-2500] | [3000-3500] | [600-700] |
| | Hungary | [30-40]% | [0-5]% | [30-40]% | [4000-4500] | [4000-4500] | [0-100] |
| | Italy | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [2000-2500] | [0-100] |
| | Norway | [30-40]% | [30-40]% | [70-80]% | [3000-3500] | [5500-6000] | [2500-3000] |
| | Poland | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Portugal | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Sweden | [70-80]% | [0-5]% | [70-80]% | [6500-7000] | [6500-7000] | [0-100] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [3500-4000] | [4500-5000] | [500-600] |
| Nitrogen | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Bulgaria | [20-30]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4000-4500] | [600-700] |
| | Denmark | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Finland | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [0-100] |
| | France | [30-40]% | [0-5]% | [30-40]% | [3000-3500] | [3000-3500] | [0-100] |
| | Germany | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2000-2500] | [300-400] |
| | Hungary | [50-60]% | [10-20]% | [50-60]% | [3500-4000] | [4500-5000] | [900-1000] |
| | Italy | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Norway | [60-70]% | [20-30]% | [90-100]% | [4500-5000] | [8500-9000] | [3500-4000] |
| | Portugal | [10-20]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| | Romania | [40-50]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [500-600] |
| | Slovakia | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [400-500] |
| | UK | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Nitrous oxide | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [700-800] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| Oxygen | Austria | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Bulgaria | [10-20]% | [30-40]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Czech Republic | [50-60]% | [5-10]% | [60-70]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Denmark | [30-40]% | [20-30]% | [60-70]% | [2500-3000] | [5000-5500] | [2000-2500] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| | Germany | [20-30]% | [5-10]% | [30-40]% | [1500-2000] | [1500-2000] | [300-400] |
| | Hungary | [40-50]% | [5-10]% | [50-60]% | [3500-4000] | [4500-5000] | [800-900] |
| | Ireland | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |
| | Italy | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | Norway | [50-60]% | [30-40]% | [90-100]% | [4000-4500] | [8000-8500] | [3500-4000] |
| | Poland | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [300-400] |
| | Portugal | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Romania | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Slovakia | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Spain | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [60-70]% | [5-10]% | [70-80]% | [4500-5000] | [5000-5500] | [800-900] |
| | UK | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [0-100] |
| | Benelux | [10-20]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |
| **HIGH PURITY GRADES** | | | | | | | |
| Acetylene | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Czech Republic | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [200-300] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Germany | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| | Hungary | [40-50]% | [10-20]% | [50-60]% | [4000-4500] | [5000-5500] | [1000-1500] |
| | Norway | [60-70]% | [10-20]% | [70-80]% | [4000-4500] | [6000-6500] | [1500-2000] |
| | Romania | [40-50]% | [10-20]% | [60-70]% | [2500-3000] | [4000-4500] | [1000-1500] |
| | Slovakia | [30-40]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | Spain | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [0-100] |
| | Benelux | [10-20]% | [0-5]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| Acetylene | EEA | [20-30]% | [5-10]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |
| | Austria | [5-10]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [300-400] |
| | Belgium | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Czech Republic | [0-5]% | [70-80]% | [80-90]% | [6000-6500] | [6500-7000] | [600-700] |
| | Denmark | [10-20]% | [0-5]% | [20-30]% | [2500-3000] | [3000-3500] | [100-200] |
| | Germany | [20-30]% | [5-10]% | [30-40]% | [1500-2000] | [2000-2500] | [300-400] |
| | Hungary | [0-5]% | [40-50]% | [40-50]% | [4500-5000] | [4500-5000] | [100-200] |
| Argon | Italy | [0-5]% | [40-50]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | Norway | [50-60]% | [10-20]% | [60-70]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Romania | [5-10]% | [80-90]% | [80-90]% | [6000-6500] | [7500-8000] | [1000-1500] |
| | Slovakia | [20-30]% | [40-50]% | [60-70]% | [2500-3000] | [4500-5000] | [1500-2000] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [200-300] |
| | Benelux | [5-10]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |
| Argon | EEA | [5-10]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Carbon dioxide – excl. dry ice | Austria | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [5000-5500] | [100-200] |
| | Czech Republic | [70-80]% | [10-20]% | [80-90]% | [5500-6000] | [7500-8000] | [2000-2500] |
| | France | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Germany | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Hungary | [30-40]% | [10-20]% | [50-60]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [2500-3000] | [3000-3500] | [100-200] |
| | Norway | [0-5]% | [90-100]% | [90-100]% | [9500-10000] | [9500-10000] | [200-300] |
| | Portugal | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [700-800] |
| | Romania | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4500-5000] | [300-400] |
| | Slovakia | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| | Sweden | [10-20]% | [40-50]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| Carbon dioxide – excl. dry ice | EEA | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [2000-2500] | [500-600] |
| Hydrogen | Czech Republic | [20-30]% | [50-60]% | [80-90]% | [3500-4000] | [6500-7000] | [2500-3000] |
| | Denmark | [20-30]% | [30-40]% | [60-70]% | [3000-3500] | [5000-5500] | [1500-2000] |
| | Germany | [30-40]% | [10-20]% | [50-60]% | [2000-2500] | [3000-3500] | [1000-1500] |
| | Hungary | [0-5]% | [40-50]% | [40-50]% | [3500-4000] | [4000-4500] | [200-300] |
| | Italy | [0-5]% | [40-50]% | [50-60]% | [3000-3500] | [3000-3500] | [300-400] |
| | Norway | [0-5]% | [90-100]% | [90-100]% | [9000-9500] | [9500-10000] | [500-600] |
| | Poland | [30-40]% | [5-10]% | [30-40]% | [2000-2500] | [2500-3000] | [300-400] |
| | Romania | [10-20]% | [60-70]% | [80-90]% | [5000-5500] | [6500-7000] | [1500-2000] |
| | Slovakia | [10-20]% | [40-50]% | [60-70]% | [3000-3500] | [4500-5000] | [1500-2000] |
| | Sweden | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [800-900] |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [2000-2500] | [3000-3500] | [500-600] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Hydrogen | EEA | [5-10]% | [30-40]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| Nitrogen | Austria | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Czech Republic | [5-10]% | [80-90]% | [90-100]% | [8000-8500] | [9000-9500] | [1000-1500] |
| | Denmark | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| | Germany | [40-50]% | [5-10]% | [40-50]% | [2500-3000] | [2500-3000] | [400-500] |
| | Hungary | [20-30]% | [30-40]% | [50-60]% | [3500-4000] | [4500-5000] | [1000-1500] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3000-3500] | [100-200] |
| | Norway | [40-50]% | [50-60]% | [90-100]% | [5000-5500] | [9500-10000] | [4500-5000] |
| | Romania | [20-30]% | [60-70]% | [80-90]% | [4000-4500] | [6500-7000] | [2000-2500] |
| | Slovakia | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3000-3500] | [100-200] |
| | Spain | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| | Sweden | [50-60]% | [10-20]% | [70-80]% | [4000-4500] | [5500-6000] | [1500-2000] |
| Nitrogen | EEA | [5-10]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| Oxygen | Austria | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| | Czech Republic | [10-20]% | [70-80]% | [80-90]% | [5500-6000] | [7500-8000] | [1500-2000] |
| | Denmark | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [0-100] |
| | Germany | [40-50]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Hungary | [5-10]% | [30-40]% | [40-50]% | [3500-4000] | [4000-4500] | [600-700] |
| | Italy | [0-5]% | [40-50]% | [40-50]% | [2500-3000] | [2500-3000] | [200-300] |
| | Norway | [40-50]% | [10-20]% | [50-60]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Portugal | [20-30]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| | Romania | [10-20]% | [70-80]% | [90-100]% | [5500-6000] | [8000-8500] | [2500-3000] |
| | Slovakia | [0-5]% | [30-40]% | [30-40]% | [3000-3500] | [3000-3500] | [100-200] |
| | Spain | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [300-400] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Sweden | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |
| Oxygen | EEA | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [2500-3000] | [600-700] |

*Source: response of 13 February 2018 to RFI 45.*

v. Dry ice

**Table 12: Sales shares for dry ice (2016)**

| | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|
| **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Austria | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3000-3500] | [100-200] |
| Czech Rep. | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [100-200] |
| Denmark | [20-30]% | [60-70]% | [90-100]% | [5000-5500] | [8000-8500] | [3000-3500] |
| France | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| Germany | [20-30]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1500-2000] |
| Hungary | [40-50]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| Ireland | [5-10]% | [40-50]% | [50-60]% | [4000-4500] | [5000-5500] | [500-600] |
| Italy | [0-5]% | [30-40]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| Norway | [10-20]% | [70-80]% | [90-100]% | [5000-5500] | [8000-8500] | [2500-3000] |
| Portugal | [20-30]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [800-900] |
| Romania | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| Spain | [5-10]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [400-500] |
| Sweden | [70-80]% | [20-30]% | [90-100]% | [5500-6000] | [9000-9500] | [3000-3500] |
| UK | [10-20]% | [30-40]% | [40-50]% | [2500-3000] | [3500-4000] | [900-1000] |
| Benelux | [5-10]% | [30-40]% | [40-50]% | [2000-2500] | [2500-3000] | [500-600] |

| | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|
| Geography | Linde | Praxair | Comb. | HHI PRE | HHI POST | Δ HHI |
| Austria | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3000-3500] | [100-200] |
| Czech Rep. | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [200-300] |
| Denmark | [20-30]% | [60-70]% | [90-100]% | [5000-5500] | [8000-8500] | [3000-3500] |
| France | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| Germany | [20-30]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1500-2000] |
| Hungary | [30-40]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| Ireland | [5-10]% | [50-60]% | [50-60]% | [4500-5000] | [5000-5500] | [600-700] |
| Italy | [0-5]% | [30-40]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| Norway | [10-20]% | [70-80]% | [90-100]% | [5000-5500] | [8000-8500] | [2500-3000] |
| Portugal | [20-30]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| Romania | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [100-200] |
| Spain | [5-10]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [400-500] |
| Sweden | [70-80]% | [20-30]% | [90-100]% | [6000-6500] | [9500-10000] | [3500-4000] |
| UK | [10-20]% | [30-40]% | [40-50]% | [2500-3000] | [3500-4000] | [900-1000] |

| | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|
| Geography | Linde | Praxair | Comb. | HHI PRE | HHI POST | Δ HHI |
| Benelux | [5-10]% | [30-40]% | [40-50]% | [2000-2500] | [2500-3000] | [600-700] |

*Source: response of 13 February 2018 to RFI 45.*

**b. Vertically affected markets**

(263) Table 13 shows Linde's 2016 market shares based on **sales in volume and value** in the bulk markets where it holds a market share of 30% or more, and Praxair is not currently active.[357] These markets are **vertically affected**[358] in view of the link with the supply of industrial gases in cylinders identified in Section 8.1.2, and so are the bulk markets illustrated in Table 6 where the combined market shares are above 30% (highlighted in **bold** in Table 6).

(264) Detailed market share data, based on sales in volume and value, including of the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms integral part of this Decision.

**Table 13: Linde's sales shares above 30% in bulk markets where Praxair is not active (2016)**

| Product | Geography | VALUE | VOLUME |
|---|---|---|---|
| Acetylene | Austria | [90-100]% | [90-100]% |
| | Czech Republic | [50-60]% | [50-60]% |
| | Germany | [50-60]% | [50-60]% |
| | Poland | [40-50]% | [50-60]% |
| | Benelux | [90-100]% | [90-100]% |
| Carbon monoxide | Norway | [90-100]% | [90-100]% |
| | Benelux | [40-50]% | [40-50]% |
| Hydrogen | Austria | [70-80]% | [70-80]% |
| | Benelux | [40-50]% | [40-50]% |
| Nitrous oxide | Benelux | [90-100]% | [90-100]% |

*Source: response of 13 February 2018 to RFI 45.*

(265) Based on the results of the market reconstruction, the Commission notes the following significant differences compared to the sales shares in volume submitted by the Notifying Parties.

(266) With respect to the bulk supply of carbon dioxide, the 2016 volume sales market shares provided by the Notifying Parties:

(a) underestimate Linde's market position in Finland: in fact, the market reconstruction indicates that Linde's market share in this market in 2016 was [70-80]%;[359]

(b) are in line with the results of the market reconstruction in all other national markets where a vertical link between the Notifying Parties' activities arises.

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357 Based on the data submitted by the Notifying Parties, there are no markets where Praxair holds a market share of 30% or more, and Linde is not currently active.

358 Affected markets are identified on the basis of the sales market shares by either value or volume. However, for the reasons explained in recital (249), it appears that value market shares should be considered more informative.

359 See footnote 336. For an explanation of the values emphasised in bold, see recital (263).

(267) With respect to the bulk supply of nitrogen, the 2016 volume sales market shares provided by the Notifying Parties:

(a) underestimate Linde's market position in Finland: in fact, the market reconstruction indicates that Linde's market share in this market in 2016 was [80-90]%;[360]

(b) are in line with the results of the market reconstruction in all other national markets where a vertical link between the Notifying Parties' activities arises.

(268) With respect to the bulk supply of oxygen, the 2016 volume sales market shares provided by the Notifying Parties:

(a) underestimate Linde's market position in Estonia: in fact, the market reconstruction indicates that Linde's market share in this market in 2016 was [90-100]%; [361]

(b) are in line with the results of the market reconstruction in all other national markets where a vertical link between the Notifying Parties' activities arises.

(269) With respect to the bulk supply of hydrogen, the 2016 volume sales market shares provided by the Notifying Parties:

(a) underestimate Linde's market position in Hungary, Poland and Sweden. In fact, the market reconstruction indicates that Linde's market shares in these markets in 2016 were the following:

**Table 14: Sales shares for bulk supply of hydrogen (volume, 2016)** [362]

| Geography | Combined |
|---|---|
| Hungary | **[90-100]%** |
| Poland | **[40-50]%** |
| Sweden | **[90-100]%** |

*Source: Commission's market reconstructions, made available in the data room.*

(b) overestimate Linde's market position in the Benelux and Denmark: indeed, the market reconstruction indicates that Linde's market share in these markets in 2016 was, respectively, [10-20]% and [0-5]%;[363]

(c) are in line with the results of the market reconstruction in all other national markets where a vertical link between the Notifying Parties' activities arises.

8.2.1.1.2. Capacity shares

(270) Market shares on **production capacity in volume**, together with capacity utilization rates can be used to assess the potential of gas producers to compete for new contracts. This is the case not only for the bulk and cylinders markets, where bulk spare capacity at production level can be used to compete for new bulk and cylinder customers, but also for the tonnage and small on-site plants, where bulk spare capacity at production level can be used to provide back-up to current and future tonnage customers. Indeed, due to the links between the different modes of supply of industrial gases (notably in terms of piggy-back plants and back-up supplies), the denser the gas plant network of a given player in a geographic cluster, the stronger the ability to compete of that player (in this respect see also Section 8.2.1.2.1).

360 See footnote 336. For an explanation of the values emphasised in bold, see recital (263).
361 See footnote 336. For an explanation of the values emphasised in bold, see recital (263).
362 See footnote 336. For an explanation of the values emphasised in bold, see recital (263).
363 See footnote 336. For an explanation of the values emphasised in bold, see recital (263).

(271) Table 15 shows the Notifying Parties' and their main competitors' capacity shares, on the basis of the best knowledge of the Notifying Parties at the time of the notification (as provided in the Form CO), for the tonnage, small on-site plant and bulk markets (both affected and not affected on the basis of sales shares).

**Table 15: Current capacity shares for tonnage, small on-site plants and bulk (volume)**

| | | MARKET PLAYERS[364] | | | | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Air Liquide** | **Air Products** | **Messer** | **SOL** |
| **Tonnage** | | | | | | | |
| Carbon dioxide | EEA | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| Carbon monoxide | EEA | [80-90]% | [10-20]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| Nitrogen | EEA | [60-70]% | [20-30]% | [5-10]% | [0-5]% | [0-5]% | [0-5]% |
| Oxygen | EEA | [30-40]% | [10-20]% | [30-40]% | [10-20]% | [0-5]% | [0-5]% |
| **Small on-site plants** | | | | | | | |
| Nitrogen | EEA | [80-90]% | [10-20]% | [0-5]% | [0-5]% | [0-5]% | NA |
| Oxygen | EEA | [60-70]% | [30-40]% | [0-5]% | [0-5]% | [0-5]% | NA |
| **Bulk** | | | | | | | |
| Argon | EEA | [40-50]% | [10-20]% | [20-30]% | [10-20]% | [0-5]% | [0-5]% |
| Argon | Austria | [80-90]% | [0-5]% | [10-20]% | [0-5]% | [0-5]% | [10-20]% |
| | Benelux | [20-30]% | [10-20]% | [10-20]% | [40-50]% | [0-5]% | [0-5]% |
| | Bulgaria | [0-5]% | [0-5]% | [90-100]% | [0-5]% | [0-5]% | [90-100]% |
| | Croatia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% | [0-5]% |
| | Czech Rep. | [60-70]% | [0-5]% | [0-5]% | [10-20]% | [5-10]% | [0-5]% |
| | Denmark | [20-30]% | [0-5]% | [60-70]% | [0-5]% | [0-5]% | [60-70]% |
| | Estonia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% | [0-5]% |
| | Finland | [50-60]% | [0-5]% | [40-50]% | [0-5]% | [0-5]% | [40-50]% |
| | France | [5-10]% | [0-5]% | [80-90]% | [0-5]% | [0-5]% | [80-90]% |
| | Germany | [40-50]% | [10-20]% | [20-30]% | [0-5]% | [0-5]% | [20-30]% |
| | Greece | [70-80]% | [0-5]% | [20-30]% | [0-5]% | [0-5]% | [20-30]% |
| | Hungary | [70-80]% | [0-5]% | [0-5]% | [0-5]% | [20-30]% | [0-5]% |
| | Ireland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Italy | [10-20]% | [20-30]% | [30-40]% | [10-20]% | [0-5]% | [30-40]% |
| | Lithuania | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Norway | [90-100]% | [5-10]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Poland | [5-10]% | [0-5]% | [60-70]% | [20-30]% | [5-10]% | [60-70]% |
| | Portugal | [10-20]% | [10-20]% | [50-60]% | [5-10]% | [0-5]% | [50-60]% |
| | Romania | [80-90]% | [5-10]% | [0-5]% | [0-5]% | [5-10]% | [0-5]% |
| | Slovenia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Spain | [0-5]% | [70-80]% | [5-10]% | [5-10]% | [10-20]% | [5-10]% |
| | Sweden | [90-100]% | [0-5]% | [5-10]% | [0-5]% | [0-5]% | [5-10]% |
| | UK | [80-90]% | [0-5]% | [0-5]% | [10-20]% | [0-5]% | [0-5]% |

[364] For the purposes of this Table only the capacity of the Tier 1 players as well as the largest Tier 2 players has been considered.

| | | MARKET PLAYERS[364] | | | | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Air Liquide** | **Air Products** | **Messer** | **SOL** |
| Nitrous oxide | EEA | NA[365] | NA | NA | NA | NA | NA |
| Carbon dioxide | Austria | [30-40]% | [0-5]% | [60-70]% | [0-5]% | [5-10]% | [0-5]% |
| | Benelux | [10-20]% | [40-50]% | [5-10]% | [0-5]% | [10-20]% | [0-5]% |
| | Croatia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% | [0-5]% |
| | Czech Rep. | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Finland | [80-90]% | [0-5]% | [5-10]% | [0-5]% | [0-5]% | [0-5]% |
| | France | [5-10]% | [0-5]% | [50-60]% | [0-5]% | [20-30]% | [0-5]% |
| | Germany | [20-30]% | [10-20]% | [10-20]% | [0-5]% | [0-5]% | [5-10]% |
| | Greece | [0-5]% | [0-5]% | [90-100]% | [0-5]% | [0-5]% | [0-5]% |
| | Hungary | [80-90]% | [0-5]% | [0-5]% | [0-5]% | [10-20]% | [0-5]% |
| | Ireland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Italy | [0-5]% | [40-50]% | [20-30]% | [0-5]% | [10-20]% | [5-10]% |
| | Norway | [0-5]% | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Poland | [0-5]% | [0-5]% | [0-5]% | [10-20]% | [10-20]% | [0-5]% |
| | Portugal | [0-5]% | [0-5]% | [90-100]% | [0-5]% | [0-5]% | [0-5]% |
| | Romania | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [10-20]% |
| | Spain | [10-20]% | [30-40]% | [10-20]% | [20-30]% | [0-5]% | [0-5]% |
| | Sweden | [90-100]% | [0-5]% | [10-20]% | [0-5]% | [0-5]% | [0-5]% |
| | UK | [0-5]% | [20-30]% | [20-30]% | [0-5]% | [0-5]% | [0-5]% |
| Carbon monoxide | Italy | [0-5]% | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| Hydrogen | Austria | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Finland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | France | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Germany | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Hungary | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Italy | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Romania | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | UK | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| Nitrogen | Austria | [30-40]% | [0-5]% | [40-50]% | [0-5]% | [10-20]% | [0-5]% |
| | Benelux | [20-30]% | [10-20]% | [30-40]% | [30-40]% | [0-5]% | [5-10]% |
| | Bulgaria | [0-5]% | [0-5]% | [50-60]% | [0-5]% | [0-5]% | [20-30]% |
| | Croatia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [70-80]% | [20-30]% |
| | Cyprus | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Czech Rep. | [60-70]% | [10-20]% | [0-5]% | [20-30]% | [5-10]% | [0-5]% |
| | Denmark | [30-40]% | [0-5]% | [50-60]% | [0-5]% | [0-5]% | [0-5]% |
| | Estonia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% | [0-5]% |
| | Finland | [50-60]% | [0-5]% | [20-30]% | [0-5]% | [0-5]% | [0-5]% |
| | France | [10-20]% | [0-5]% | [60-70]% | [10-20]% | [5-10]% | [0-5]% |
| | Germany | [40-50]% | [10-20]% | [20-30]% | [0-5]% | [0-5]% | [0-5]% |

365 Data have been provided only for Linde (Annex 27 to the Form CO).

| | | MARKET PLAYERS[364] | | | | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Air Liquide** | **Air Products** | **Messer** | **SOL** |
| | Greece | [60-70]% | [0-5]% | [30-40]% | [0-5]% | [0-5]% | [0-5]% |
| | Hungary | [40-50]% | [0-5]% | [0-5]% | [0-5]% | [50-60]% | [0-5]% |
| | Iceland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Ireland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Italy | [10-20]% | [20-30]% | [20-30]% | [10-20]% | [0-5]% | [10-20]% |
| | Latvia | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Norway | [60-70]% | [40-50]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Poland | [20-30]% | [0-5]% | [10-20]% | [30-40]% | [20-30]% | [0-5]% |
| | Portugal | [0-5]% | [10-20]% | [60-70]% | [10-20]% | [0-5]% | [0-5]% |
| | Romania | [30-40]% | [50-60]% | [0-5]% | [0-5]% | [10-20]% | [0-5]% |
| | Slovenia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% |
| | Spain | [5-10]% | [30-40]% | [20-30]% | [20-30]% | [5-10]% | [0-5]% |
| | Sweden | [70-80]% | [10-20]% | [5-10]% | [0-5]% | [0-5]% | [0-5]% |
| | UK | [70-80]% | [0-5]% | [0-5]% | [20-30]% | [0-5]% | [0-5]% |
| Nitrous oxide | Hungary | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| Oxygen | Austria | [40-50]% | [0-5]% | [40-50]% | [0-5]% | [10-20]% | [0-5]% |
| | Benelux | [10-20]% | [20-30]% | [20-30]% | [30-40]% | [0-5]% | [5-10]% |
| | Bulgaria | [40-50]% | [0-5]% | [30-40]% | [0-5]% | [0-5]% | [10-20]% |
| | Croatia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [70-80]% | [20-30]% |
| | Cyprus | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Czech Rep. | [50-60]% | [10-20]% | [0-5]% | [20-30]% | [0-5]% | [0-5]% |
| | Denmark | [20-30]% | [0-5]% | [70-80]% | [0-5]% | [0-5]% | [0-5]% |
| | Estonia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% | [0-5]% |
| | Finland | [60-70]% | [0-5]% | [20-30]% | [0-5]% | [0-5]% | [0-5]% |
| | France | [10-20]% | [0-5]% | [70-80]% | [5-10]% | [0-5]% | [0-5]% |
| | Germany | [30-40]% | [10-20]% | [30-40]% | [0-5]% | [5-10]% | [0-5]% |
| | Greece | [50-60]% | [0-5]% | [40-50]% | [0-5]% | [0-5]% | [0-5]% |
| | Hungary | [50-60]% | [0-5]% | [0-5]% | [0-5]% | [40-50]% | [0-5]% |
| | Iceland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Ireland | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Italy | [5-10]% | [20-30]% | [30-40]% | [10-20]% | [0-5]% | [10-20]% |
| | Latvia | [90-100]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Norway | [70-80]% | [20-30]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| | Poland | [20-30]% | [0-5]% | [30-40]% | [10-20]% | [20-30]% | [0-5]% |
| | Portugal | [10-20]% | [10-20]% | [50-60]% | [5-10]% | [0-5]% | [0-5]% |
| | Romania | [70-80]% | [10-20]% | [5-10]% | [0-5]% | [5-10]% | [0-5]% |
| | Slovenia | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [90-100]% |
| | Spain | [10-20]% | [30-40]% | [10-20]% | [20-30]% | [10-20]% | [0-5]% |
| | Sweden | [70-80]% | [0-5]% | [10-20]% | [0-5]% | [0-5]% | [0-5]% |
| | UK | [50-60]% | [0-5]% | [5-10]% | [30-40]% | [0-5]% | [0-5]% |

*Source: Commission's compilation based on Annexes 27 and 32 to the Form CO.*

(272) The data reported in Table 15 is likely to overestimate the Notifying Parties' capacity in tonnage and small on-site plants and to underestimate the capacity of competitors. As the Notifying Parties point out in the Form CO, they do not have a complete overview of competitors' plants and capacity in these markets. The same claim is not made with respect to bulk, so that the capacity figures in the Table can be considered a good proxy.

(273) During the market investigation the Commission has conducted a market reconstruction to verify the accurateness of the capacity data for industrial gases submitted by the Notifying Parties. However no conclusion could be drawn from the data collected due to inconsistencies between the definitions of "capacity" used by the various competitors, in a way that undermines the accuracy of any market reconstruction exercise. In this context, an analysis trying to benchmark the market position of the Notifying Parties in terms of sales volume based on the market reconstruction[366] against their respective position in terms of capacity could not be undertaken.[367]

(274) As regards capacity utilization rates for bulk plants (including piggy back plants), the Notifying Parties have not been able to provide data for their competitors, but only for their own production assets.[368] The rates have been calculated by comparing the actual output of the plants in 2016 against their nameplate capacity.

(275) With respect to nitrous oxide, only Linde operates a bulk plant in […], with nameplate capacity of […] metric tpd and utilization rate of […]% in 2016.

(276) With respect to carbon dioxide, the Notifying Parties own and operate in aggregate […] plants in the EEA, of which […] Linde and […] Praxair (including SIAD). The below Table illustrates the Notifying Parties' plant locations, capacity and capacity utilization rates.

**Table 16: Notifying Parties' bulk plants for the production of carbon dioxide in the EEA, respective nameplate capacity and capacity utilization rates (2016)**

| Country | Asset location | Asset owner (and % of shares if JV) | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|
| Austria | […] | Linde | […] | […] |
| Czech Rep. | […] | Linde | […] | […] |
| Finland | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| France | […] | Linde | […] | […] |

366 As explained in Section 8.2.1.1.1, the Commission's market reconstruction has revealed several inaccuracies in the volume sales data provided by the Notifying Parties.

367 The benchmarking has not been performed using the sales volume shares compiled in the market reconstruction due to the heterogeneity of the data sources, i.e. while the capacity shares are based on the Notifying Parties' market intelligence, the sale volume shares would be based on actual sales data gathered by the Commission's in the market investigation.

368 Annex Q22.1 to the response to RFI 48, which contains and complements the information already submitted in Annex 27 to the Form CO. Annex Q22.1 does not include any production assets for acetylene. The Notifying Parties explain that reason for this is that acetylene, due to its highly unstable, combustible nature, is produced in filing stations and then immediately filled into cylinders or trailers. The Notifying Parties also explains that the equipment required for the production of acetylene can be installed and if necessary extended fairly easily; the available production capacity is therefore typically not a constraining factor for the supply of acetylene. The market investigation has not provided any evidence putting into question this claim of the Notifying Parties.

| Country | Asset location | Asset owner (and % of shares if JV) | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|
| Germany | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […] | Praxair | […] | […] |
| Hungary | […] | Linde | […] | […] |
| Iceland | […] | Linde | […] | […] |
| Italy | […] | Rivoira | […] | […] |
| | […] | Rivoira | […] | […] |
| | […] | Rivoira | […] | […] |
| | […] | Rivoira / SIAD | […] | […] |
| | […] | Rivoira / SIAD | […] | […]** |
| | […] | Rivoira / SIAD | […] | […] |
| | […] | SIAD | […] | […] |
| Netherlands | […] | Linde | […] | […] |
| | […] | Praxair | […] | […] |
| Norway | […] | Praxair | […] | […] |
| Spain | […] | Linde | […] | […] |
| | […] | Praxair | […] | […] |
| | […] | Praxair | […] | […] |
| | […] | Praxair | […] | […] |
| | […] | Praxair / Air Liquide (50% JV) | […] | […] |
| Sweden | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| UK | […] | Praxair | […] | […] |

*Source: Annex Q22.1 to the response to RFI 48.*

* […].

** […] *(Thematic Papers[369]).*

(277) As illustrated by Table 16, several of the Notifying Parties' bulk plants for the production of carbon dioxide in 2016 had a capacity utilization rate below […]%.

(278) With respect to carbon monoxide, only Praxair, through SIAD, operates a carbon monoxide bulk plant in Italy ([…]), with nameplate capacity of […] metric tpd and a utilization rate of only […]% in 2016.

(279) With respect to hydrogen, only Linde owns and operates plants used for the production of hydrogen to be sold in bulk. Table 17 illustrates Linde's plant location, capacity and capacity utilization rates.

369 Notifying Parties, SIAD Group as a Stand-Alone Tier 2 Industrial Gases and Engineering Business, footnote 34.

**Table 17: Linde's bulk plants for the production of hydrogen in the EEA, respective nameplate capacity and capacity utilization rates (2016)**

| Country | Asset location | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|
| Austria | […] | […] | […] |
| Finland | […] | […] | […] |
| | […] | […] | […] |
| France | […] | […] | […] |
| | […] | […] | […] |
| Germany | […] | […] | […] |
| | […] | […] | […] |
| | […] | […] | […] |
| | […]* | […] | […] |
| Hungary | […] | […] | […] |
| Italy | […] | […] | […] |
| Romania | […] | […] | […] |
| UK | […] | […] | […] |
| | […] | […] | […] |
| | […] | […] | […] |
| | […] | […] | […] |

*Source: Annex Q22.1 to the response to RFI 48.*
* […].

(280) As illustrated by Table 17, several of Linde's bulk plants for the production of hydrogen in 2016 had a capacity utilization rate below […]%.

(281) With respect to argon, the Notifying Parties own and operate several ASUs in the EEA used for the production of argon to be sold in bulk ([…] in aggregate of which […] Praxair (including SIAD) and […] Linde). More than half of Linde's and Praxair's plants (respectively […] and […]) in 2016 had capacity utilization rate below […]%.[370] The below Table illustrates the location, capacity and capacity utilization rates of the Notifying Parties' plants in 2016 which had capacity utilization rate below […]%.

**Table 18: Notifying Parties' bulk plants for the production of argon in the EEA, respective nameplate capacity and capacity utilization rates (2016)**

| Country | Asset location | Asset owner (and % of shares if JV) | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|
| Austria | […]* | Linde | […] | […] |
| Belgium | […]* | Praxair | […] | […] |
| | […]* | Praxair | […] | […] |
| Czech Rep. | […]* | Linde | […] | […] |
| Finland | […] | Linde | […] | […] |
| | […]* | Linde | […] | […] |

370 Capacity utilization rates are considered only for plants producing liquid argon, and not for gaseous argon delivered by pipeline to a customer, as the latter gas is dedicated to the pipeline customer.

| Country | Asset location | Asset owner (and % of shares if JV) | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|
| France | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […] | Linde | […] | […] |
| Germany | […]* | Linde | […] | […] |
| | […]* | Praxair | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […]* | Praxair | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |
| Italy | […] | Linde | […] | […] |
| | […]* | SIAD | […] | […] |
| | […]* | Rivoira | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […] | Rivoira | […] | […] |
| Netherlands | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| Norway | […] | Linde | […] | […] |
| | […] | Praxair | […] | […] |
| | […]* | Praxair | […] | […] |
| | […] | Linde | […] | […] |
| | […]* | Linde ([…]%) / Statoil ([…]%) | […] | […] |
| Portugal | […] | Linde | […] | […] |
| | […]* | Praxair / Air Products ([…] JV) | […] | […] |
| Romania | […]* | SIAD | […] | […] |
| Spain | […]* | Praxair | […] | […] |
| | […]* | Praxair ([…]%) / Air Liquide ([…]%) | […] | […] |
| | […]* | Praxair | […] | […] |
| | […]* | Praxair | […] | […] |
| | […]* | Praxair | […] | […] |
| | […] | Linde | […] | […] |
| | […] | Linde | […] | […] |

| Country | Asset location | Asset owner (and % of shares if JV) | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|
| Sweden | […]* | Linde | […] | […] |
| | […] | Praxair | […] | […] |
| | […] | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| | […]* | Linde | […] | […] |
| UK | […]* | Linde | […] | […] |

*Source: Annex Q22.1 to the response to RFI 48.*
* […].

(282) With respect to the other air gases, also produced in the same ASUs as argon, that is to say oxygen and nitrogen, the Notifying Parties own and operate several ASUs in the EEA used for the production of gases to be sold in bulk ([…] in aggregate of which […] Praxair (including SIAD) and […] Linde).

(283) As regards the assessment of capacity utilization rates for those plants, the Notifying Parties submit that, as the actual plant's operation mode may differ from the ordinary operation mode based on which the nameplate capacity has been calculated, a capacity utilization rate far below 100% may not be indication of actual spare capacity. For example, a plant may be set at production modes which generate more oxygen than what is indicated as nameplate capacity; accordingly, the actual plant capacity for nitrogen would be below the plant's nameplate capacity. In such context it would not be possible for the plant to increase its nitrogen production, even if its capacity utilization rate with respect to this gas is far below 100%. Moreover, the Notifying Parties explain that for piggy-back plants, the proportion of gas that can be sold into the bulk market depends also on the demand of the tonnage customer. As the latter may vary over time, also the capacity that can be used to serve the bulk markets often varies over time.[371]

(284) In this respect the Commission notes that the overwhelming majority of the Notifying Parties' ASUs serving the bulk markets for oxygen and nitrogen are in fact piggy-back plants ([…] out of […] for Linde; […] out of […] for Praxair). Moreover, the majority of these ASU have been operated in 2016 at capacity utilization rates higher than […]% for either nitrogen or oxygen or both. Only a minority of plants of Linde ([…] out of […], of which […]) have been operated at a level of capacity utilization below […]%, whilst […] out of […] plants of Praxair ran below that level in 2016 ([…]). The below Table illustrates the location, capacity and capacity utilization rates of the Notifying Parties' plants which are underutilised.

**Table 19: Notifying Parties' bulk plants for the production of oxygen and nitrogen in the EEA, respective nameplate capacity and capacity utilization rates (2016)**

| Country | Asset location | Asset owner (and % of shares if JV) | Product | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|---|
| Belgium | […]* | Praxair | Oxygen | […] | […] |
| | | Praxair | Nitrogen | […] | […] |

371 Form CO, Chapter A, Section 6, paragraph 295; and Response to European Commission's 6(1)(c) Decision. Residual Topics, Section 3.

| Country | Asset location | Asset owner (and % of shares if JV) | Product | Nameplate capacity (metric tpd) | Utilization rate |
|---|---|---|---|---|---|
| Netherlands | […]* | Linde | Nitrogen | […] | […] |
| | | Linde | Oxygen | […] | […] |
| | […]* | Linde | Nitrogen | […] | […] |
| | | Linde | Oxygen | […] | […] |
| France | […]* | Linde | Nitrogen | […] | […] |
| | | Linde | Oxygen | […] | […] |
| Germany | […]* | Praxair | Oxygen | […] | […] |
| | | Praxair | Nitrogen | […] | […] |
| | […]* | Praxair | Oxygen | […] | […] |
| | […] | Linde | Nitrogen | […] | […] |
| | | Linde | Oxygen | […] | […] |
| Italy | […] | Rivoira | Nitrogen | […] | […] |
| | | Rivoira | Oxygen | […] | […] |
| Norway | […]* | Linde | Nitrogen | […] | […] |
| | | Linde | Oxygen | […] | […] |
| | […]* | Praxair | Nitrogen | […] | […] |
| | | Praxair | Oxygen | […] | […] |
| Romania | […]* | SIAD | Oxygen | […] | […] |
| | | SIAD | Nitrogen | […] | […] |
| Spain | […]* | Praxair | Oxygen | […] | […] |
| | | Praxair | Nitrogen | […] | […] |
| | […]* | Praxair | Oxygen | […] | […] |
| | | Praxair | Nitrogen | […] | […] |
| | […]* | Praxair | Oxygen | […] | […] |
| Sweden | […] | Linde | Nitrogen | […] | […] |
| | | Linde | Oxygen | […] | […] |

*Source: Annex Q22.1 to the response to RFI 48.*

* […].

8.2.1.1.3. Bidding analysis

(285) Contracts for tonnage and small on-site plant supply are typically awarded through tenders. Bidding data provides information about both winners and participants in tenders that took place over a given period of time. Information about winners supplements market shares, because it can reveal changes in the suppliers' respective positions resulting from the outcome of recent tenders, while market shares incorporate the full tender history. Participation data adds information about the competitive interaction between market participants, because it reveals the actual competitors for a given tender. Therefore, bidding data complements market share data in describing the competitive dynamics in the markets for the tonnage and small on-site plant supply of industrial gases.

(286) In this Section, the Commission, first, presents the methodology it followed in performing the bidding analysis and responds to the criticisms of the Notifying Parties in that respect, and then sets out the results of its bidding analysis exercises for both the tonnage and small on-site plant markets.

**a. Methodology**

(287) The bidding analysis performed by the Commission in this Decision is based on data provided by the Notifying Parties in the course of the first and second phase investigations.

(288) As a response to the initial bidding analysis of the Commission presented in the Article 6(1)(c) Decision, the Notifying Parties submitted the Paper on Observations on the Commission's Bidding Analysis.

(289) One of the key criticisms to the Commission's initial bidding analysis concerned the partial and incomplete data based on which the Commission's analysis was conducted. In this respect, the Commission notes that the bidding analysis contained in the Article 6(1)(c) Decision was performed on the assumption that the underlying data corresponded to the best of the Notifying Parties' knowledge and that such data, at the very least, was correct as regards the tenders where either or both of the Notifying Parties participated. In fact the data was compiled by the Notifying Parties in response to a series of RFIs, the first of which was sent prior to the notification of the Transaction, as illustrated in the below recitals.

(290) The Commission sent the first request for tender data to the Notifying Parties as part of RFI 4 on 16 October 2017, prior to the notification of the Transaction. In their response to such RFI, the Notifying Parties provided information on […] tenders which took place in the EEA in the period 2007 – 2017. The Commission sent additional questions on tender data with the RFI 11 on 1 December 2017. The Notifying Parties responded on 21 December 2017 with an enlarged dataset of […] tenders and confirmed that the data annex included information for onsite projects regarding both Linde and Praxair. The same annex was submitted with the Form CO on 12 January 2018.

(291) After receiving the notification, the Commission asked further questions on the tender value as part of RFI 36 on 23 January 2018. While acknowledging that the data sample it had received was small in size, the Commission performed the initial bidding analysis for purposes of the Article 6(1)(c) Decision based on the available information which was submitted to the Notifying Parties on 22 February 2018.

(292) Following the issuance of the Article 6(1)(c) Decision, the Commission asked further clarifications on the bidding data as part of RFI 48, which was sent to the Notifying Parties on 6 March 2018.

(293) After receiving the Article 6(1)(c) Decision, the Notifying Parties assembled additional tender information to complement the original dataset and submitted such additional information to the Commission on 15 March 2018. Therefore, the Notifying Parties' response to the Article 6(1)(c) Decision was based on data which was not entirely available to the Commission as of the day in which the Article 6(1)(c) Decision was issued, and took into account a total of […] tenders. The Notifying Parties' response to RFI 48 incorporated these changes and was also submitted to the Commission on 15 March 2018.

(294) Nonetheless, during the second phase investigation the Commission sought to address this criticism and further engaged with the Notifying Parties to complete the data set. Indeed, following the amended data submission and the state of play meeting held on the 23 March 2018, the Notifying Parties requested a call with the Commission's case team to explain the amended data provided in the Notifying Parties' Reply to the Article 6(1)(c) Decision and to discuss the questions which the Commission had raised during the state of play meeting. The call was held on 28 March 2018. Further amendments to the dataset were submitted to the Commission with the response to RFI 50 on 8 April 2018 and the response to RFI 57 on 20 April 2018.

(295) As a result, the bidding analysis presented in the Statement of Objections was prepared based on the data set provided in response to RFI 48, incorporating the further amendments provided by the Notifying Parties in responses to RFI 50 and RFI 57.[372]

(296) In the Reply to the Statement of Objections, the Notifying Parties did not reiterate their criticism in relation to the completeness of the bidding dataset, but they noted that the Commission incorrectly presumed that the […] tenders won by Praxair in […][373] were under individual contracts for the supply of […] tpd of oxygen each. The Notifying Parties stated that the nameplate capacity of […] tpd applied to all three customers combined.

(297) In this respect, the Commission notes that the Notifying Parties' also treated these tenders as separate contracts for […] tpd capacity each in their bidding analysis provided in the Paper on Observations on the Commission's Bidding Analysis. Furthermore, the potential data duplication in these tenders was raised by the Commission during a call with the Notifying Parties on 28 March 2018 and also included as a question in RFI 50.[374] The Notifying Parties did not correct the data set information provided for these three tenders in the course of second phase investigation.

(298) Nonetheless, after receiving the Reply to the Statement of Objections, the Commission amended the bidding data set to incorporate the change in the total capacity won by Praxair.

(299) A second criticism to the Commission's initial bidding analysis in the Article 6(1) Decision put forward by the Notifying Parties in the Paper on Observations on the Commission's Bidding Analysis related to the inclusion of Linde Engineering as a participant.[375] In this respect the Commission notes that Linde Engineering participated to tenders where customers where not only seeking integrated offers, that is offers where the gas company both built and operated the plant, but also so called "self-supply" offers, that is offer which relate to the engineering and building of a gas plant which is then directly operated by the customer.

(300) As explained by the Notifying Parties in the Form CO, it is uncommon that a potential industrial gas customer contacts both Linde for an integrated tonnage solution and Linde Engineering for a self-supply solution. In fact, the Commission notes that, in the dataset it received, there has been only one instance where both Linde and Linde Engineering were invited to participate in the same tender at the specific request of a customer, that is […] in […]. Nonetheless the Commission considers that, when a customer does request quotes for both integrated and self-supply offers, in such a tender an integrated tonnage solution competes with a self-supply solution for the same customer as these solutions address the same demand.

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372 For the purpose of performing bidding analysis, the Commission merged the bidding data for the past tenders (Annex Q1.1 to response to RFI 57 - Tender data) and the ongoing tenders (Annex Q5 to response to RFI 57 Ongoing projects). The Commission did not take into account […] closed tenders with no information on winner, and often capacity. In order to assess the competition for industrial gases supply, the Commission also included […] renewal projects of Praxair which received competition from other suppliers. This resulted in a bidding data set of […] projects in the EEA in the years 2007 - 2018. Based on the internal document review, the Commission added additional participation of industrial gases suppliers to […] of these tenders. Detailed explanations are provided in the Annex II to this Decision.

373 […], […] and […] in the Antwerp region.

374 RFI 50, question 3.

375 The engineering division of Linde which provides engineering services not only to the gas divisions of Linde but also to third parties.

(301) Therefore, the Commission considers that the participation of Linde Engineering should be included in the dataset if Linde Engineering entered a tender where a customer sought offers for both an onsite gas solution and a self-supply plant offering. Nonetheless, as explained in the Statement of Objections, for the purpose of the bidding analysis, the Commission treats both Linde Gas[376] and Linde Engineering divisions as Linde given that they do not seem to compete against each other and represent Linde Group's offering. The Notifying Parties have not contested this approach in the Reply to the Statement of Objections.

(302) As a result, the final dataset used by the Commission for its bidding analysis in this case includes […] tenders issued in the EEA in the period 2007 – 2018, out of which:

(a) […] are attributable to the tonnage market for oxygen and nitrogen.[377] In line with the relevant product market definitions for the assessment of the Transaction, these tenders were awarded for plants with a nameplate capacity for oxygen production equal to or exceeding 100 tons per day ("tpd");

(b) […] are attributable to the tonnage market for hydrogen. In line with the relevant product market definitions for the assessment of the Transaction, these tenders were awarded for plants with a nameplate capacity for hydrogen production equal to or exceeding 0.3 tpd;

(c) […] are attributable to small-onsite plants for oxygen. In line with the relevant product market definitions for the assessment of the Transaction, these tenders were awarded for plants with nameplate capacity for oxygen production below 100 tpd; and

(d) […] are attributable to small-onsite plants for nitrogen. In line with the tonnage tenders for oxygen and nitrogen sample classification, the sample for small-onsite plants for nitrogen is comprised of the tenders for plants with nameplate capacity falling below 100t pd in terms of oxygen production.

(303) The description of the final dataset used by Commission for the purpose of its bidding analysis (taking into account all additional changes) is provided in Annex II to this Decision.

(304) The Commission acknowledges that the samples used by it for the bidding analysis are small and that the conclusions drawn by it are qualified to that extent. However, the samples cover all competitive tenders that took place in the EEA in 2007 – 2018 for tonnage oxygen, nitrogen and hydrogen and small on-site plants for oxygen and nitrogen, to the best knowledge of the Notifying Parties. Competitive tenders are defined as tenders that received bids from more than one industrial gases supplier. Furthermore, only […] tenders were issued for lead product carbon monoxide and both were won by Air Liquide. However, the Notifying Parties did not provide data on the capacity of the relevant plants. Therefore, the Commission's analysis does not cover bidding data for carbon monoxide.

(305) For the purpose of analysing the participation and winning patterns of the Notifying Parties, the Commission took into account the tenders which received bids from more than

376 The gas division of Linde.

377 The Commission took into account the fact that ASUs produce oxygen, nitrogen and argon at the same time at different proportions (Form CO, page 37). To ensure that the sample classification based on the nameplate capacity correctly reflects the size of the tendered plants and their production capabilities, the Commission converted the nameplate capacity of […] tonnage tenders for nitrogen as lead product to the nameplate capacity as of oxygen. Detailed explanations are provided in the Annex II to the Decision.

one industrial gases supplier, hereinafter competitive tenders only.[378] The Commission considers that only competitive tenders are informative about the competitive interaction between competitors. While the tenders with a single bidder can be informative about the degree of market power enjoyed by the different market participants, the Commission understands, based on the information provided by the Notifying Parties, that Linde and Praxair could not provide comprehensive information about tenders with a single bidder.[379] Furthermore, the Notifying Parties stated that they have better knowledge of tenders in the regions where they are especially active.[380] The Commission believes that the information about single-bidder tenders provided by the Notifying Parties may not include tenders where other competitors were the only participants and, as a result, the analysis of the full dataset would not provide accurate winning and participation shares. Moreover, the Commission notes that the Transaction would not have an impact on the competition in tenders with a single bidder. Therefore, for the purpose of understanding the competitive dynamics in tenders for tonnage and small on-site plants and the constraints that the Notifying Parties exercise on each other, the Commission analysed the competitive tenders only.

**b. Tonnage plants for oxygen, nitrogen and hydrogen**

i. Tender wins

(306) The dataset reviewed by the Commission shows that the Notifying Parties were particularly successful in the tenders for tonnage for oxygen and nitrogen, where Linde and Praxair, considered jointly, won […] of the total tendered capacity in the context of competitive tenders, especially in the most recent years (2012 – 2018), as illustrated in the below Table 20.

**Table 20: Share of total tendered capacity won in competitive tenders for tonnage oxygen and nitrogen (EEA, 2007 – 2018)**

| | Linde | Praxair | Air Liquide | Air Products | Messer | Others |
|---|---|---|---|---|---|---|
| Total sample (2007 – 2018) | […]% | […]% | […]% | […]% | […]% | […]% |
| 2007 - 2011 | […]% | […]% | […]% | […]% | […]% | […]% |
| 2012 - 2018 | […]% | […]% | […]% | […]% | […]% | […]% |

(307) More in detail, based on the data included in Table 20 which reflect the amendments implemented after receiving the Reply to the Statement of Objections, the Commission notes that:

(a) Linde won the largest share ([…]%) of the total tendered capacity in competitive tenders for tonnage in oxygen and nitrogen in the period 2012 – 2018. Its share raises up to […]% if the total sample is considered (that is, all tenders in the period 2007 – 2018);[381]

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378 This approach of looking into competitive tenders was also adopted in the Commission decision of 8 September 2015 in case M.7278 – *General Electric/Alstom*, Annex II.

379 Paper on Observations on the Commission's Bidding Analysis.

380 Paper on Observations on the Commission's Bidding Analysis.

381 As shown by Table 20 above, Linde was the most successful bidder in the competitive tenders for tonnage supply of oxygen and nitrogen also in the earlier years of 2007 – 2011, winning […]% of the tendered capacity.

(b) Praxair has been the third most successful player in competing for tonnage projects for oxygen and nitrogen after Linde and Air Liquide, as it won […]% of the tendered capacity in competitive tenders in the years 2012 – 2018. Table 20 also shows the significant increase in Praxair's competitive position in tonnage projects for oxygen and nitrogen over time: indeed, whilst its share of won tendered capacity out of the total sample is […]%, this is due to the share of only […]% it was able to achieve in the period 2007 – 2011.

(308) The Commission also notes that the amendments to the bidding data it made in response to the comments made in the Reply to the Statement of Objections have resulted into the following corrections:

(a) an increase of Linde's total tendered capacity won in competitive tenders for tonnage oxygen and nitrogen in the period 2012 – 2018 (from […]% to […]%) as well as in the total sample (from […]% to […]%);

(b) a decrease of Praxair's total tendered capacity won in competitive tenders for tonnage oxygen and nitrogen in the period 2012 – 2018 (from[…]% to […]%) as well as in the total sample (from […]% to […]%);

(c) an increase of Air Liquide's total tendered capacity won in competitive tenders for tonnage oxygen and nitrogen in the period 2012 – 2018 (from […]% to […]%) as well as in the total sample (from […]% to […]%);

(d) a small increase of Messer's total tendered capacity won in competitive tenders for tonnage oxygen and nitrogen in the period 2012 – 2018 (from […]% to […]%) as well as in the total sample (from […]% to […]%); and

(e) a small increase of Air Products' total tendered capacity won in competitive tenders for tonnage oxygen and nitrogen in the total sample (from […]% to […]%).

(309) Nonetheless, the Commission considers that, despite these changes in the results of the bidding analysis, the preliminary findings in the Statement of Objections with respect to the competitive constraint exerted by the Notifying Parties still stand. In particular, considering the tenders in the most recent years (2012 – 2018), the evidence on competitive tender wins for oxygen and nitrogen tonnage plants indicates that:

(a) Linde is the market leader as it secured the largest share of won tendered capacity;

(b) Praxair is the number three on the markets and, as further described in Section 8.2.2.2.1, it can be considered an important competitive force, at least with respect to tonnage oxygen tenders, as its winning share in competitive tenders is greater than what its market share ([…]% by value and […]% by volume) would suggest.

(310) Given the competitive advantage of being an incumbent supplier (that is to say, of already supplying a customer as a result of having won a previous tender in same location), the Commission also analysed the instances where customers switched from their existing oxygen and nitrogen supplier to a different one. The analysis revealed that Praxair has been the second most successful supplier in terms of won capacity in competitive tenders where the customer chose not the incumbent but a new provider. Praxair's share accounts for […]% of the tendered capacity where the incumbent provider was challenged and changed. The figures are detailed in Table 21 below.

**Table 21: Share of total tendered capacity won in tenders where customer changed the incumbent provider, competitive tenders for oxygen and nitrogen (EEA, 2007 – 2018)**

| | Linde | Praxair | Air Liquide | Messer |
|---|---|---|---|---|
| Tonnage for oxygen and nitrogen | […]% | […]% | […]% | […]% |

(311) Thus the evidence on competitive tender wins against incumbent suppliers confirm that the Notifying Parties exert important competitive constraints in the EEA tonnage markets for oxygen and nitrogen.

(312) As regards tenders for tonnage hydrogen, despite having submitted bids, Praxair did not win any of these tenders in the years 2007 – 2018 in the EEA. Out of the total of […] competitive tenders in tonnage for hydrogen that have been awarded from 2007 to date, […] have been awarded to Linde, […] to Air Liquide and […] to Messer, Air Products and Haldor Topsoe. When looking into competitive tenders for hydrogen, only […] industrial gases suppliers won competitive tenders for hydrogen plants with nameplate capacity above 60tpd: […].

(313) Although Praxair […] in the years 2007 – 2018 in the EEA, given that […] out of the […] tenders for tonnage with lead product hydrogen have not yet been awarded to date, it would be possible for Praxair to achieve a significant increase in the market shares for hydrogen in the near future. This is because Praxair placed a bid for […] tenders with large capacity, constituting almost […]% of the total capacity in the ongoing tenders for tonnage hydrogen. Further data analysis also revealed that Praxair successfully renewed […] contracts for tonnage plants in […] with lead product carbon monoxide, which are also typically used for hydrogen production.

ii. Average number of participants

(314) The tender data for oxygen and nitrogen tonnage plants, as presented in Table 22, indicates a lower intensity of competition than what has been described by the Notifying Parties. According to the data, […]% of the tenders triggered an offer from […] bidder only. The average participant number was approximately […] bidders per tender across all oxygen and nitrogen tonnage tenders and […] bidders for competitive tenders. […]% of such instances occurred for sites with an already present incumbent. Only […]% of oxygen and nitrogen tonnage tenders triggered bids from […] market participants. Tenders where both Linde and Praxair participated were more competitive than the average: participant numbers are higher and close to […] bidders per tender, on average. The Transaction would indeed have its strongest effect on these more competitive tenders, bringing down the average number of participants to […].

(315) Tonnage tenders for hydrogen plants were the most competitive in terms of participation: customers received almost […] bids per tender on average. However, not every announced tender received interest from multiple industrial gases suppliers as […] out of […] tenders triggered a bid from […] supplier only. In all […] cases, the incumbent supplier already present on the customer side was the […] bidder. Tenders where both Linde and Praxair participated were more competitive than the average for hydrogen tonnage plants as well: the participant number is close to […] bidders per tender. The Transaction would indeed have its strongest effect on these more competitive tenders, bringing down the average number of participants to […].

(316) The evidence on the average number of participants shows that customers in the tonnage oxygen, nitrogen and hydrogen markets have already extremely limited possibilities in switching suppliers: there are approximately […] participants on average in competitive tonnage tenders in these markets. Moreover, the Transaction would likely affect most

strongly those tenders with more switching possibilities by reducing the number of participants from around […] to between […] and […] on average.

**Table 22: Average participant number in tenders for tonnage in the EEA (2007 – 2018)**

| | Full dataset -all tenders | Tonnage for oxygen/nitrogen | Tonnage for hydrogen |
|---|---|---|---|
| Competitive tenders | […] | […] | […] |
| Tenders in which both Linde and Praxair participated | […] | […] | […] |
| Competitive tenders - post-Transaction | […] | […] | […] |

iii. Cross-participation by competitors

(317) In the tonnage market for oxygen and nitrogen the Notifying Parties were active bidders: Linde participated in […] and Praxair in […] competitive tenders, corresponding to, respectively, […]% and […]% of the tendered capacity in this segment between 2007 and 2018. Prior to the amendments implemented after receiving the Reply to the Statement of Objections, the figures for Linde's and Praxair's participation were […]% and […]% of the total tendered capacity in competitive tenders, respectively. Table 23 below summarizes cross participation patterns between the competing gas suppliers in terms of (i) participation counts in competitive tenders for tonnage oxygen and nitrogen, and (ii) the tendered capacity in competitive tenders for both Linde and Praxair. The columns indicate the "conditional participation" of each Notifying Party, that is they indicate, (i) for the number of bids placed by each Notifying Party, how many of these bids were for tenders that also received bids from other competitors (first column, "participation counts", (ii) for the total capacity bid by each Notifying Party in competitive tenders, how much of that capacity was also bid by its competitors in the same tenders (second column, "capacity share").

(318) Praxair met Air Liquide and Linde most often: the two latter companies participated in […]% and […]% of competitive tenders in which Praxair also participated. These ratios are similar if common participation is weighted by total tendered capacity ([…]% and […]%). Based on either measure Praxair met Air Products and Messer approximately in one third of the competitive oxygen and nitrogen tonnage tenders in which Praxair participated. The Commission notes that prior to the amendments implemented after receiving the Reply to the Statement of Objections, the common participation ratios were different in terms of bid capacity. Compared to the figures presented in the Statement of Objections, the common participation ratio for Praxair with Air Liquide has decreased from […]% to […]%, whilst the respective ratios increased for common participation with all other players. Notably, the share of Praxair's total capacity bid in competitive tenders together with Linde has increased from […]% to […]%.

(319) Linde met Air Liquide the most often, namely in […]% ([…]% in capacity) of Linde's competitive oxygen and nitrogen tenders. Linde met the other three companies in similar proportions: Praxair […]%, Air Products […]% and Messer […]%. If common participation ins weighted by the tendered capacity, the share of tendered capacity for Linde with Air Products increases to […]%, which puts its common participation share closer to Air Liquide.

**Table 23: Cross participation in competitive tenders for tonnage supply of oxygen and nitrogen (EEA, 2007 – 2018)**

| | Linde | | Praxair | |
|---|---|---|---|---|
| | (i) Participation counts, % | (ii) Capacity share, % | (i) Participation counts, % | (ii) Capacity share, % |
| Air Liquide | […] | […] | […] | […] |
| Air Products | […] | […] | […] | […] |
| Linde | […] | […] | […] | […] |
| Messer | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] |
| Others | […] | […] | […] | […] |

(320) The data on cross-participation indicate that Linde is a close competitor to Praxair, exercising a strong competitive constraint on Praxair as Linde was the second most often met competitor across the oxygen and nitrogen tonnage tenders in which Praxair participated.

(321) In the hydrogen tonnage market the Notifying Parties were active bidders as well: Linde placed a bid for every competitive tender in the EEA in 2007 – 2018, whilst Praxair bid in […]% of the tenders for tonnage in hydrogen. However, when weighting the participation by capacity, Praxair bid for […]% of the tendered capacity in competitive tenders. The tenders where Praxair participated where relatively competitive as the […] times when Praxair participated in a tender for the tonnage supply of hydrogen, Linde and Air Liquide were also participating. Table 24 below summarizes cross participation patterns between the competing gas suppliers in terms of (i) participation counts in competitive tenders for tonnage hydrogen, and (ii) the tendered capacity in competitive tenders for both Linde and Praxair.

**Table 24: Cross participation in competitive tenders for tonnage supply of hydrogen (EEA, 2007 – 2018)**

| | Linde | | Praxair | |
|---|---|---|---|---|
| | (i) Participation counts, % | (ii) Capacity share, % | (i) Participation counts, % | (ii) Capacity share, % |
| Air Liquide | […] | […] | […] | […] |
| Air Products | […] | […] | […] | […] |
| Linde | […] | […] | […] | […] |
| Messer | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] |
| Others | […] | […] | […] | […] |

(322) The evidence on the common participation in competitive hydrogen tonnage tenders suggests that Praxair is a close competitor to Linde and Air Liquide, especially when

weighing tenders by their capacity, as Praxair participated in tenders for larger capacity plants. These tenders are also relatively more competitive with a higher number of participants.

iv. Winning rates and participation

(323) In competitive tonnage tenders for oxygen and nitrogen in 2007-2018 in the EEA, Praxair's success rate was considerably lower in the instances where Linde was present ([…]% out of all tenders with the presence of both of the Notifying Parties) compared to the tenders where Linde did not place a bid ([…]% out of tenders where Praxair participated but Linde did not). The differences in the winning rates of Praxair are even larger when taking into account the tendered capacity – Praxair won […]% of its tendered capacity when Linde was not present and only […]% in tenders where Linde also competed. These figures are specified in the Table 25 below. When analysing the tenders where the Notifying Parties competed against each other in detail, it appears that […] out of the […] tenders lost by Praxair were won by Linde, […] by Air Liquide and […] each by Messer and Air Products.

(324) The evidence on Praxair's decreasing winning rates when Linde is present suggests that Linde was exercising a strong competitive constraint on Praxair.

**Table 25: Praxair's winning rates in tenders with and without Linde, competitive tenders for oxygen and nitrogen (EEA, 2007 – 2018)**

| | Number of tenders | Praxair's share of won bids, % | Praxair's share of won capacity, % |
|---|---|---|---|
| Both Notifying Parties are present | […] | […] | […] |
| Only Praxair is present | […] | […] | […] |

**c. Small on-site plants for oxygen and nitrogen**

(325) For the purpose of the bidding analysis, the Commission has considered separately the tenders for the small on-site plants into the separate samples for (i) the tenders with lead product oxygen, and (ii) tenders with lead product nitrogen. The Commission believes that this approach correctly takes into account the fact that some of the tendered plants produce either oxygen or nitrogen, and not necessarily both gases together. In contrast to the tonnage classification, pooling these tenders together would not be meaningful due to the different production capabilities of some of the small on-site plants.

i. Tender wins

(326) In line with the winning shares in the competitive tonnage tenders for oxygen and nitrogen, Linde has also won the largest share of the tendered capacity in competitive tenders for small on-site oxygen and nitrogen plants in 2007-2018 in the EEA, amounting to […]% and […]% respectively. Praxair has also been particularly successful in the segment of the small on-site plants for oxygen, where it won the second largest share of the tendered capacity after Linde. The shares of won capacity in the competitive tenders for both small on-site plants for oxygen and small on-site plants for nitrogen are presented in the Table 26 below.

(327) The data on competitive tender wins suggests that the Transaction would eliminate an important competitive force in the EEA market for small on-site plants for oxygen.

**Table 26: Share of total tendered capacity won, competitive tenders for small on-site plants for oxygen and nitrogen (EEA, 2007 – 2018)**

| | Linde | Praxair | Air Liquide | Air Products | Messer | Others |
|---|---|---|---|---|---|---|
| Small on-site plant for nitrogen | […] | […] | […] | […] | […] | […] |
| Small on-site plant for oxygen | […] | […] | […] | […] | […] | […] |

ii. Average number of participants

(328) The tender data for oxygen and nitrogen small on-site plants is presented in Table 27. Similarly to tonnage tenders for oxygen and nitrogen, […]% of tenders for small on-site plants with lead product oxygen and […]% of tenders for small on-site plants with lead product nitrogen had only […] participant. The low level of participation is particularly evident for small on-site plants for both oxygen and nitrogen as the average participant number across these tenders is […] bidders. The tenders for tonnage for oxygen and nitrogen appeared to have received more bids, on average, that the tenders for the small on-site plants for oxygen and the tenders for the small on-site plants with nitrogen as lead product.

**Table 27: Average participant number in tenders for small on-site plants in the EEA (2007 – 2018)**

| | Full dataset | Small on-site plant for oxygen | Small on-site plant for nitrogen |
|---|---|---|---|
| Competitive tenders | […] | […] | […] |
| Tenders in which both Notifying Parties participated | […] | […] | […] |
| Competitive tenders - post-Transaction[382] | […] | […] | […] |

(329) The incumbency advantage applies also to these segments as it was the case for tonnage tenders. […]% of all small on-site tenders for oxygen and […]% of all small on-site tenders for nitrogen had an already present incumbent gas supplier on site. The majority of these tenders were won by the incumbent gas supplier ([…]% and […]% for oxygen and nitrogen, respectively).

(330) The evidence on the average number of participants in the tenders for small on-site plants for oxygen and nitrogen shows that customers face already extremely limited switching possibilities: there are less than […] participants on average in competitive tenders in these markets. Moreover, the Transaction would likely affect most strongly those tenders with more switching possibilities by reducing the number of participants from around […] to between […] and […] on average.

iii. Cross-participation by competitors

(331) The Notifying Parties were active bidders in tenders for small on-site plants for oxygen: Linde participated in […] and Praxair in […] competitive tenders for oxygen (out of the total of […]), corresponding to, respectively, […]% and […]% of the tendered capacity in

[382] Post-Transaction averages were calculated by treating Linde and Praxair as one entity in the previous tenders

this segment. Similarly to the tonnage market Air Liquide and Linde were the two competitors that Praxair met most often in competitive tenders for small on-site plants with lead product oxygen, as they participated in […]% and […]% of competitive tenders where Praxair participated, respectively. The common participation patterns are similar when looking into Praxair's total tendered capacity in competitive tenders in the same segment: […]% of Praxair's tendered capacity for small on-site plants with lead product oxygen concerned tenders where Air Liquide was present, and […]% concerned tenders where Linde was present.

(332) Table 28 below summarizes cross participation patterns between the competitors in terms of (i) participation counts, and (ii) the tendered capacity in the competitive tenders for small on-site plants for oxygen for both Linde and Praxair. The columns indicate the "conditional participation" of each Notifying Party, that is they indicate, (i) for the number of bids placed by each Notifying Party, how many of these bids were for tenders that also received bids from other competitors (first column, "participation counts", (ii) for the total capacity bid by each Notifying Party in competitive tenders, how much of that capacity was also bid by its competitors in the same tenders (second column, "capacity share").

(333) The data on common participation in the tenders for small on-site plants for oxygen suggest that Linde is a close competitor to Praxair, exercising a strong competitive constraint on Praxair as it bid for the second largest capacity share ([…]%) after Air Liquide.

**Table 28: Cross participation in competitive tenders for small on-site plants for oxygen (EEA, 2007 – 2018)**

| | Linde | | Praxair | |
|---|---|---|---|---|
| | (i) Participation counts, % | (ii) Capacity share, % | (i) Participation counts, % | (ii) Capacity share, % |
| Air Liquide | […] | […] | […] | […] |
| Air Products | […] | […] | […] | […] |
| Linde | […] | […] | […] | […] |
| Messer | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] |
| Others | […] | […] | […] | […] |

(334) Similarly to the tenders for small on-site plants for oxygen, the Notifying Parties were also active bidders in the tenders for small on-site plants for nitrogen. Linde participated in […] and Praxair in […] competitive tenders for small on-site plants for nitrogen (out of the total of […]), corresponding to, respectively, […]% and […]% of the tendered capacity in the competitive tenders for small on-site plants for nitrogen. Furthermore, for Praxair, Air Liquide and Linde were also the two most often met suppliers in competitive tenders for small on-site plants with lead product nitrogen, as they participated in […]% and […]% of competitive tenders together with Praxair, respectively. Moreover, Linde bid for the largest share ([…]%) of Praxair's tendered capacity in competitive tenders for small on-site plants for nitrogen, and Air Liquide bid for the second largest share ([…]%). Table 29 below summarizes cross participation patterns between the competitors in terms of (i) participation counts, and (ii) the tendered capacity in the competitive tenders for small on-site plants for nitrogen for both Linde and Praxair.

(335) The data on common participation in the tenders for small on-site plants for nitrogen suggests that Linde is a close competitor to Praxair, exercising a strong competitive constraint on Praxair as it was the second most often met competitor by Praxair.

**Table 29: Cross participation in competitive tenders for small on-site plants for nitrogen (EEA, 2007 – 2018)**

| | Linde | | Praxair | |
|---|---|---|---|---|
| | (i) Participation counts, % | (ii) Capacity share, % | (i) Participation counts, % | (ii) Capacity share, % |
| Air Liquide | […] | […] | […] | […] |
| Air Products | […] | […] | […] | […] |
| Linde | […] | […] | […] | […] |
| Messer | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] |
| Others | […] | […] | […] | […] |

**d. Conclusion**

(336) The evidence from the bidding data on tonnage tenders for oxygen and nitrogen plants shows that the Transaction would reduce the already limited number of players and, at least with respect to oxygen, the Transaction would also eliminate an important competitive force, Praxair, that won a substantial share of the tendered capacity, especially in the last five years and against incumbents. Finally, it also demonstrates that Linde is a close competitor to Praxair, exercising a strong competitive constraint on Praxair.

(337) The evidence from the bidding data on tonnage tenders for hydrogen plants shows that Praxair is a close competitor to Linde and Air Liquide. The evidence also indicates that Praxair could increase its presence as it is currently participating in 3 ongoing tenders with large capacity for tonnage hydrogen in the EEA.

(338) In the EEA markets for small on-site plants for oxygen and nitrogen, the evidence from the bidding data shows that (i) customers face already extremely limited switching possibilities, (ii) the Transaction would eliminate an important competitive force, Praxair, and that (iii) Linde is a close competitor to Praxair, exercising a strong competitive constraint on Praxair as it was Praxair's second most often met competitor.

8.2.1.2. Competitive parameters and general market conditions

(339) In this Section, the Commission describes the general market conditions and competitive parameters in the horizontally affected markets identified in Section 8.1.1. Unless otherwise specified, the findings set out in this Section, and in particular the results of the market investigation, do not materially differ depending on the industrial gas type or the geographies at stake.[383] Therefore, the Commission's analysis and the results of the market investigation will be presented primarily by mode of supply.

[383] Responses to RFI Q17 to customers of industrial gases and RFI Q31 to competitors in industrial and medical gases. Also, agreed non-confidential minutes of the conference call with […] of 17 October 2017, paragraph 16, ID 861: "[…] *considers that, in the EU, in the areas where their plants are located, the conditions of competition and the market features of the industrial gas market are similar. In particular,* […]*'s top suppliers can supply the* […] *in every EU area*"; […] has plants located in various European countries, […], ID6299.

(340) In the following the Commission describes, first, the economies of density, as a market feature which applies to, and links, all modes of supply, and, then, the specific characteristics of each mode of supply.

8.2.1.2.1. Economies of density

(341) As mentioned at recital (51), the gas industry overall is characterised by strong positive externalities, notably economies of density. This is particularly the case for industrial gases. In this context, economies of density refer to a concentration of gas plants and filling centres in a certain geography (referred to also as "power zone" by Linde[384]) affording the gas companies that own those plants and centres a very competitive cost structure and high profitability, which in turn allow for a further expansion of their distribution network. This is a very important competitive advantage in an industry characterised by intense capital investment.[385] The importance of economies of density applies to all modes of supply of industrial gases and has been acknowledged by the Notifying Parties in the Reply to the Statement of Objections.

(342) The creation of density can occur organically. There are two possibilities in this respect. A gas company may start operations and building density in a given area by distributing cylinders. At the outset, as the gas company has no production capability in the area, it may rely on swap or purchase agreements with competitors to source the gas to be distributed. Once enough critical mass in terms of customers is reached, the gas company may invest in the construction of a plant for in-house production of the gas and start distributing also industrial gases in bulk form.[386] This is the typical way of entering a market for Tier 2 and Tier 3 players (typically, the latter have not yet reached the critical mass to justify the investment in in-house bulk production).

(343) The other possibility to build density organically is for a player to bid for a tonnage contract: normally, in this case, the decision to bid for a tonnage tender in a certain area is accompanied by a study of the overall demand for industrial gases in that area to understand whether there are selling opportunities for gases in bulk and cylinders.[387] If such opportunities exist, the tonnage plant would be built with additional piggy-back capacity to satisfy a larger number of customers in the area: such opportunities are taken into consideration in the financial evaluation submitted to the tonnage customer in the form of "liquid credits", that is the price offered to the customer discounts the cost benefits and sales opportunities that the gas supplier may achieve thanks to the construction of a new gas plant in a certain area.[388] Given the size of the investment to be undertaken, this way of building density is available only to the players with the greater financial capabilities, the Tier 1, and, to a more limited extent, Tier 2 suppliers. Operations in proximity to the area where the new plant will be built may enhance the likelihood of being selected as tonnage supplier, because it increases the security of supply for the customer and the lower cost of

384 For example, Linde's internal document, "[…]", […] [[…]].

385 Economies of scale play can also play a role in light of the fact that the density of a supplier's gas plant or filling station network determines the transportation costs, which account for a significant proportion of total cost. In the EEA, transportation and distribution costs in the cylinder business typically account for approximately […]% of the overall costs. The equivalent figure for the bulk business is approximately […]%, depending on the region in the EEA (Form CO, Section 6, Chapter A, paragraph 449).

386 Form CO, Chapter A, Section 8, paragraph 382.

387 For example, documents submitted in Annex 11 to the Form CO (documents submitted to the Board of Linde for the approval of a decision to submit a bid to a tonnage customer), including a section discussing the "Merchant Market Situation", that is to say bulk sale opportunities.

388 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 7, ID 6230. For example, also Annex 11.426 to the Form CO.

back liquid supply. This is in particular the case for the air gases, especially nitrogen and oxygen. In this respect the Commission notes that more than half of the Notifying Parties' ASUs are tonnage plants with piggy-back.[389]

(344) Density is the main driver of profitability of an industrial gas supplier and nowadays is an important element in the business strategy of Tier 1 players. This is clearly shown by the internal documents of the Notifying Parties, where "density" is considered as an important parameter in the assessment of their own competitive position and the competitive position of their competitors, or in the definition of their own strategy in a certain region.

(345) For example, in a presentation delivered at […].[390] In another presentation delivered at the same occasion […].[391]

(346) Also public statements of the Notifying Parties' main competitors identify density as a key market driver. An internal document of Praxair tracks a series of public quotes in this respect. At the Investors Day of 31 March 2015 an executive of Air Products, Corning F. Painter, stated that "*…in terms of driving profitability your global market share does not matter. Your national market share does not matter. What matters is the quality of your local position. And when we talk about the local positions, we mean driving density and integration into those positions. So, imagine, if you will, an industrial region. And what we mean here is, in that industrial region having a mix of the three modes of supply that I just mentioned. And by having all three modes of supply there, we get integration benefits, right. We get code products. We get customer density. We get sales force coverage and putting those together gives us density and I would say proximity to our customers. A low cost position, a strong market share and ultimately a defendable, sustainable, profitable, local position. And that is what the new Air Products is focused on driving*"; likewise, Benoît Potier, CEO of Air Liquide, in the occasion of the Airgas Acquisition Call in 2015 stated that "*In a nutshell, the bulk business as such is all about density in a certain region with the HHI Index*".[392]

(347) Density is identified as one "*of the most important factors in order to be successful in the market for the on-site supply of industrial gases*" also by the Notifying Parties in the Thematic Papers.[393] In this respect, the Notifying Parties explained in those Papers that for "*piggy-back plants (that produce both liquid and gaseous product), the expected bulk (liquid) contribution margin (i.e., margin from selling bulk products to customers other than the primary gas customer) is typically around* […]*% of the total expected cash flow for a specific investment, but can also range up to* […]*%. If a proposed project generates*

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389 Annex Q22.1 to the response to RFI 48.

390 Annex 11.060 to the Form CO, page 7. Also, Annex 11.58 to the Form CO, (evaluating Linde's position in several markets: "[…]", page […]; evaluating Praxair's position in the same markets: "[…]", page […]) as well as Annexes 11.56-57 to the Form CO, containing a similar type of analysis. In Annex 11.55 to the Form CO Linde assesses […]. Also, Linde's internal document […], ID5077-008736, which assesses […] ([…]; ID 4760-84561) […].

391 Annex 11.059 to the Form CO, page 7.

392 Praxair's internal document, "[…]", ([…]; ID4593-045965). Albeit some of these quotes relate to operations in region other than the EEA, the dynamics of the industrial gas markets in relation to density appear to be the same on a worldwide basis, as proved by the quotes from the internal documents of the Notifying Parties cited in the preceding paragraphs and footnotes. Also, Praxair's news "Praxair builds density through acquisition of industrial and medical gas businesses", available at: http://www.praxair.com/news/2016/praxair-builds-density-through-acquisition-of-industrial-and-medical-gas-businesses, ID6423.

393 On-site Supply of Industrial Gases Suitability of Proposed Divestitures, paragraph 10.

*synergies with the supplier's existing network in the area, it is much easier to put forward* […]."[394]

(348) Density appears also to be a driver of merger and acquisition activities in the sector as well as of asset swaps between competitors. For example, in the same presentation delivered at the […] it is mentioned that in Europe "[…]" and […].[395] In the same vein […] stated that "…[…]."[396] In an internal document of Praxair is also for "[…]".[397]

(349) As mentioned in Section 6.5, the high profitability of the gas industry has attracted the interest of financial investors and is also assessed in detail in market reports prepared by investment banks. Such reports have well noted the relevance of density in the industry. In this respect, for example, Société Générale observes that location density contributes importantly to the financial performance of the industry in terms of growth, profitability improvements, returns and cash flows. In the attempt to assess the importance of density Société Générale has even elaborated a "[…]", being density a decisive factor in establishing market leadership.[398]

(350) The importance of density and geographic proximity is also acknowledged by customers. For example, according to […], the *"fact that competition is limited to the companies that are in sufficient proximity of* […]*'s plants drastically reduces the potential competition in the market for tonnage supply. In some cases, the worst placed gas suppliers do not even submit an offer; in other cases it is anyway easy for the best placed supplier to understand which* […]*'s alternatives are and to exploit its advantage in the negotiation so as to set prices slightly below the second best alternative.*"[399] In the same vein, […] stated that the "*main competition parameter is the geographic location, which is reflected in the price, being price a function of transport costs. Normally, the producer who owns the closest industrial gas facility to the customer's plant wins the tender. In some cases, the worse geographically placed supplier does not even respond to a tender. Only in two instances a gas supplier with a worse geographic location can win a tender over a better located competitor:*

*a. When it has overcapacity and it is therefore willing to offer a lower price, or*

*b. When the better located competitor is capacity constrained."*[400]

(351) Coherently, customers responding to the market investigation consider the location of the supplier and its proximity to their facilities as an important factor influencing their choice of supplier.[401]

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394 On-site Supply of Industrial Gases Suitability of Proposed Divestitures, paragraphs 15-16.

395 Annex 11.060 to the Form CO, page 8.

396 Praxair's internal document, "[…]", ([…]; ID4593-045965).

397 Praxair's internal document, […]. Also, […].

398 Praxair's internal documents, […] ([…]) and […] ([…]).

399 Agreed non-confidential minutes of the conference call with […] of 29 September 2017, paragraph 11, ID 604.

400 Agreed non-confidential minutes of the conference call with […] of 3 September 2017, paragraph 22, ID 623.

401 Also, agreed non-confidential minutes of the conference call with […] of 29 September 2017, paragraph 30, ID 604: "*The main drivers for the choice of bulk suppliers are: location, transport costs (the two are closely correlated), product availability*", agreed non-confidential minutes of the conference call with […] of 3 September 2017, paragraphs 22-23, ID 623: "*The main competition parameter is the geographic location, which is reflected in the price, being price a function of transport costs. Normally, the producer who owns the closest industrial gas facility to the customer's plant wins the tender*"; agreed non-confidential minutes of conference call with […] of 10 October 2017, paragraphs 11-12, ID 5561: "*Transport reflects a significant part of the overall cost in prospective of bulk supply of Industrial*

(352) At the current stage of the market development in the EEA, however, density does not appear to have reached a tipping point so that competition is ineffective within the "power zone" of a gas supplier. For example, a Linde's presentation of […]. The presentation illustrates […]. The outcome of this analysis, however […] in the presence of certain circumstances, such as:

"*1.* […]

*2.* […]

*3.* […]

*4.* […]

*5.* […]

*6.* […]

*7.* […]

*8.* […]

*9.* […]

*10.* […]

*11.* […]...."

(353) In the presence of any such circumstance the player operating a plant and a distribution network in proximity of the customer may not be able to offer the best price, as was the case for Linde in relation to the bulk supply of nitrogen to […] discussed in the presentation at stake.[402]

(354) Even if the player holding the "power zone" is eventually able to offer the best conditions to the customer, competition still appears to play a vital role, as it sets the upper boundary to the price that the best placed player can extract. In other words, the "power zone" player will be able to increase prices only up to the point where a competing supplier can make an economic offer.[403] In this respect in the market investigation […] explained that "*the price offered by the company with the closest production unit is set taking into account the price which could be offered by the second closest facility*."[404]

8.2.1.2.2. Tonnage

(355) As regards the **general conditions of competition** in the tonnage markets, during the first phase market investigation, on average, customers rated the level of competitiveness of the markets at 2.5 on a scale of 5 points.[405]

(356) Customers described these markets as oligopolies with few credible market players. In fact, the majority of customers indicated that the only credible suppliers in the markets are the Tier 1 players and, in certain clusters within the EEA, and in any event only for smaller

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*Gases (...) Therefore, the location of suppliers' facilities is crucial. However, all industrial gas producers have entered into swap agreements so to extend the scope of their activities*".

402 Linde's internal document, "[…]", […] [[…]].

403 Agreed non-confidential minutes of the conference call with a customer of 12 October 2017, paragraph 16, ID 5387. Self-supply as an alternative strategy is available only to few, typically large customers with the necessary engineering and process skills to operate a gas plant. See Section 8.2.5.2.

404 Agreed non-confidential minutes of the conference call with […] of 3 September 2017, paragraph 25, ID 623.

405 Responses to RFI Q17 to customers of industrial gases, question 7.

projects in value terms, also Tier 2 players such as Messer or, to a more limited extent, SOL.[406]

(357) In this respect, in the market investigation, […] stated that "*If larger quantities are involved (like in the tonnage market), the choice of suppliers is reduced: large suppliers have a big competitive advantage due to their economies of scale and the possibility to face higher investments*."[407] In the same vein, […] stated that the tonnage market are "*Oligopolistic*" with "*high cost barriers for switching supplier*."[408] […] stated that "*the technical gas market in Europe is dominated by max. 4 companies, in most of the regions there are only 2 active suppliers – or even a quasi-monopoly due to the existing pipeline grid*."[409] […] observed that "*Air gas market is very highly consolidated already now, and […] does not wish it to get even more consolidated. After the recent merger between french Air Liquide and US-based Airgas Inc. there are very few large-scale producers in the market at the moment (AGA-Linde, Air Liquide, Praxair and Air Products Inc.), especially in Nordic countries. By Nordic countries we mean Finland, Sweden, Norway and Denmark. On top of very limited amount of competitors in the market, the other point is that not even all of the large-scale suppliers are present in all countries. Consequently, in practice, for large scale consumers like* […] *that means extremely few practical supplier alternatives, in worst case only one depending on the location for the respective need. From procurement point of view, we suffer currently from both very high prices and inflexible/inactive/inefficient performance with air gas companies due to lack of competition*."[410]

(358) In this context, the views of customers are split on the issue whether the number of bidders for tonnage contracts in the market is currently sufficient to elicit competitive offers.[411] Among those considering the number of suppliers not sufficient, […] stated that it was *"[v]ery difficult to receice [sic] competitive bids in 2012-request for offers*."[412] Among customers considering the number of suppliers sufficient, […] stated that "*There are basically always the same large providers […], so relatively few bidders, but still sufficient for us*."[413]

(359) Competition appears to be higher in tenders for new projects (that is, for the construction of new production assets), which in the period 2007 to 2017 have been approximately […] per year for air gases (nitrogen and oxygen) and less than […] for hydrogen.[414] Indeed, the overwhelming majority of customers who organised tenders for the tonnage contracts with an already existing incumbent supplier on site, awarded the contract to the incumbent and some did not even contact alternative suppliers (mainly customers supplied by pipeline).[415] The tonnage markets, in particular if the supply is carried out via a pipeline, are therefore characterised by a strong incumbent advantage or, as a customer defined it in the market investigation, a "[*f]irst mover advantage*".[416] In this respect […] stated that in an area with the presence of pipelines, such as the Antwerp region in Belgium, where it organises

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406 Responses to RFI Q17 to customers of industrial gases, question 10.

407 Agreed non-confidential minutes of the conference call with […] of 18 October 2017, paragraph 20, ID443: […] purchases oxygen and nitrogen through the tonnage mode of supply.

408 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 3008.

409 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 3044.

410 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 2535.

411 Responses to RFI Q17 to customers of industrial gases, question 20.

412 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 2634.

413 […]'s response to RFI Q17 to customers of industrial gases, question 20, ID 4226.

414 See bidding analysis in Section 8.2.1.1.3.b.

415 Responses to RFI Q17 to customers of industrial gases, question 18.

416 […]'s response to RFI Q17 to customers of industrial gases, question 20, ID 3008.

tonnage tenders, "*a new supplier will likely be deterred by the required investment which affects prices and, therefore, the possibility to make a competitive offer*,"[417] while […] stated that "[o]*nce a vendor is selected as a tonnage gas suppliers the ability for a competitor to displace the incumbent is quite difficult as they are proposing new facilities or pipelines to replace depreciated assets*."[418] Likewise, […] stated that "*it is very difficult for a new supplier to compete with an incumbent supplier that has an on-site gas plant because new plant has a high capital cost*."[419]

(360) As described in Section 8.2.1.1.3., the bidding analysis confirms those findings. In particular, it shows that the markets are even more concentrated than what market shares and concentration levels suggest: indeed, on average there are only two to three bidders in tenders for new projects. Moreover, the bidding analysis confirms the presence of an incumbent advantage in the tonnage markets: out of the tenders where the incumbent supplier participated, […]% in tonnage for oxygen and nitrogen and […]% in tonnage for hydrogen were won by that supplier.

(361) As regards **parameters of competition**, both tonnage customers and competitors responding to the market investigation have indicated price as the most important parameter, followed by supply security. Respondents indicate that the latter is achieved in the most cost effective manner by suppliers with a bulk plant network (for back-up supplies) with extensive coverage.[420]

(362) In the Thematic Papers the Notifying Parties submitted that one "*of the most important factors in order to be successful in the market for the on-site supply of industrial gases are business development personnel, credible and highly reliable operations capability, significant business density within the local market to allow for integration, financial strength and finally engineering capability to either buy or design plants*."[421]

(363) The relevance of density has already been assessed in Section 8.2.1.2.1. This factor appears to be key in defining the success of a player in the tonnage markets. With respect to business development and operational capabilities, no evidence in the Commission's file puts into question the relevance of these elements as important factors in defining the competitiveness of a player in the tonnage markets, as submitted by the Notifying Parties. Nonetheless, the evidence in the Commission's file also indicates that financial and engineering capabilities play an important role in particular for the largest tonnage projects (for ASUs with nameplate capacity above 1000 metric tpd or hydrogen/carbon monoxide plants with nameplate capacity above 60-100 metric tpd)[422] as set out in the following recitals.

(364) As regards **financial capabilities**, the high investments required to perform a contract for the tonnage supply of industrial gases prevent Tier 2 from bidding for the largest tonnage projects, given the high percentage of their yearly turnover that each of these single projects can account for. In this respect, with regard to hydrogen, Messer states that "*they do not offer big hydrogen as the huge CAPEX required for their construction (around EUR 100 million) makes these plants too costly for them (given that their overall turnover is*

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417 Agreed non-confidential minutes of the conference call with […] of 20 October 2017, paragraph 24, ID 598.

418 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 3867.

419 […]' response to RFI Q17 to customers of industrial gases, question 21, ID 3060.

420 Responses to RFI Q17 to customers of industrial gases, question 8 and Responses to RFI Q31 to competitors in industrial and medical gases, question 12.

421 Notifying Parties, On-site Supply of Industrial Gases Suitability of Proposed Divestitures, paragraph 10.

422 These thresholds are identified based on the results of the market investigation discussed in this section, as well as, importantly, the bidding data provided by the Notifying Parties.

*EUR 1.2 billion).*"[423] Likewise, Westfalen stated that, whilst it "*is looking for tonnage contract opportunities, [...] the investment needed to build an ASU plant for tonnage is about EUR 20 to 60 million: the high investments needed constitute an expansion barrier for Westfalen, which is a family business and, as such, is subject to a strict financial constraint with an annual capex spend in industrial gases of less than 50 million.*"[424] Expenditure for an ASU with nameplate capacity above 1000 metric tpd is typically lower than EUR 100 million, but still above EUR 50 million. Based on the bidding data submitted by the Notifying Parties in the second phase investigation, Table 30 below illustrates the capital expenditure for the largest tonnage contracts for hydrogen, carbon monoxide, nitrogen and oxygen tenders awarded in the years 2007-2017 or for which tenders are still ongoing.

**Table 30: Capital expenditure for largest tonnage projects (tenders, 2007-2018)**

| Gas | Type of plant | Customer | Country | Asset location | Tender award year | Tender Value - CAPEX (mEUR) | Nameplate capacity for lead product (tpd) |
|---|---|---|---|---|---|---|---|
| Nitrogen | ASU | […] | Ireland | […] | 2012 | […] | […] |
| | ASU | […] | Benelux | […] | ongoing | […] | […] |
| Oxygen | ASU | […] | Germany | […] | 2008 | […] | […] |
| | ASU | […] | Netherlands | […] | 2015 | […] | […] |
| | ASU | […] | France | […] | 2009 | […] | […] |
| | ASU | […] | France | […] | 2009 | […] | […] |
| | ASU | […] | Belgium | […] | 2009 | […] | […] |
| | ASU | […] | Czech Rep. | […] | 2013 | […] | […] |
| | ASU | […] | Poland | […] | 2008 | […] | […] |
| | ASU | […] | Austria | […] | 2007 | […] | […] |
| | ASU | […] | Germany | […] | 2014 | […] | […] |
| | ASU | […] | Poland | […] | 2012 | […] | […] |
| | ASU | […] | Belgium | […] | 2013 | […] | […] |
| | ASU | […] | UK | […] | 2007 | […] | […] |
| | ASU | […] | Germany | […] | 2010 | […] | […] |
| | ASU | […] | Belgium | […] | 2010 | […] | […] |
| | ASU | […] | Romania | […] | 2008 | […] | […] |
| | ASU | […] | Germany | […] | 2008 | […] | […] |
| | ASU | […] | UK | […] | ongoing | […] | […] |
| | ASU | […] | Benelux | […] | ongoing | […] | […] |
| Hydrogen | HyCO | […] | Germany | […] | 2012 | […] | […] |
| | HyCO | […] | Hungary | […] | 2007 | […] | […] |
| | HyCO | […] | Belgium | […] | 2013 | […] | […] |
| | HYCO | […] | Spain | […] | Ongoing | […] | […] |
| | HyCO | […] | Netherlands | […] | Ongoing | […] | […] |
| | HyCO | […] | Spain | […] | Ongoing | […] | […] |

423 Agreed minutes of the conference call with Messer of 24 October 2017, paragraph 10, ID 698.

424 Agreed minutes of the conference call with Westfalen of 19 March 2017, paragraph 5, ID 6109.

| Gas | Type of plant | Customer | Country | Asset location | Tender award year | Tender Value - CAPEX (mEUR) | Nameplate capacity for lead product (tpd) |
|---|---|---|---|---|---|---|---|
| | HYCO | […] | Netherlands | […] | Ongoing | […] | […] |
| | HyCO | […] | Netherlands | […] | 2007 | […] | […] |
| | HyCO | […] | Finland | […] | Ongoing | […] | […] |
| Carbon monoxide | HyCO | […] | Germany | […] | Ongoing | […] | […] |

*Source: Annexes Q1.1 and Q5 to response to RFI 57.*

(365) As regards **engineering capabilities**, as explained by the Notifying Parties, a distinction can be drawn between:

(a) design engineering, that is (i) the specification of the process and equipment required to meet the needs of the customer, (ii) the creation of detailed specifications to procure or fabricate that equipment and (iii) the creation of all the functional and detailed construction drawings that define how that equipment will be installed to meet the requirements of the customer and the company's operations. The design of a gas plant typically relates to the following four areas:

- The base plant, that is the part of the plant that processes, separates and purifies products to the customer's specification. In case of an ASU, the base plant consists of the air compression system, air cleaning and drying equipment, and the coldbox (the piece of equipment used in ASUS to cryogenically distil air gases).
- The distribution systems, that is the part of the plant that delivers gas from the base plant to the customer. These components are site specific and consist of compressors, pipelines, product meters, liquid storage tanks and truck filling systems.
- The backup systems, which are typically liquid storage systems that provide backup for the base plant by vaporising liquid gas when the base plant is not operational. The backup system consists of storage tanks, pumps, vaporisers, and control systems.
- The auxiliary systems, which comprise mainly electrical distribution and cooling systems.

(b) procurement of components, that is the sourcing of the components to be used to build the plants; and

(c) construction, that is the actual building of the plant or the management of a construction site.

(366) Whilst (c) is typically outsourced and carried out by (local) sub-contractors, the areas where the in-house engineering capabilities of the existing tonnage suppliers differ are primarily design engineering and procurement of components.[425] Whilst with respect to the design engineering and procurement of components a tonnage player would have the

[425] Form CO, Chapter F, Section 8, paragraph 2056; On-site Supply of Industrial Gases Suitability of Proposed Divestitures, paragraph 31.

strategic choice between carrying those activities in-house or outsourcing them, outsourcing would bear a mark-up on the cost of engineering.

(367) As regards the portion of capital expenditure for the performance of a tonnage contract which is related to engineering, the results of the market investigation have provided mixed indications, possibly due to different accounting systems used by the various players. For example, Linde estimated that for the construction of a new large ASU tonnage plant, Linde Engineering's share of CAPEX is typically […]%, albeit on average less than approximately […]% relate to engineering services and components by Linde Engineering, whilst the remaining portion of CAPEX is to be allocated to purchases of components and/or services from third parties. [426] Linde submitted that for an ECOVAR (standardised small on-site plant) Linde Engineering's share of CAPEX is typically […]%,[427] so that for a medium size tonnage ASU the Commission assumes that the share of CAPEX would be between […]% and […]%. The estimates provided by Praxair/SIAD on the impact of engineering on the capital expenditure for a tonnage project are lower (less than […]%, with increasing importance depending on the plant capacity).[428] Likewise competitors indicated lower percentages than Linde: Messer indicated that typically "*the total engineering cost can range from 10 to 15% of the total investment, depending on the plan, [but] if all engineering services are outsources to a third party, the cost of engineering related to the construction of a new plant can increase up to 20% of the total investment*",[429] whilst Westfalen stated that the "*impact of engineering costs on the total construction investment is around 5%.*"[430] Air Liquide added that "*the cost of engineering can typically range from 10% to 30% of the gas price for an OTF tonnage contract and from 10% to 70% of the total plant cost if Engineering means the actual hours to design the plant, depending on technology (if "Engineering" includes the full scope of designing, procuring, building and delivering into service, i.e. TPS tonnage contract, the cost of engineering represents nearly 100% of the cost of the plant). Air Liquide explains that "engineering" does not only refer to the design and construction of a plant. In terms of value delivered to the customer, "engineering" also includes very important technology elements related to the design and management of the plant, such economy of by-products, optionalities to reduce [carbon dioxide] footprint, etc. These technological features, in terms of value delivered to the customer, are more important than the overall CAPEX. […]% more of CAPEX in a project compared to a competitor can bring a significant extra value to the customer. This is why, in order to be competitive, especially for large projects, it is necessary to be a large player with strong financials. Air Liquide states that being competitive in the execution of a project is very important and estimates that this constitutes approximately […]% of the differentiation and therefore the reason for ultimate successful selection*"[431]

(368) Further, in the Reply to the Statement of Objections, the Notifying Parties estimate that the cost advantage of having extensive in-house engineering capabilities in terms of initial CAPEX investment would be only […]% an even lower, and not material, if considering the total cost of ownership of a gas plant over the lifespan of a typical tonnage contract.

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426 Response to RFI 48, question 19.

427 Response to RFI 48, question 19.

428 Response to RFI 48, question 19.

429 Agreed minutes of the conference call with Messer of 15 March 2017, paragraph 12, ID 6240.

430 Agreed minutes of the conference call with Westfalen of 19 March 2017, paragraph 11, ID 6109.

431 Agreed non-confidential minutes of conference call with Air Liquide of 23 March 2018, paragraph 15 ID 6402.

(369) Nonetheless, it appears that outsourcing still bears a mark-up on the cost of engineering, which affects the price that a tonnage supplier is able to offer to a prospective customer. Such mark-up would add to the already possibly higher cost structure of a player which enjoys less economy of density in an area where it does not operate other gas plants near-by to ensure security of supply and translates in a further competitive disadvantage.

(370) The disadvantages of relying on external engineering capabilities were confirmed by the competitors responding to the market investigation. In fact, competitors stated that in-house engineering capabilities are key for the competitiveness of a tonnage player, as they allow for a greater control over the whole process and in particular as regards costs. Indeed a company with in-house engineering capabilities can operate independently from third party engineering support and internalise the cost of such support.[432] In this vein, Westfalen stated that "[n]*ot having in house engineering capabilities could be considered a weakness when a new ASU has to be built as competitors with in-house engineering have a cost advantage. Internalizing engineering capabilities makes less expensive the construction of new plants*."[433]

(371) Overall, while the actual influence of density, business development, operational, financial and engineering capabilities on the winning rate of a player in tonnage tenders could not be exactly estimated on the basis of the results of the market investigation, a high degree of correlation appears to exist between the fact that a player enjoys one or more of these characteristics and its ability to win tonnage tenders. Importantly, the degree of correlation with the ability to win tonnage tenders seems, nonetheless, to be higher with respect to economies of density.[434]

(372) Therefore the Commission will assess financial capabilities and in-house engineering as important competitive factors, in particular when assessing the ability to compete of gas suppliers in the tonnage markets in Section 8.2.2.2.1a and b.

8.2.1.2.3. Small on-site plants

(373) As regards the **general conditions of competition** in the small on-site plant markets, during the first phase market investigation, on average, customers rated the level of competitiveness of the markets at 2.79 on a scale of 5 points.[435] Customers described these markets as oligopolies with few credible market players. In fact, the majority of customers indicated that the credible suppliers in the markets are the Tier 1 players and, in certain clusters within the EEA, also Messer.[436] In this context, the views of customers were split on the issue whether the number of bidders for small on-site plant contracts in the market is currently sufficient to elicit competitive offers.[437]

(374) In relation to competition for new projects (that is, for the construction of new production assets), the majority of customers who organised tenders for the renewal of small on-site plant contracts awarded the contract to the incumbent and some did not even contact alternative suppliers.[438] The small on-site plant markets are therefore also characterised by an incumbent advantage.

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432 Responses to RFI Q31 to competitors in industrial and medical gases, question 13.

433 Agreed minutes of the conference call with Westfalen of 19 March 2017, paragraph 11, ID 6109.

434 This is in line with the Notifying Parties' submissions, in particular Reply to the Statement of Objections, Section 2.

435 Responses to RFI Q17 to customers of industrial gases, question 59.

436 Responses to RFI Q17 to customers of industrial gases, question 62.

437 Responses to RFI Q17 to customers of industrial gases, question 72.

438 Responses to RFI Q17 to customers of industrial gases, question 71.

(375) As described in Section 8.2.1.1.3, the bidding analysis confirms those findings. In particular, it shows that the markets are even more concentrated than what market shares and concentration levels suggest. Indeed, […]% of tenders for the small on-site plants with lead product oxygen and […]% of tenders for lead product nitrogen had only one participant and the average participant number for tenders for oxygen and nitrogen was in any event between two and three bidders.

(376) As regards **parameters of competition**, small on-site plant customers responding to the market investigation indicated supply security as the most important parameter, followed by price and service level.[439] Similarly, competitors indicated that the most relevant parameter of competition is price, followed by security of supply and service level.[440] Competitors also mentioned that in-house engineering capabilities are very important for the competitiveness of small on-site plant players.[441]

8.2.1.2.4. Bulk

(377) As regards the **general conditions of competition** in the bulk markets, during the first phase market investigation, on average, customers rated the level of competitiveness of the markets at 2.8 on a scale of 5 points.[442] Customers described these markets as oligopolies with few credible market players. In fact, the majority of customers indicated that the only credible suppliers in the markets are the Tier 1 players and, in certain clusters within the EEA, also Messer or, to a limited extent, SOL.[443] In this respect, as regards the supply of carbon dioxide in the United Kingdom, […] stated that "*[carbon dioxide] supply in the UK is almost a monopolised market by Praxair in the UK with the majority of supply coming in from the EU. The other main suppliers have some small localised sources but in the main also buy from Praxair to support their customers requirements. Nitrogen and Oxygen is more readily available in the UK but is still restricted in terms of where the gas is supplied*."[444] In the same vein […] stated that in Ireland "*Currently there are two main suppliers of Bulk [carbon dioxide] in the market place, namely Praxair with approx.* [50-60]*% market share and BOC Linde who supply the balance of the market*".[445] As regards the bulk supply of nitrogen and argon, […] stated that there are "*Few suppliers in the market and it is difficult to change supplier once contracted*."[446] For oxygen, argon, nitrogen and carbon dioxide, […] stated that "*There are very few suppliers on the market and the competition is low*."[447] With respect to oxygen, nitrogen and hydrogen, […] stated that "*Depending on the local area, there are very few suppliers available because deliveries are limited in a radius of 200 to 400km*".[448] Nonetheless, the majority of customers purchasing industrial gases in bulk considered that the number of suppliers for bulk is currently sufficient to obtain competitive offers.[449]

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439 Responses to RFI Q17 to customers of industrial gases, question 60.

440 Responses to RFI Q31 to competitors in industrial and medical gases, question 55.

441 Responses to RFI Q31 to competitors in industrial and medical gases, question 55.

442 Responses to RFI Q17 to customers of industrial gases, question 35.

443 Responses to RFI Q17 to customers of industrial gases, question 38.

444 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 3992. Albeit the question related to the tonnage market, […] is a bulk and cylinder customer only (RFI Q17 to customers of industrial gases, question 3, ID 3992.

445 […]'s response to RFI Q17 to customers of industrial gases, question 36, ID 2373.

446 […]'s response to RFI Q17 to customers of industrial gases, question 35, ID 2653. Nitrogen and argon are the products that […] purchases in bulk (response to RFI Q17 to customers of industrial gases, question 3, ID 2653).

447 […]'s response to RFI Q17 to customers of industrial gases, question 35, ID 2492.

448 […]'s response to RFI Q17 to customers of industrial gases, question 35, ID 4092.

449 Responses to RFI Q17 to customers of industrial gases, question 50.

(378) As regards **parameters of competition**, bulk customers responding to the market investigation indicated security of supply as the most important, followed by timely deliveries. Price was only rated as the third most important factor.[450] The key importance of supply security and timely deliveries is demonstrated by the fact that customers often include stringent clauses in this respect in their contracts with gas suppliers. For example, […] explained that: "*Clear safeguards and guarantees assuring security of supply are an important feature of the contracts signed by* […]. *The contracts impose clear requirements on security of supply and timely delivery of industrial gases.*"[451]Similarly, during the market investigation […] stated that "[…] *security and continuity of supply are vital parameter in its business. Contracts with gas suppliers include safeguards in this respect.*"[452] During the market investigation, bulk customers also indicated that they consider the location of the supplier (i.e. the proximity to their facilities)[453] and the availability of back-up as important factors.[454]

(379) Competitors rated security of supply and price equally as the first most important parameters of competition, followed by timely deliveries.[455] Competitors also stated that swap agreements are quite important for the competitiveness of a bulk player, as they enable suppliers to reduce their transport costs and to increase the geographic scope of their activities.[456]

8.2.1.2.5. Cylinders and dry ice

(380) As regards the **general conditions of competition** in the cylinder markets, during the first phase market investigation, on average, customers rated the level of competitiveness of the

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450 Responses to RFI Q17 to customers of industrial gases, question 36. In this respect, for example, […] explained that: "*the factors they consider when choosing an industrial gas supplier are: (i) continuity of supply; (ii) price; (iii) quality; (iv) assistance and expertise*" (Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraph 28, ID 6237); […] stated that: "*The most important criteria for the selection of suppliers are price and continuity of supply.*"(Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraph 8, ID 595); […] indicated that: "*Given the critical importance of carbon dioxide for its production process,* […]*'s focus when choosing an industrial gas supplier is primarily on supply security followed by quality and price."* (Agreed non-confidential minutes of conference call with […] of 6 September 2017, paragraph 6, ID 704).

451 Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraph 31, ID 6237.

452 Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraph 23, ID 595.

453 In this respect, […] stated that: "*Proximity of suppliers to* […] *operations is an important factor in selecting suppliers, as the company seeks to source as close as possible to its production facilities"* (Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraph 8, ID 595); […] [referring to bulk supplies] indicated that: "*The main drivers for the choice of bulk suppliers are: location, transport costs (the two are closely correlated), product availability*" (Agreed non-confidential minutes of conference call with […] of 29 September 2017, paragraph 30, ID 604); […] stated that:" *Geographic location determines the choice of both mode of supply and gas supplier (s)."*(Agreed non-confidential minutes of conference call with […] of 10 October 2017, paragraph 9, ID 1027.

454 […] [referring to bulk supplies] indicated that: "*The main drivers for the choice of bulk suppliers are: location, transport costs (the two are closely correlated), product availability*" and that: "*An important role is however played by the geographic location of the producers' plants.* […] *stated that industrial gas producers able to offer the best prices are those whose facilities are closest to* […]*'s plants"* (Agreed non-confidential minutes of conference call with […] of 29 September 2017, paragraphs 30 and 26, ID 604).

455 Responses to RFI Q31 to competitors in industrial and medical gases, question 33.

456 Responses to RFI Q31 to competitors in industrial and medical gases, question 123.

markets at 3 on a scale of 5 points.[457] While a greater number of distributors are present compared to the bulk markets, customers have described these markets as oligopolies with few credible market players. In fact, the majority of customers indicated that the only credible suppliers in the markets are the Tier 1 players and, in certain clusters within the EEA, also Messer or, to a limited extent, SOL.[458] Therefore, Tier 3 players, not vertically integrated in the production of industrial gases, have not been considered credible suppliers. In this context, **vertical integration** in the bulk production of industrial gases must be considered an important competitive advantage for a player in the cylinder markets. Nonetheless, the Commission notes that majority of customers purchasing cylinders consider that the number of suppliers for cylinders is currently sufficient to obtain competitive offers.[459]

(381) As regards **parameters of competition**, cylinder customers responding to the market investigation indicated security of supply as the most important, followed by price. Timely delivery was rated as the third most important factor. Product range and ability to also offer cylinders of helium also appear to be important in the customers' selection of cylinder suppliers.[460]

(382) Competitors rated timely deliveries as the first most important parameter of competition, closely followed by price. The third most important parameter was security of supply followed by product range. Similarly to customers, competitors considered as an important element for a competitive cylinder offer the ability to also offer cylinders of helium.[461] Competitors also stated that agreements between gas companies and third party depots are quite important for the competitiveness of a cylinder player, as they enable suppliers to concentrate demand of small customers and to amortise delivery costs associated with such small deliveries.[462]

(383) No evidence in the Commission's file suggests that the general conditions of competition and parameters of competition would be different in relation to the provision of dry ice. Importantly, the Commission considers that considerations similar to those made with respect to the cylinder markets on the ability to compete of non-vertically integrated Tier 3 players, and therefore the importance of vertical integration, apply also to dry ice. Likewise, several customers responding to the market investigation have indicated that the level of competitiveness of the dry ice market pre-Transaction is already limited. For example, […] explained that "*Dry Ice is often needed just in time, so long transportation (sic) time doesn´t make sense, therefore limited competition*".[463]

*8.2.2. Horizontal non-coordinated effects*

(384) In this Section the Commission assesses the likelihood that the Transaction may result in anticompetitive horizontal non-coordinated effects in the affected markets for industrial gases identified in Section 8.2.1.1.1.a. Unless otherwise specified, the findings set out this Section, and in particular the results of the market investigation, do not materially differ depending on the gas type or the geographies at stake (in the case where the geographic scope of the relevant market has been defined as national).[464] Therefore, the Commission's

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457 Responses to RFI Q17 to customers of industrial gases, question 86.
458 Responses to RFI Q17 to customers of industrial gases, question 90.
459 Responses to RFI Q17 to customers of industrial gases, question 101.
460 Responses to RFI Q17 to customers of industrial gases, question 87.
461 Responses to RFI Q31 to competitors in industrial and medical gases, question 73.
462 Responses to RFI Q31 to competitors in industrial and medical gases, question 125.
463 […]'s response to RFI Q17 to customers of industrial gases, question 36, ID 2439.
464 Responses to RFI Q17 to customers of industrial gases and RFI Q31 to competitors in industrial and medical gases.

analysis and the results of the market investigation will be presented primarily by mode of supply.

8.2.2.1. Notifying Parties' view

(385) In the Form CO, the Notifying Parties acknowledged that, given their significant market shares and/or the non-negligible market share increments, the Transaction may prima facie raise serious doubts as to its compatibility with the single market within the meaning of Article 6(1)(c) of the Merger Regulation in a number of affected markets (so defined "Category 2").[465] In relation to other affected markets ("Category 1" markets), the Notifying Parties did not express a view as to the effects of the Transaction, as, according to them, the divestment envisaged in the Form CO for the "Category 2" markets would have removed the full overlap between the Notifying Parties' activities also in the "Category 1" markets.[466] The exceptions are the following markets that they identified in the Form CO, with respect to which they submitted that the Transaction does not give rise to competition concerns: bulk argon and cylinder high purity argon in Belgium; bulk argon and carbon dioxide, cylinder argon (all purity grades), high purity argon, nitrogen (all purity grades) and standard purity nitrogen in Finland; bulk oxygen and cylinder argon (all purity grades), standard purity argon, dry ice, carbon dioxide (all purity grades), carbon dioxide (high purity), carbon dioxide (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades) and oxygen (standard purity) in France; cylinder acetylene (all purity grades) and acetylene (standard purity) in Lithuania and bulk nitrogen in Luxembourg.[467]

(386) As regards closeness of competition, the Notifying Parties submitted that Linde and Praxair are not closer competitors between each other than they are with the remaining industrial gas suppliers that are active in the EEA. According to the Notifying Parties, due to the highly commoditised nature of the products at stake, all the major suppliers of industrial gases in the EEA have a very comparable offering and Praxair does therefore not exert more competitive pressure on Linde (and vice versa) than the remaining suppliers.[468]

(387) In the Thematic Papers the Notifying Parties only argued that in the Article 6(1)(c) Decision the Commission misjudged the role played by the so called Tier 2 suppliers as far as the on-site supply of industrial gases in the EEA is concerned. More specifically, according to the Notifying Parties the Commission (i) did not consider the importance of business development and operational capabilities, (ii) understated the importance of a supplier's local geographic footprint, while it overstated the relevance of a supplier's (iii) financial strength and (iv) in-house engineering capabilities as parameters of competition.

(388) In the Reply to the Statement of Objections, the Notifying Parties only reiterated that the Commission overstated the relevance of a supplier's in-house engineering capabilities as a distinguishing factor between Tier 1 and Tier 2 suppliers in the EEA.

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465 The "Category 2" markets are those where the Notifying Parties have a combined market share in excess of [50-60]% with an overlap of at least [0-5]%, or a combined market share in excess of [40-50]% with an overlap of at least [5-10]%, as identified in Form CO, Chapter A, Section 6, Tables 34 and 35.

466 The "Category 1" markets are all affected markets not falling under Category 2, as identified in Form CO, Chapter A, Section 6, Table 35 and paragraph 195.

467 Form CO, Chapter A, Section 6, paragraphs 231 to 253.

468 Form CO, Chapter A, Section 8, paragraph 413.

8.2.2.2. Results of the market investigation and Commission's assessment

8.2.2.2.1. Tonnage

(389) Section 8.2.2.2.1 analyses whether the Transaction would give rise to horizontal non-coordinated effects in the EEA tonnage markets for the supply of carbon monoxide, nitrogen, hydrogen[469] and oxygen. For that purpose, first, it assesses the competitive constraints exerted by the Notifying Parties on each other and on their competitors pre-Transaction, which would be removed by the Transaction (Section 8.2.2.2.1.a); then, it assesses the other competitive constraints in the tonnage markets, which will remain post-Transaction, and the likelihood that they off-set the anticompetitive effects of the Transaction (Section 8.2.2.2.1.b). Finally, the Commission undertakes an overall assessment of the likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.2.2.2.1.c), and then draws conclusions (Section 8.2.2.2.1.d).

**a. Assessment of the competitive constraint exerted by the Notifying Parties**

(390) The Commission considers that the Notifying Parties exert important competitive constraints in the EEA tonnage markets, on each other, as well as on the remaining competitors, which would be removed by the Transaction. This is true both in view of the Notifying Parties' large market shares, shares of tendered capacity won, and the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), and in view of their market performance.

i. Market shares

(391) As illustrated by Table 4 and Annex I, based on the sales market shares provided by the Notifying Parties, pre-Transaction Linde and Praxair are respectively number one and number three by volume and value in the supply of nitrogen, number two and number three by volume in the supply of oxygen (number two and number four by value), and number two and number four in the supply of carbon monoxide by volume (number three and number four by value). Air Liquide is the market leader in all of these markets with the exception of nitrogen and Air Products is number three or number four, depending on the market, similar to Praxair. Messer follows at distance only in nitrogen and oxygen.

(392) The combined market shares of the Notifying Parties are above [40-50]% in the EEA tonnage markets for the supply of oxygen, above [30-40]% in nitrogen (based on the market reconstruction), above [20-30]% in carbon monoxide and [10-20]% in hydrogen.

(393) In terms of competitive tenders won for oxygen and nitrogen tonnage projects, as illustrated in Table 20, the Notifying Parties, considered together, won more than […]% of the total tendered capacity in the period 2007-2018 in the EEA. Linde and Praxair were respectively the number one and number three in terms of tendered capacity won in the most recent years (2012 – 2018), having been awarded tenders accounting for, respectively, […]% and […]% of the capacity tendered, while Air Liquide was number two, with […]% and Air Products and Messer following at distance with, respectively, […]% and […]%. With respect to competitive tenders for hydrogen tonnage plants, Linde won […]%, Air Liquide won […]% and Haldor Topsoe won […]% of the tendered capacity in the EEA between 2007 and 2018.[470] In terms of participation, Linde and Air

469 In relation to the EEA tonnage supply of hydrogen, please see footnote 330, above.

470 Haldor Topsoe is a company providing engineering services and not a gases supplier. According to the data provided by the Notifying Parties, Haldor Topsoe won one large tonnage tender for hydrogen with […] tpd capacity a plant sale offering. Based on the available data, the winning offer was for the sale of the plant to be operated by the customer. The Commission took into account the tenders where the tonnage supply offer competed with a self-supply offering, which would capture this instance as Linde,

Liquide participated in all tenders for hydrogen tonnage plants, while Praxair and Air Products bid for, respectively, […]% and […]% of the tendered capacity.

(394) Therefore, the Commission considers that the Notifying Parties have large combined market shares in tonnage markets, particularly as regards nitrogen and oxygen. Moreover, the Notifying Parties' market shares and their successful track record in tonnage tenders for oxygen and nitrogen are likely to lead to a significant increase in market power post-Transaction.

ii. Closeness of competition

(395) As regards closeness of competition, the Commission notes that the tonnage markets are very concentrated. This has been illustrated in Section 8.2.1.2.2. In this respect the Commission also notes that, already pre-Transaction, concentration levels are very high and above [3000-3500], by both volume and value, in all markets with the exception of nitrogen, where they are in any event above [2500-3000] by value and [2000-2500] by volume.[471]

(396) Contrary to the Notifying Parties' arguments, the results of the market investigation indicate that, in the very concentrated tonnage markets, only the Tier 1 players compete closely with each other and their capabilities are unmatched by the other suppliers, in particular in terms of ability to bid for the largest tonnage projects. This is in particular because of their engineering capabilities. Messer and SOL follow at distance and only in some geographic areas.[472]

(397) In this respect, among the customers, […] stated that, "*in some regions, a competitive environment (although already limited) is today guaranteed by the presence of Praxair and Linde acting as competitors. This is also explained by Praxair and Linde's close geographic positioning in Europe. Often Air Liquide, Praxair and Linde are present in the same circles around* […]*'s site, and are therefore either credible alternatives as suppliers, or at least the alternative that determines the price the best located supplier can impose. Air Products is not present in the overall European HyCO market, but it has a role as a regional supplier of air gases*".[473]

(398) This is confirmed by the analysis of the Notifying Parties' internal documents where the main focus and key benchmarking of the Notifying Parties' activities in the EEA is undertaken primarily against each other, Air Liquide and Air Products, and only in certain geographies, and to a more limited extent, against Messer or SOL.[474]

(399) In this context it appears therefore that the Notifying Parties compete with other suppliers, at the very least in line with what their market share would suggest, particularly as regards nitrogen and oxygen. The evidence on common tender participation in competitive tenders

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Praxair, Air Liquide and Air Products also placed bids for the same tender. See Annex II for more explanations on the data assumptions.

471 Based on the sale market shares provided by the Notifying Parties and illustrated in Section 8.2.2.2.1.a.i.

472 Responses to RFI Q17 to customers of industrial gases, questions 16 and 17 and RFI Q31 to competitors in industrial and medical gases, questions 24 and 25.
While the share of oxygen and nitrogen tonnage capacity won by Messer is greater than the one of Air Products, all those instances where Messer won an oxygen or nitrogen tonnage tender were localised in Central and Eastern Europe, the geographic area to which Messer's capabilities are circumscribed. The three tenders won by Messer related to plants to be built in Germany, Romania and Czech Republic.

473 Agreed non-confidential minutes of the conference call with […] of 29 September 2017, paragraph 32, ID 604.

474 For example, Linde's internal documents, Annex 11 to the Form CO, 5.4(iii) Non-transaction related documents, Executive Board of Linde AG, Competitors.

for oxygen and nitrogen tonnage plants shows that Linde is a close competitor to Praxair, exercising a strong competitive constraint on Praxair as it was the second most often met competitor across the tenders in oxygen and nitrogen tonnage tenders. From the perspective of Linde competitors are of similar distance except for Air Liquide, its closest competitor.

(400) With respect to hydrogen, the degree of competitive constraint exerted by the Notifying Parties on each other appears to be stronger than what their market share would suggest. Indeed, Linde placed a bid for every competitive tender in the EEA for tonnage hydrogen in the period 2007-2018. While Praxair […] for tonnage hydrogen, it bid for […]% of the tendered capacity in competitive tenders for hydrogen tonnage plants in the same period. Therefore, for more than half of the tendered capacity the Notifying Parties did compete against each other.

(401) In fact, as explained in Section 8.2.1.1.3., the bidding analysis shows that Praxair and Linde compete strongly against each other in tonnage tenders. Indeed, Praxair's winning ratio decreases when Linde also places a bid, compared to tenders where they compete against other players and the other Notifying Party is not present.

(402) The Commission therefore considers that the Notifying Parties are close competitors to a significant degree such that the Transaction could potentially give rise to significant price effects by removing the constraint exerted by the Notifying Parties on each other and on the other competitors.

iii. Specific assessment of the competitive constraint exerted by Linde

(403) The Commission considers that Linde exerts an important competitive constraint in the EEA tonnage markets for oxygen, nitrogen, hydrogen and carbon monoxide, which is not only due to its high market shares (illustrated in Section 8.2.2.2.1.a.i), but also to (i) its market performance with respect to the main parameters of competition, (ii) its outstanding engineering capabilities, as well as it financial and operational capabilities, and (iii) the density of its plant network.

(404) First, as regards performance with respect to the main parameters of competition identified in Section 8.2.1.2.2, Linde is rated best by customers and second best by competitors (closely after Air Liquide) in terms of supply security.[475] In terms of prices, while the results of the market investigation have not been conclusive on the customer side,[476] competitors consider Linde the second most price aggressive player, second only to Praxair.[477] This is in line with the results of the bidding analysis illustrated in Table 20, which shows that Linde has been very successful in competitive tonnage tenders: in the last ten years, by won capacity, Linde was the most successful bidder in tonnage oxygen and nitrogen tenders and the third most successful bidder in tonnage hydrogen tenders.

(405) Second, one of Linde's key strengths lies in its first class in-house engineering capabilities. Linde operates with a high degree of vertical integration in engineering, where in essence only construction of the plants is outsourced to third parties. Linde has a separate division, Linde Engineering, which designs and builds industrial plants in different sectors (that is petrochemical industries, processing of natural gas, ASUs for air gases and plants for the production of non-atmospheric industrial gases) and plant components. Linde Engineering

475 Responses to RFI Q17 to customers of industrial gases, question 12 and RFI Q31 to competitors in industrial and medical gases, question 18.

476 Responses to RFI Q17 to customers of industrial gases, question 11. Several customers have provided rating values which are in contradiction with the explanation of their answers.

477 Responses to RFI Q31 to competitors in industrial and medical gases, question 17.

has close to 1,500 employees and specific subdivisions active in the supply of specific plants.[478] Representatives of Linde Engineering participate to the board meetings of Linde deciding on tender participation.

(406) The outstanding quality of Linde's engineering capabilities has been emphasised by the respondents to the market investigation. In particular, competitors consider Linde the most competitive player as regards in-house engineering capabilities, followed by Air Liquide and Praxair.[479]

(407) In this respect, the Commission notes that one of the stated rationales of the Transaction is to "*leverage the strengths of each company: Linde's long-standing leadership in engineering and technology expertise with Praxair's operational excellence*."[480]

(408) Third, as regards financial capabilities the Commission notes that Linde has an aggregated worldwide turnover of approximately EUR 17 billion in 2016, which makes it the second largest player in the industry after Air Liquide. Its EEA overall turnover is around EUR […] and it has won several tonnage tenders requiring a capital expenditure above EUR […], up to EUR […].[481] These considerable financial capabilities allow Linde finance projects that require a large capital expenditure.

(409) Fourth, as regards Linde's operational capabilities, Linde has been operating in the tonnage markets for several years and possesses significant expertise, proved by the fact that both customers and competitors responding to the market investigation rated Linde the best in terms of reputation.[482]

(410) Fifth, as regards density, Linde operates a large network of bulk plants which enables it to offer security of supply for tonnage customers at a competitive cost over a large portion of the EEA territory, as illustrated by the site maps submitted with the Form CO.[483]

(411) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Linde is likely to deteriorate.

iv. Specific assessment of the competitive constraint exerted by Praxair

(412) The Commission considers that Praxair exerts an important competitive constraint in the EEA tonnage markets for oxygen, nitrogen, hydrogen and carbon monoxide, in particular due to its outstanding operational capabilities in managing its plant network, as well as it financial and engineering capabilities.

(413) Indeed, despite being the Tier 1 player with the smallest sales market shares in the tonnage markets (with the exception of nitrogen where it holds a share larger than Air Products),[484] Praxair is considered the industry performance leader and the excellence in terms of operational capabilities, pioneer of the so called "density and discipline" model in industrial gases. As described by Société Générale, Praxair's strategy is to focus on "[…]."[485]

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478 Form CO, Chapter F, Section 7, paragraph 2044 and Table 181, as well as Annex 181.

479 Responses to RFI Q31 to competitors in industrial and medical gases, question 19.

480 Form CO, Section 1, paragraph 10.

481 Annex Q1.1 to the response to RFI 57.

482 Responses to RFI Q17 to customers of industrial gases, question 12 and RFI Q31 to competitors in industrial and medical gases, question 18.

483 Form CO, Annex 25, as well as Annex 27 list all its plants.

484 Based on the sale market shares provided by the Notifying Parties and illustrated in Section 8.2.2.2.1.a.i., Praxair's sale market shares are more modest compared to the ones of Linde and below [10-20]%, with the exception of nitrogen where is at [10-20]%.

485 Praxair's internal documents, […] ([…]) and […] ([…]).

(414) The selectivity in Praxair's approach to bidding has been pointed out in public also by […]. For example, at […] stated that "[…]."[486]

(415) When it does select to bid for tonnage, Praxair does it aggressively and it is able to provide good security of supply because of the density of its network.[487] In this respect, the Commission notes that competitors consider Praxair the most price aggressive player in terms of price.[488]

(416) Because of this focussed bidding strategy, even when it does not win Praxair appears to exert a competitive constraint greater than what its sale market shares suggest. This is in particular the case for oxygen.

(417) In this respect the results of the bidding analysis illustrated in Table 20 suggest that Praxair is currently a stronger competitor than its market shares would suggest in the most recent years. In particular, its share of won tenders with respect to oxygen and nitrogen has been increasing in the last six years (2012-2018), compared to the previous six-year period (2007-2011): Praxair won […]% of the total tendered tonnage capacity in those years in 2012-2018 for nitrogen and oxygen (compared to […]% in 2007-2011), while its sales market share for oxygen, which reflect a much longer history of competitive interactions, are below […]%. Moreover, Praxair has been the second most successful challenger of incumbent gas suppliers: Praxair's share accounts to […]% of the competitive tendered capacity where the incumbent provider was challenged and lost. With regards to tonnage hydrogen, although Praxair […] in the tonnage market for hydrogen, when weighting the participation by capacity, Praxair bid for […]% of the tendered capacity in competitive tenders in the EEA in 2007 – 2018.

(418) Therefore, on the basis of the bidding analysis, the Commission considers that Praxair constitutes an important competitive force at least in the EEA tonnage market for oxygen, which would be removed by the Transaction.

(419) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Praxair is likely to deteriorate. To the contrary, the bidding data submitted by the Notifying Parties shows that Praxair is currently bidding for several very large hydrogen tonnage tenders (nameplate capacity above […] metric tpd), an oxygen tonnage tender for a nameplate capacity of […] metric tpd and also one of the infrequent carbon monoxide tonnage tenders for a nameplate capacity of […] metric tpd.[489] In fact, there is almost as much hydrogen capacity tendered for in currently ongoing competitive tenders ([…] metric tpd) as the total hydrogen capacity in competitive tenders between 2007 and 2018. Praxair is participating in […]% of these tenders.

(420) Finally, the Commission notes that also Praxair, just like Linde, enjoys significant financial capabilities and very strong in-house engineering capabilities, neither of which is also likely to deteriorate absent the Transaction.[490]

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486 Praxair's internal document, "[…]", ([…]; ID4593-045965).

487 In terms of security of supply Praxair is considered the third best option by both customers and competitors. Responses to RFI Q17 to customers of industrial gases, question 12 and RFI Q31 to competitors in industrial and medical gases, question 18.

488 Responses to RFI Q31 to competitors in industrial and medical gases, question 17. As mentioned at recital (385), the results of the market investigation have not been conclusive on the customer side as regards gas suppliers' price aggressiveness. In fact, several customers have provided rating values which are in contradiction with the explanation of their answers. Responses to RFI Q17 to customers of industrial gases, question 11.

489 Annex Q5 to the response to RFI 57.

490 No evidence in the Commission's file suggests that.

(421) Indeed, with EUR 9.5 billion aggregated revenues worldwide in 2016, of which EUR […] in the EEA (where it achieved, in 2016, aggregated gross profit margins above […]%[491]), Praxair is the third largest supplier of industrial gases worldwide and in the EEA in terms of financial capabilities.[492]

(422) Moreover, with respect to in-house engineering, Praxair's capabilities are considered by competitors second only to those of Linde and Air Liquide in the EEA.[493] In this respect, the level of vertical integration of Praxair is considerable, albeit lower compared to Linde. In the EEA Praxair has an engineering team based in Belgium, which is in charge of business development, procurement of components, and operation (including maintenance and repair) of the plants and oversees their construction with the assistance of local teams. That team […]. The following Table 31 provides an overview of Praxair's overall engineering capabilities (that is to say, not limited to what is relevant in the tonnage markets), distinguishing […]. The Table distinguishes five types of plants:

(a) ASUs, for the production of oxygen, nitrogen and noble gases;

(b) "HyCO" plants, for the production of hydrogen and carbon monoxide;

(c) "VPSAs" (Vacuum Pressure Swing Adsorption Plants), small on-site plant solutions for the production of oxygen,

(d) "PSAs" (Pressure Swing Adsorption Plants) and "N-Plants", small on-site plant solutions for the production of nitrogen.

**Table 31: Engineering capabilities relied on by Praxair for its EEA activities in industrial gases**

| Process step | | | Type of gas plant component | | | |
|---|---|---|---|---|---|---|
| | | | Base plant | | | Distribution, backup and auxiliary systems |
| | | | ASUs, N-Plants, VPSAs | PSAs | HyCO | |
| Business development | | | […] | | | |
| Engineering | Project management | | […] | | | |
| | Design (plants and components) | | […] | […] | […]* | […] |
| | Components | Procurement | […] | | | |
| | | Fabricated and designed by third parties (%) | […] | […] | […] | […] |
| | | Fabricated by third parties to Praxair's design (%) | […] | […] | […] | […] |
| | | Fabricated in-house to Praxair's design (%) | […] | […] | […] | […] |
| | Construction | Construction drawings | […] | | | |

491 Response to RFI 48, question 17.2.

492 Excluding SIAD, but including Rivoira.

493 Responses to RFI Q31 to competitors in industrial and medical gases, question 19.

| | | | |
|---|---|---|---|
| | | **Construction process** | […] |
| | | **Overseeing construction process** | […] |
| | | **Commissioning and start-up** | […] |
| **Operations (including maintenance and repair)** | | | […] |

*Source: On-site Supply of Industrial Gases Suitability of Proposed Divestitures, Table 5.*

* […].

(423) It is important to note that Praxair, like Linde, […].

v. Conclusion

(424) On the basis of the considerations set out in recitals (390)-(423), the Commission considers that the Notifying Parties exert important competitive constraints in the EEA tonnage markets for oxygen, nitrogen, carbon monoxide and hydrogen, on each other, as well as on their remaining competitors.

**b. Assessment of the other competitive constraints in the markets**

(425) Recitals (426) to (452) assess the competitive constraints which would remain post-Transaction in the EEA markets for the tonnage supply of oxygen, nitrogen, hydrogen and carbon monoxide and whether those constraints would have the ability and incentives to counteract the loss of competition deriving from the Transaction and described in recitals (390)-(424).

i. Air Liquide

(426) Air Liquide is currently the market leader in all tonnage markets with the exception of nitrogen, where, pre-Transaction, it closely follows the market leader Linde. Post-Transaction it will continue to be the market leader for tonnage oxygen, hydrogen and carbon monoxide, but its distance from the market leadership in nitrogen would increase.[494]

(427) Air Liquide has strong financial and engineering capabilities. Indeed, it is the first supplier of industrial gases in terms of aggregated revenues, both worldwide and in the EEA,[495] and it has extensive in-house engineering design capabilities for various gas process plants and plant components.[496] It also enjoys a dense network of plants across the EEA.[497] In the market investigation, Air Liquide was also rated the highest in terms of security of supply by competitors and the second highest by customers, closely after Linde.[498]

(428) However, as illustrated in Section 8.2.1.1.3, the bidding analysis suggests that Air Liquide's pre-Transaction bidding strategy in the tonnage market is not as aggressive as its market share would suggest. It appears that Air Liquide rather relies on its

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494 Based on the sale market shares provided by the Notifying Parties and illustrated in Section 8.2.2.2.1.a.i. and Annex I.

495 See Section 6.5.

496 Form CO, Chapter F, Section 6, Tables 177 and 179, as well as Air Liquide's response to RFI Q20, question 2, ID 4311.

497 Form CO, Annexes 26 and 27.

498 Responses to RFI Q17 to customers of industrial gases, question 12 and RFI Q31 to competitors in industrial and medical gases, question 18.

strong existing market positions. In fact, with respect to tonnage tenders for oxygen and nitrogen, its share of won tenders is lower compared to Linde's, as well as compared to its sale market share: in the period 2007-2018 Air Liquide won […]% of the tendered capacity for oxygen and nitrogen; its share of won tenders increased in the period 2012-2018 compared to the period 2007-2011 ([…]%), it is […]% and comparable to a sale market share of […]% by value and […]% by volume for nitrogen (which is the lowest sales market share of Air Liquide in the tonnage markets).[499]

(429) This relatively unaggressive bidding behaviour is also reflected in the rating given by respondents to the market investigation to Air Liquide's pricing in the tonnage markets: both customers and competitors viewed Air Liquide as less aggressive compared to Linde and Praxair, but also, for customers, compared to Messer.[500]

(430) No evidence in the Commission's file suggests that, post-Transaction, Air Liquide would change its strategy. On the contrary, it may consider it more profitable to compete even less in tenders for new projects given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players. Financial analysts seem to have expressed such opinion, when, after the announcement of the Transaction, they upgraded Air Liquide's shares among the shares "*to Buy, with Target Price Change EUR* […]".[501] In the same vein, among customers responding to the market investigation […] expects price increases by the competitors of the merged entity post-Transaction, explaining that "*According to our experience, the players are very eager for aggressive pricing if only there is a chance for that. Due to the lack of cost-based price setting, in our view, the realism between product prices and the added value created by air gas production process has disappeared and the prevailing air gas companies are trying to utilize heavily there position in the markets in price setting and are endeavoring to become even more profitable with high price expectations*."[502] Likewise […] stated that "*the merger between Praxair and Linde will cause a price increase and so the other competitors (Air liquide and Gasin) will not feel the need to be so agressive*".[503] This view is shared by several other customers in the market investigation.[504]

(431) The Commission therefore considers that, while Air Liquide is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

ii. Air Products

(432) Pre-Transaction, Air Products is the second largest supplier of hydrogen and carbon monoxide EEA tonnage markets, and the fourth largest player in the EEA tonnage

499 Based on the sale market shares provided by the Notifying Parties.

500 Responses to RFI Q17 to customers of industrial gases, question 11 and RFI Q31 to competitors in industrial and medical gases, question 16.

501 Linde's internal documents, […] ([…]), page […]. Air Liquide's share price has never been above EUR 112, https://www.airliquide.com/investors/shareprice-performance, ID6422.

502 […]'s response to RFI Q17 to customers of industrial gases, question 29, ID 2535.

503 […]'s response to RFI Q17 to customers of industrial gases, question 29, ID3084.

504 Responses to RFI Q17 to customers of industrial gases, question 29.

markets for nitrogen and oxygen.[505] Post-Transaction it will continue to be the second largest player for hydrogen after Air Liquide.

(433) Air Products has strong financial and engineering capabilities. Indeed, it is the third largest supplier of industrial gases in terms of aggregated revenues, both worldwide and in the EEA,[506] and it has in-house engineering design capabilities comparable to those of Praxair.[507] Air Products has been rated fourth in terms of security of supply by competitors and fifth by customers in the market investigation.[508] This is a consequence of its less dense network of plants compared to the other Tier 1 players, as well as compared to Messer for the regions where the latter is active.[509]

(434) As illustrated in Section 8.2.1.1.3, the bidding analysis shows that Air Products also appears not to be particularly aggressive in bidding and rather to rely on its existing position. Indeed, it has not won many competitive bids in a pre-Transaction scenario: Air Products has won only […]% of the total tendered capacity for tonnage oxygen and nitrogen in the years 2007–2018, below its sales market shares in either of these tonnage markets (the lower being […]% in oxygen by volume). The competitive constraint exerted by Air Products in the EEA tonnage markets for oxygen and nitrogen has been decreasing in the more recent past: indeed, its share of tendered capacity won has been […]% in the period 2012-2018. With respect to hydrogen, Air Products did not win any significant tender.

(435) No evidence in the Commission's file suggests that, post-Transaction, Air Products would change its strategy. On the contrary, it may consider it more profitable to compete even less in tenders for new tonnage projects given the reduction of the competitive pressure in the market brought about by the elimination of Praxair as standalone player. In this respect, among customers responding to the market investigation […] expects price increases by the competitors of the merged entity post-Transaction, explaining that the merger "*would lead to an overall price increase. As the market already now has limited competition, this competition would further decrease*."[510] Likewise, […] stated that "*In a market with few suppliers, such as this one, if one of them increases prices the rest may do the same*".[511] This view is shared by several other customers in the market investigation.[512]

(436) The Commission therefore considers that, while Air Products is likely to have the ability to compete post-Transaction as much as it had pre-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

iii. Messer

(437) Messer has a marginal presence in the EEA tonnage markets for nitrogen and oxygen, where it holds respectively sales market shares of [0-5]% and [0-5]%, both by volume and value, and a negligible presence in hydrogen, with a share below [0-

505 Based on the sale market shares provided by the Notifying Parties and illustrated in Section 8.2.2.2.1.a.i. and Annex I.

506 See Section 6.5.

507 Form CO, Chapter F, Section 6, Tables 177 and 179.

508 Responses to RFI Q17 to customers of industrial gases, question 12 and RFI Q31 to competitors in industrial and medical gases, question 18.

509 Form CO, Annexes 26 and 27.

510 […]'s responses to RFI Q17 to customers of industrial gases, question 29, ID 3044.

511 […]'s responses to RFI Q17 to customers of industrial gases, question 29, ID 3816.

512 Responses to RFI Q17 to customers of industrial gases, question 29.

5]%, both by volume and value. It does not supply carbon monoxide to tonnage customers.[513]

(438) Whilst, with respect to oxygen and nitrogen, its share of won tendered capacity in the period 2007-2018, as illustrated in Table 20 of Section 8.2.1.1.3, is above its 2016 sales market shares, Messer won only three tenders in Germany, Romania and the Czech Republic.

(439) Indeed, Messer has a somewhat dense network of plants in Austria and Eastern Europe, which may confer it a certain competitive advantage in those areas (reflected in the ratings given by customers and competitors to Messer in terms of security of supply and price aggressiveness, which are relatively comparable to those of Air Products[514]). However, it has only a marginal presence in other areas, with the exception of Spain where it operates a pipeline.[515] In this respect, in the market investigation, […] stated that "*Messer seems to have a limited footprint*,"[516] while […] stated that "*Messer is much smaller than the others and is less interested in participating in competitive tenders*."[517]

(440) Moreover, whilst Messer has the largest revenues of all Tier 2 players, its aggregated worldwide revenues are comparable to those of either Praxair or Air Products, the smallest Tier 1 players, in the EEA.[518] Messer itself identified in financial constraints the reason of its inability to compete for costly hydrogen plants, when it stated that "*they do not offer big hydrogen as the huge CAPEX required for their construction (around EUR 100 million) makes these plants too costly for them (given that their overall turnover is EUR 1.2 billion).*"[519]

(441) Messer has in-house engineering capabilities, including for the design of ASUs,[520] commissioning and start up activities,[521] Nonetheless, as Messer itself recognises, compared to the Tier 1 players it has "*the smallest capacities of engineering departments and is depending on third parties support. Messer also covers the smallest range of Products*."[522]

(442) No evidence in the Commission's file suggests that, post-Transaction, Messer's capabilities are likely to change.

(443) The Commission therefore considers that post-Transaction Messer appears unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the EEA tonnage markets for nitrogen and oxygen, as well as for hydrogen and carbon monoxide.

iv. Other players

(444) Other players in the EEA tonnage markets are SOL, Tyczka, Woikoski and Westfalen. Those players have been able to win a few tonnage tenders (resulting in

513 Based on the sales market shares provided by the Notifying Parties and illustrated in Section 8.2.2.2.1.a.i. and Annex I.

514 Responses to RFI Q17 to customers of industrial gases, question 12 and RFI Q31 to competitors in industrial and medical gases, question 18.

515 Form CO, Annexes 26 and 27.

516 […]'s response to RFI Q17 to customers of industrial gases, question 16, ID3867.

517 […]' response to RFI Q17 to customers of industrial gases, question 16, ID 3060.

518 See Section 6.5.

519 Agreed minutes of the conference call with Messer of 24 October 2017, paragraph 10, ID 698.

520 Messer's response to RFI Q31 to competitors in industrial and medical gases, question 6, ID 3201.

521 Agreed minutes of the conference call with Messer of 15 March 2018, paragraph 10, ID6240.

522 Messer's response to RFI Q31 to competitors in industrial and medical gases, question 19, ID 3201.

individual market shares below [0-5]% in the various markets, with the exception of SOL which achieves [0-5]% for nitrogen, both by volume and value).

(445) The Commission considers that the ability of these players to compete is rather limited. Indeed, these players, as well as other Tier 2 players, are constrained in terms of engineering capabilities, financial resources, and geographic presence.

(446) As regards engineering, these players have no in-house capabilities with regards to the design of ASUs or other process plants for industrial gases (with the exception of automated filling stations for cylinders)[523]. They purchase plants from third parties, including, importantly, Linde and SIAD. Such lack of in-house capabilities is considered a competitive disadvantage in the tonnage markets. For example, SOL stated that "*not having its own in-house plant construction and engineering capabilities could cause to companies like SOL some disadvantages (for example in terms of cost) when bidding for tonnage tenders in competition with other gas suppliers that have their own engineering and construction capabilities. More specifically, the margins that SOL and other similar companies may expect to realise are lower since the customers' final price needs anyhow to be competitive*."[524]

(447) Likewise, Westfalen stated that it "*does not dispose of [sic] extensive in-house engineering and it depends on competitors, mainly Linde and SIAD, for engineering capabilities to build ASUs. The only in house engineering capability available to Westfalen is in relation to filling stations. Westfalen can do the simplest design of a gas plant (specifications on capacity and purity of the gas to be produced) but then it depends on third parties for the more detailed design engineering and construction of the plant. Not having in house engineering capabilities could be considered a weakness when a new ASU has to be built as competitors with in-house engineering have a cost advantage. Internalizing engineering capabilities makes less expensive the construction of new plants.*"

(448) Therefore, the Commission considers that suppliers without in-house engineering capabilities pose only a limited competitive pressure on suppliers with such in-house capabilities and this will remain the case post-Transaction.

(449) As regards financial capabilities, the small revenue base of Tier 2 players other than Messer constitute and important constraint on their ability to bid for tonnage projects. In this respect Westfalen stated that, whilst it "*is looking for tonnage contract opportunities, […] the investment needed to build an ASU plant for tonnage is about EUR 20 to 60 million: the high investments needed constitute an expansion barrier for Westfalen, which is a family business and, as such, is subject to a strict financial constraint with an annual capex spend in industrial gases of less than 50 million*."[525]

(450) Finally, as regards geographic footprint, Tier 2 players have very limited density, each of them operating a very small number of gas plants and in circumscribed geographic areas. For example SOL, which operates the largest plant network after Messer among Tier 2 players, operates eight ASUs with a certain degree of density only in Italy and in the neighbouring countries, Croatia and Slovenia. It also operates single plants in Germany, Belgium and Romania.[526]

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523 Responses to RFI Q31 to competitors in industrial and medical gases, question 6.

524 Agreed minutes of the conference call with SOL of 23 March 2018, paragraph 8, ID6243.

525 Agreed minutes of the conference call with Westfalen of 19 March 2017, paragraph 5, ID 6109.

526 Form CO, Annexes 26 and 27.

(451) No evidence in the Commission's file suggests that, post-Transaction, the capabilities of Tier 2 Players other than Messer are likely to change. Notably, the overwhelming majority of customers and competitors do not expect any expansion or organic growth in the tonnage markets by other existing gas suppliers.[527]

(452) Finally, as explained in Section 8.2.5.1, entry of new tonnage players does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction.

(453) The Commission therefore considers that post-Transaction Tier 2 players other than Messer (with respect to which see Section 8.2.2.2.1.b.iii) appear unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the EEA tonnage markets for nitrogen and oxygen, as well as for hydrogen and carbon monoxide.

v. Customer's switching possibilities

(454) As explained in Section 8.2.5.2, buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. In this respect the Commission also notes that, contrary to the Notifying Parties' claims[528], switching costs for customers appear to be substantial (also at the end of a contract) as a result of the incumbent advantage which characterises the tonnage markets.[529] In this respect the Commission notes that the overwhelming majority of customers responding to the market investigation clearly indicated that switching is difficult or very difficult.[530] In fact, only a minority of customers indicated they have switched supplier in the past five years.[531] In this respect in the market investigation:

(a) […] stated that "*Having a large on-site gas plant installed it's not so easy to change supplier, huge investments needed, and this limitates competition*",[532]

(b) […] explained its statement that switching is very difficult by saying that "*Incumbent supplier with existing customer and infrastructure base is able to offer more favorable conditions, esp. for contract renewals*",[533]

(c) […] explained that "*Changing the supplier under an onside supply is very hard. But if there is a pipeline grid for the supply, it is almost impossible to find another supplier as they usually cannot provide the same security of supply (at the intended price level of the supplier), so such supply would be more expensive. In Hydrogen-CO-business, the marketing of the by-products, e.g. hydrogen for CO, is very difficult and leads to additional obstacles for switching suppliers*",[534]

(d) […] stated that "*Whether it's the cost to run the pipeline to our plant or build a new plant the capital and thus capital recovery for the vendor is high and the [switching] process can be 24-40 months to connect*".[535]

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527 Responses to RFI Q17 to customers of industrial gases, question 15 and RFI Q31 to competitors in industrial and medical gases, question 23.

528 Form CO, Chapter A, Section 8, paragraphs 403 to 405.

529 See Section 8.2.1.2.2.

530 Responses to RFI Q17 to customers of industrial gases, question 22.

531 Responses to RFI Q17 to customers of industrial gases, question 21.

532 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 2387.

533 […]'s response to RFI Q17 to customers of industrial gases, question 22, ID 3008.

534 […]'s response to RFI Q17 to customers of industrial gases, question 22, ID 3044

535 […]'s response to RFI Q17 to customers of industrial gases, question 22, ID3867.

(e) […] explained that "*in the case of supply via an on-site plant or via pipeline, which constitutes most of* […]*'s need, the incumbent supplier has a competitive advantage over the other industrial gas suppliers and is inherently able to make a better offer. Switching supplier or switching the supply mode from pipeline to an on-site plant is considered more expensive than renewing the existing contract for gas supply*".[536]

(f) […] explained that "[…] *explains that, for on-site plants, when there is an incumbent supplier, it is very difficult for other players to compete. As a result, switching supplier is difficult. It is technically possible to switch suppliers but it is not economically viable to build a production plant from scratch. For this reason, in practice, they have so far never considered switching from an existing supplier. However,* […] *invites other suppliers to bid in tenders for the renewals of tonnage supply contracts as the presence of other bidders and their offers represent a constraint on the price charged by the incumbent. In this respect, the proposed merger could worsen the situation, by reducing the number of potential challengers of an incumbent*".[537]

vi. Conclusion

(455) On the basis on the considerations set out in recitals (426)-(454), the Commission considers that, post-Transaction, any other competitive constraints present in the EEA tonnage markets are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely overall effects of the Transaction**

(456) The Commission notes that, post-Transaction, the merged entity would become the market leader in the EEA tonnage markets for the supply of oxygen with a market share above [40-50]% and increments, brought by Praxair, around or above [10-20] percentage points. Based on the results of the market reconstruction, the merged entity's market shares would be [30-40]% in the EEA tonnage market for nitrogen. Concentration levels (by volume and value) would increase significantly in nitrogen and oxygen, with delta HHI above [500-600] (around or above [1000-1500] in nitrogen, both by volume and value). In carbon monoxide and hydrogen the market share of the merged entity would be more moderate and below, respectively, [20-30]% and [20-30]%, but the post-Transaction HHI is around [4000-4500] in both cases.

(457) Moreover, the Notifying Parties exert important competitive constraints in the EEA tonnage markets for oxygen, nitrogen, carbon monoxide and hydrogen, on each other, as well as on the remaining competitors, which would be removed by the Transaction, not only in view of their market shares, but also for all the reasons illustrated in Section 8.2.2.2.1.a. Further, the Transaction is likely to eliminate an important competitive force in the EEA tonnage market for oxygen, for the reasons illustrated in Section 8.2.2.2.1.a.iv.

(458) The reduction of the competitive pressure resulting from the Transaction is not likely to be counteracted by other competitive constraints which will remain on the markets for the reasons illustrated in Section 8.2.2.2.1.b.

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536 Agreed non-confidential minutes of conference call with […] of 20 October 2017, paragraph 17, ID 598.

537 Agreed non-confidential minutes of conference call with […] of 10 October 2017, paragraph 20, ID 1027.

(459) In this context the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario. Indeed, the Transaction will further reduce the already limited number of bidders in tonnage tenders and increase the likelihood of wins by the merged entity, whose market shares would be set to grow further.

(460) This view is shared by the participants to the market investigation. Indeed, the majority of tonnage customers and competitors who replied to the market investigation expect that the Transaction will have a negative impact on the tonnage markets.[538] Among customers expressing a negative view on the Transaction:

(a) […] stated that "*merging the industrial gases and the engineering divisions of [Linde and Praxair] will further reinforce the consolidation of an already consolidated market and will further reduce the available choice when planning a large investment*." According to […], "*the worst effects have to be expected in the form of price increases*"[539]: the merger "*would lead to an overall price increase. As the market already now has limited competition, this competition would further decrease. The cost for new entries of new /smaller companies would increase (for investments in new plants and rebates expected from customers to make them change their incumbent supplier).*"[540]

(b) […] stated that, "*from a procurement perspective, the proposed merger is critical, leading to a potential reduction of suppliers, post-transaction. This statement is true for all industrial gases, irrespective of mode of supply, but specifically true for tonnage supply. There, the transaction between Linde and Praxair would reduce the number of supply alternatives in an already highly consolidated market. Local dominant supply positions will remain or even further expand, while bargaining power of tonnage customers will further decrease.*"[541]

(c) Another customer stated that it "*considers the market to be already too concentrated to have sufficient choice of tonnage suppliers and notes that, in certain countries, only two alternatives are available. […], if Praxair and Linde were to merge, the reduction in the number of available gas suppliers will reduce the number of alternatives of supply*."[542]

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538 Responses to RFI Q17 to customers of industrial gases, question 31 and RFI Q31 to competitors in industrial and medical gases, question 31.

539 Agreed non-confidential minutes of the conference call with […] of 29 September 2017, paragraphs 31 and 33, ID 5387. Also, […]'s response to RFI Q17 to customers of industrial gases, question 26, ID 3044: "*If out of 4 relevant suppliers, the no. 2 and 3 merge and form a new no. 1, this will definitely minimize competition. In most locations we do not even have 4 relevant suppliers, showing willingness to bid for projects. After the merger of Linde and Praxair, in some locations competition will be eliminated completely*."

540 […]'s response to RFI Q17 to customers of industrial gases, question 29, ID 3044.

541 Agreed non-confidential minutes of the conference call with […] of 21 March 2018, paragraph 27, ID 6254. Also, […]'s response to RFI Q17 to customers of industrial gases, question 31, ID 3008.: "*A reduced number of suppliers in an already highly concentrated market will further decrease supply options with lower price pressure for suppliers, especially for such locations with an existing dominant player*".

542 Agreed non-confidential minutes of the conference call with a customer of 12 October 2017, paragraph 25, ID5387.

(d) […] stated that "*Since the market structure can be characterised as oligopoly anyway, the merger of Praxair/ Linde will tighten the market even more*".[543]

(e) […] stated that "*There will be even worse situation after this transaction, as one of the competitors is missing*" and that "*Both of these companies are very large even now. After the transaction, one competitor will disappear from the markets and presumably some of their customers are facing monopolistic supply situation in air gases in the future, depending on their location. This would mean of course higher prices for the customers*." [544]

(f) […] explained that in "*Germany, in particular, [it] would suffer from significant decrease of capable tonnage gas suppliers.*"[545]

(g) […] stated that "*There are only 4 credible suppliers for* […]*'s business needs at the moment, and in some locations, like Rotterdam this is restricted by existing pipeline systems. This deal brings it down to a maximum of 3*."[546]

(h) According to […], "*In an expected oligopoly situation the overall price level is expected to increase significantly*" as a result of the merger.[547]

(i) […] stated that "*In a market with few suppliers, such as this one, if one of them increases prices the rest may do the same*".[548]

**d. Conclusion**

(461) For the reasons set out in the preceding recitals of Section 8.2.2.2.1, the Commission's assessment is that the Transaction would significantly impede effective competition in the EEA tonnage markets for carbon monoxide, nitrogen and oxygen, as result of horizontal non-coordinated effects.

(462) With respect to the EEA tonnage market for hydrogen, the Commission acknowledges that the evidence with respect to the horizontal non-coordinated effects of the Transaction is not as compelling as for the other tonnage markets. In any event the Commission considers that there is no need to conclude on the horizontal non-coordinated effects of the Transaction in the EEA tonnage market for hydrogen, because the commitments submitted by the Notifying Parties on 10 July 2018to remedy the horizontal non-coordinated effects of the Transaction in the other markets for industrial gases would also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects in the EEA tonnage market for hydrogen. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in that market.

8.2.2.2.2. Small on-site plants

(463) Recitals (463)-(514) analyse whether the Transaction would give rise to horizontal non-coordinated effects in the EEA markets for the supply of nitrogen and oxygen through small on-site plants. For that purpose, first, it assesses the competitive constraints exerted by the Notifying Parties on each other and on their competitors pre-Transaction, which would be removed by the Transaction (Section 8.2.2.2.2.a); then, it assesses the other competitive constraints in the small on-site plant markets,

543 […]'s response to RFI Q17 to customers of industrial gases, question 26, ID 2786.
544 […]'s response to RFI Q17 to customers of industrial gases, questions 26 and 28, ID 2535.
545 […]'s response to RFI Q17 to customers of industrial gases, question 26, ID 3060.
546 […]'s response to RFI Q17 to customers of industrial gases, question 26, ID 3789.
547 […]' response to RFI Q17 to customers of industrial gases, question 29, ID 3054.
548 […]'s response to RFI Q17 to customers of industrial gases, question 29, ID 3816.

which would remain post-Transaction, and the likelihood that they would off-set the anticompetitive effects of the Transaction (Section 8.2.2.2.2.b). Finally, there is an overall assessment of likely effects of the Transaction, based on the evidence presented in those Sections, together with the Commission's conclusions.

**a. Assessment of the competitive constraint exerted by the Notifying Parties**

(464) The Commission considers that the Notifying Parties exert important competitive constraints in the EEA small on-site plant markets for nitrogen and oxygen, on each other as well as on the remaining competitors, which would be removed by the Transaction. This is true both in view of the Notifying Parties' large market shares, shares of tendered capacity won, and the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), and in view of their market performance.

i. Market shares

(465) As illustrated by Table 5 and Annex I, according to the Notifying Parties' estimates, in terms of sales, pre-Transaction Linde and Praxair are respectively number two and four by volume and value in the supply of oxygen, and number two and five by volume and value in the supply of nitrogen. In all these markets, Air Liquide is number one and Air Products number three. Messer is number four in the supply of nitrogen, where SOL and Westfalen would hold respectively [0-5]% and [0-5]%; in the supply of oxygen Messer is number five with a share by value of [0-5]% and by volume of [0-5]%, while no other player has a share above [0-5]%.

(466) The combined market shares of the Notifying Parties according to their own estimates (which are [20-30]% for nitrogen and [40-50]% for oxygen, in value) are similar to the market shares of Air Liquide, which are around [30-40]% for nitrogen and [40-50]% for oxygen.

(467) The picture provided by the Notifying Parties' sales market shares appears highly conservative. Indeed, in terms of won tenders in the period 2007-2018, as illustrated in Table 26, together Linde and Praxair won […]% and […]% of the total tendered capacity for the supply of, respectively, nitrogen and oxygen, with Linde winning […]% of the nitrogen tendered capacity and […]% of the oxygen tendered capacity and Praxair winning […]% of the nitrogen tendered capacity and […]% of the oxygen tendered capacity.

(468) Therefore, the Commission considers that the Notifying Parties have large or relatively large combined shares in the EEA markets for the small on-site supply of nitrogen and oxygen. Moreover, the Notifying Parties' market shares and the successful track record in small on-site plant tenders for oxygen and nitrogen are likely to lead to a significant increase of market power post-Transaction.

ii. Closeness of competition

(469) As regards closeness of competition, the Commission notes that the small-on-site markets are very concentrated. This has been illustrated in Section 8.2.1.2.3. In this respect the Commission also notes that, already pre-Transaction, concentration levels are high and above 2000, by both volume and value, for nitrogen and above [3000-3500] by value and very close to [2000-2500] by volume for oxygen.[549]

[549] Based on the sales market shares provided by the Notifying Parties and illustrated in 8.2.2.2.1.a.i. and Annex I.

(470) The results of the market investigation indicate that in the very concentrated small on-site plant markets Linde, Air Liquide and Praxair closely compete with each other, followed by Air Products and Messer.[550]

(471) This is confirmed by the analysis of the Notifying Parties' internal documents where the main focus and key benchmarking of the Notifying Parties' activities in the EEA is undertaken primarily against each other, Air Liquide and Air Products, and only in certain geographies against Messer.[551]

(472) In this context it appears therefore that the Notifying Parties compete with other suppliers, at the very least in line with what their market share would suggest.

(473) In fact, as explained in Section 8.2.1.1.3, the bidding analysis shows that Praxair and Linde compete strongly against each other in small on-site plant tenders for nitrogen and oxygen: Praxair participated in tenders together with Linde for […]% and […]% of the total capacity that Praxair bid for in competitive small on-site plant tenders for, respectively, oxygen and nitrogen.

(474) The Commission therefore considers that the Notifying Parties are close competitors to a significant degree such that the Transaction would be likely to give rise to significant price effects by removing the constraint exerted by the Notifying Parties on each other and on other competitors.

iii. Specific assessment of the competitive constraint exerted by Linde

(475) The Commission considers that Linde exerts an important competitive constraint in the EEA small on-site plant markets for oxygen and nitrogen, which is not only due to its high market shares (illustrated in Section 8.2.2.2.2.a.i), but also to (i) its market performance with respect to the main parameters of competition, (ii) its outstanding engineering capabilities, as well as it financial and operational capabilities, and (iii) the density of its plant network.

(476) First, as regards performance with respect to the main parameters of competition identified in Section 8.2.1.2.3, based on the responses of customers and competitors in the market investigation, the Commission considers that Linde's market position is comparable to the one of the other Tier 1 players and superior to the one of Tier 2 players.[552]

(477) Nonetheless, on the basis of the bidding analysis, the Commission notes that, in the period 2007-2018 Linde has been the player winning the highest share of tendered capacity both for nitrogen and oxygen. Whilst for oxygen the share of total tendered capacity won by Linde is broadly in line with (or only slightly lower than) its sales market share, with respect to nitrogen the share of total tendered capacity won by Linde is more than double than its sales market share. In this context the Commission considers that Linde is currently a stronger competitor than its market shares would suggest in the market for the small on-site supply of nitrogen and can be considered an important competitive force, which would be removed by the Transaction.

(478) Second, as regards engineering, the same considerations made in Section 8.2.2.2.1.a.iii with respect to the tonnage markets apply also the small on-site plant

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550 Responses to RFI Q17 to customers of industrial gases, questions 68 and 69 and RFI Q31 to competitors of industrial and medical gases, questions 65 and 66.

551 For example, Linde's internal documents, […]; Praxair's internal documents, […], where […].

552 Responses to RFI Q17 to customers of industrial gases, question 64 and RFI Q31 to competitors in industrial and medical gases, question 60.

markets. Notably, Linde's first class in-house engineering capabilities translate in the small on-site plant markets in the offering of a large suite of small standardised onsite plant solutions overall branded as "ECOVAR".[553]

(479) Third, as regards financial and operational capabilities, as well as concerning density, the same considerations made Section 8.2.2.2.1.a.iii with respect to the tonnage markets apply also the small on-site plant markets.

(480) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Linde is likely to deteriorate.

iv. Specific assessment of the competitive constraint exerted by Praxair

(481) The Commission considers that Praxair exerts an important competitive constraint in the EEA small on-site plant markets for oxygen and nitrogen, in particular due to its outstanding operational capabilities in managing its plant network, as well as it financial and engineering capabilities.

(482) In this respect, the same considerations made in Section 8.2.2.2.1.a.iv with respect to the tonnage markets apply also the small on-site plant markets.

(483) In particular, on the basis of the bidding analysis, the Commission considers that Praxair constitutes an important competitive force in the EEA small on-site plant market for oxygen, which would be removed by the Transaction. Indeed, as explained in Section 8.2.1.1.3, the bidding analysis shows that, in that market, Praxair is currently a stronger competitor than its market shares would suggest: in the period 2007-2018 Praxair won […]% of the total tendered capacity, while its sale market shares were never above [0-5]%, both if considered value or volume sale data.

(484) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Praxair is likely to deteriorate. To the contrary, the bidding data submitted by the Notifying Parties and analysed in Section 8.2.1.1.3 indicate that Praxair has placed bids for approximately […]% of the total not yet awarded capacity in competitive tenders for small-onsite plants for nitrogen in the EEA. Praxair is also participating in […] out of […] ongoing competitive tenders for small-onsite plants for oxygen in the EEA, for which the information on capacity was not provided to the Commission.

v. Conclusion

(485) On the basis of recitals (464)-(484), the Commission considers that the Notifying Parties exert important competitive constraints in the EEA small on-site plant markets for oxygen and nitrogen, on each other, as well as on the remaining competitors. On the basis of the bidding analysis, the Commission also considers that the Transaction is likely to eliminate an important competitive force in the EEA small on-site plant markets for oxygen and nitrogen.

**b. Assessment of the other competitive constraints in the markets**

(486) In this Section, the Commission assesses the competitive constraints which will remain post-Transaction in the EEA markets for the small on-site plant supply of oxygen and nitrogen and whether those constraints would have the ability and incentives to counteract the loss of competition deriving from the Transaction and described in the previous Section.

553 Form CO, Chapter A, Section 6, Table 19 for an overview of Linde's ECOVAR plant offering.

i. Air Liquide

(487) Air Liquide is currently the market leader in both nitrogen and oxygen small on-site plant markets. Post-Transaction it will continue to be the market leader for oxygen, but it will become the second largest player in nitrogen.

(488) As regards financial and engineering capabilities, as well as concerning density, the same considerations made in Section 8.2.2.2.1.b.i with respect to Air Liquide's position in the tonnage markets apply also the small on-site plant markets.

(489) However, as illustrated in Section 8.2.1.1.3, the bidding analysis shows that Air Liquide's pre-Transaction bidding strategy in the small on-site markets is not particularly aggressive. It appears that Air Liquide rather relies on its strong existing market positions. In fact, with respect to small on-site tenders for oxygen and nitrogen, its share of won tenders is lower compared to Linde's, despite it being the market leader in terms of sales market shares.

(490) No evidence in the Commission's file suggests that, post-Transaction, Air Liquide would change its strategy. On the contrary, it may consider it more profitable to compete even less aggressively in tenders for new projects given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players. Financial analysts seem to have expressed such opinion, when, after the announcement of the Transaction, they upgraded Air Liquide's shares among the shares "*to Buy, with Target Price Change EUR* […]".[554]

(491) The Commission therefore considers that, while Air Liquide is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

ii. Air Products

(492) Pre-Transaction, Air Products is the third largest supplier of nitrogen and oxygen through small on-site plants in the EEA. Post-Transaction it will continue to be the third largest player.

(493) As regards financial and engineering capabilities, as well as concerning density, the same considerations made in Section 8.2.2.2.1.b.ii with respect to Air Products' position in the tonnage markets apply also the small on-site plant markets. Importantly, it should be recalled that Air Products benefits from lower economies of density compared to Linde or Air Liquide due to its less dense network of plants.[555]

(494) As illustrated in Section 8.2.1.1.3, the bidding analysis shows that Air Products' winning rate is in line with its sale market shares, so that its bidding strategy could be considered not particularly aggressive and rather conservative.

(495) No evidence in the Commission's file suggests that, post-Transaction, Air Products would change its strategy. On the contrary, it may it consider more profitable to compete even less in tenders for new projects given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players.

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554 Linde's internal documents, […]. Air Liquide's share price has never been above EUR 112, https://www.airliquide.com/investors/shareprice-performance, ID6422.

555 Form CO, Annexes 26 and 27.

(496) The Commission therefore considers that, while Air Products is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

iii. Messer

(497) Pre-Transaction, Messer is the fourth and the fifth supplier, by both value and volume sales market shares, in the small on-site plant supply of, respectively, nitrogen and oxygen. Post-Transaction it will continue to be the fourth largest player for nitrogen and will become the fourth also with respect to the supply of oxygen.

(498) The lower capital investments needed to supply a customer through small on-site plants translate into a greater ability to compete of Messer with respect to small on-site plants compared to tonnage, especially as regards nitrogen. Messer's greater ability to compete is reflected in its higher sales shares and shares of won tendered capacity. Nonetheless, the other shortcomings that affect Messer's competitive position in the tonnage markets still remain relevant and will likely prevent Messer to exert a stronger competitive constraint post-Transaction than what it exerts today.

(499) Indeed, Messer benefits from lower economies of density compared to the Tier 1 players, as a result of its less dense network of plants, described in Section 8.2.2.2.1.b.iii.

(500) Moreover, Messer relies on third parties' design engineering capabilities for technologies other than those required to build ASUs, technologies which are used for the small on-site plants (notably VPSA and PSA).[556]

(501) No evidence in the Commission's file suggests that, post-Transaction, Messer's capabilities are likely to change.

(502) The Commission therefore considers that, post-Transaction, Messer is unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the EEA small on-site plant markets for nitrogen and oxygen.

iv. Other players

(503) Other players in the small on-site plant markets are SOL, Woikoski and Westfalen, which, together, have been able to win a few tenders in the past (resulting in individual market shares below or around [0-5]% in the various markets, with the exception of SOL which achieves [0-5]% for nitrogen, both by volume and value).

(504) With respect to these players, the Commission considers nonetheless that their ability to compete is rather limited. Indeed, these players, as well as other Tier 2 players, are constrained in terms of engineering capabilities, financial resources, and geographic presence. In this respect the same considerations made in relation to the tonnage markets in Section 8.2.2.2.1.b.iv apply. Importantly, whilst the financial constraint they are subject to in the small on-site markets may be less significant considering the more limited capital investment needed for a single small on-site plant project, it still affects the ability of Tier 2 players to submit bids in a large number of tenders. Indeed, based on the bidding data submitted by the Notifying Parties, the level of CAPEX required by these projects is, on average, in the range of EUR […] and could

556 Messer's response to RFI Q31 to competitors in industrial and medical gases, question 6, ID 3201. Also, Form CO, Chapter A, Section 6, Table 21.

be as high as EUR […].[557] Such expenditure would sum up to the other investments that Tier 2 players have to undertake for their tonnage, bulk and cylinder businesses. In this respect the Commission notes that, for example, in the year 2016 SOL made investments related to its overall industrial gas business in the amount of EUR […].[558]

(505) No evidence in the Commission's file suggests that, post-Transaction, the capabilities of Tier 2 Players other than Messer are likely to change. Notably, the overwhelming majority of customers and competitors do not expect any expansion or organic growth in the small on-site plant markets by those gas suppliers.[559]

(506) Finally, as explained in Section 8.2.5.1, entry of new players in small on-site plants does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction.

(507) The Commission therefore considers that, post-Transaction, Tier 2 players other than Messer (with respect to which see Section 8.2.2.2.2.b.iii) are unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the EEA small on-site plant markets for nitrogen and oxygen.

v. Customer's switching possibilities

(508) As explained in Section 8.2.5.2, buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. In this respect the Commission also notes that switching costs for customers appear to be substantial (also at the end of a contract) as a result of the incumbent's advantage which characterises the small on-site plant markets.[560] In this respect the Commission notes that the overwhelming majority of customers responding to the market investigation clearly indicated that switching is difficult or very difficult.[561] In fact, no customer indicated that they have switched supplier in the past five years.[562]

vi. Conclusion

(509) On the basis of the considerations set out in recitals (486)-(508), the Commission considers that, post-Transaction, any other competitive constraints present in the EEA small on-site plant markets are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely overall effects of the Transaction**

(510) The Commission notes that post-Transaction the merged entity would hold a market share equivalent to the one of Air Liquide, which is around [30-40]% for nitrogen and [40-50]% for oxygen small on-site plants. The Transaction would result in increments, brought by Praxair, of around [5-10] and [0-5] percentage points in these two markets. Concentration levels (by volume and value), already above 2000, will increase significantly with delta HHI above 250 in all markets as a result of the Transaction.

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557 Annexes Q1.1 and Q.5 to the response to RFI 57.

558 SOL's 2016 annual report, available at http://www.solgroup.com/en/investor-relation/annual-reports/Bilancioinglese2016_PDF.pdf (ID6309).

559 Responses to RFI Q17 to customers of industrial gases, question 66 and RFI Q31 to competitors in industrial and medical gases, question 63.

560 See Section 8.2.1.2.3.

561 Responses to RFI Q17 to customers of industrial gases, question 74.

562 Responses to RFI Q17 to customers of industrial gases, question 73.

(511) Moreover, the Notifying Parties exert important competitive constraints in the EEA small on-site plant markets for oxygen and nitrogen, on each other, as well as on the remaining competitors, which would be removed by the Transaction, not only in view of their market shares, but for all the reasons illustrated in Section 8.2.2.2.2.a. Further, the Transaction is also likely to eliminate an important competitive force in the same markets for the reasons illustrated in Section 8.2.2.2.2.a.iv.

(512) The reduction of the competitive pressure resulting from the Transaction is not likely to be counteracted by other competitive constraints which will remain on the markets for the reasons illustrated in Section 8.2.2.2.2.b.

(513) In this context the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario. Indeed, while in the market investigation small on-site plant customers and competitors expressed mixed views as regards the effects of the Transaction, with half considering the Transaction to have negative effects and the other half considering it neutral,[563] the Commission notes that the Transaction will further reduce the already limited number of bidders in small on-site plant tenders and increase the likelihood of wins by the merged entity, whose market shares would be set to grow further.

**d. Conclusion**

(514) For the reasons set out in recitals (463)-(513), the Commission's assessment is that the Transaction would significantly impede effective competition in the EEA small on-site plant markets for nitrogen and oxygen as result of horizontal non-coordinated effects.

8.2.2.2.3. Bulk

(515) In the following the Commission analyses whether the Transaction would give rise to horizontal non-coordinated effects in the horizontally affected bulk markets identified in Table 6. To this aim, first, it assesses the competitive constraints exerted by the Notifying Parties on each other and on their competitors pre-Transaction, which would be removed by the Transaction (Section 8.2.2.2.3.a); then, it assesses the other competitive constraints in the bulk markets, which will remain post-Transaction, and the likelihood that they would off-set the anticompetitive effects of the Transaction (Section 8.2.2.2.3.b). Finally, the Commission undertakes an overall assessment of likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.2.2.2.3.c), and draws conclusions (Section 8.2.2.2.3.d).

**a. Assessment of the competitive constraint exerted by the Notifying Parties**

(516) With the exception outlined in this Section, the Commission considers that the Notifying Parties exert important competitive constraints in the horizontally affected bulk markets identified in Table 6, on each other, as well as on the remaining competitors, which would be removed by the Transaction. This is true both in light of the Notifying Parties' market shares, the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), and in view of their market performance, as explained below.

563 Responses to RFI Q17 to customers of industrial gases, question 83 and RFI Q31 to competitors in industrial and medical gases, question 72.

i. Market shares

(517) As illustrated by Table 6 and Annex I, based on the sales market shares provided by the Notifying Parties, pre-Transaction, **Linde** holds:

(a) **Market shares above [50-60]%** by either volume or value in: argon in Austria, the Czech Republic, Finland, Sweden; carbon dioxide in Cyprus, the Czech Republic, Finland, Sweden; nitrogen in Norway, Sweden, the United Kingdom; and oxygen in Norway and Sweden. In all these markets Linde is the market leader;

(b) **Market shares above [30-40]%** by either volume or value in: argon in Germany, Hungary, Norway, Romania; carbon dioxide in Germany, Hungary, Ireland, Romania; nitrogen in Austria, the Czech Republic, Denmark, Germany, Romania; and oxygen in Austria, Denmark And Romania. In all these markets Linde is either the market leader or the second largest player;

(c) In all other horizontally affected markets Linde has more moderate market shares below [30-40]% by either volume or value.

(518) With respect to **Praxair**, based on the sale market shares provided by the Notifying Parties, the Commission notes that, pre-Transaction, it holds:

(a) **Market shares above [50-60]%** by either volume or value in: carbon dioxide in Italy, Ireland, Norway and Denmark as well as argon in Norway. In all these markets Praxair is the market leader;

(b) **Market shares above [30-40]%** by either volume or value in: argon in Spain, nitrogen in Portugal and oxygen in Norway. In all these markets Praxair is either the market leader or the second largest player after Linde;

(c) In all other horizontally affected markets Praxair has more moderate market shares below [30-40]% by either volume or value.

(519) In the markets for the supply of carbon dioxide in Ireland and Norway, oxygen in Norway and argon in Norway, the combined market shares of the Notifying Parties are, by either volume or value, **above [90-100]%** (based on the Notifying Parties' market share data).

(520) The **combined market shares** of the Notifying Parties are **above [50-60]%** in the bulk markets for the supply of argon in Austria, the Czech Republic, Finland, Spain and Sweden; carbon dioxide in Cyprus, the Czech Republic, Denmark, Finland, Germany and Sweden; nitrogen in Austria, the Czech Republic, Portugal, Romania, Sweden, the United Kingdom; and oxygen in the Czech Republic and Sweden.

(521) In several other affected markets the combined market shares of the Notifying Parties are **above [30-40]%** by volume and value, that is in the supply of: argon in the EEA, as well as in Bulgaria, Denmark, Germany, Hungary, Portugal, Romania; carbon dioxide in Benelux, Hungary, Portugal, Romania, Spain, the United Kingdom; hydrogen in Germany; nitrogen in Denmark, Germany, Hungary, Slovakia, Spain; and oxygen in Austria, Benelux, Denmark, Germany, Portugal, Romania, Slovakia and Spain.

(522) Finally, in a few affected markets the combined market shares of the Notifying Parties, by either volume of value, are **equal or above [20-30]%**, that is in relation to the supply of: argon in Benelux, Italy, Slovakia; nitrogen in Benelux, Bulgaria, Italy, Poland; and oxygen in Bulgaria, Hungary, Italy and Poland. The combined market shares of the Notifying Parties are just **above [20-30]%** in the supply of carbon dioxide in Bulgaria and Slovakia and in the supply of oxygen in France.

(523) Based on the results of the market reconstruction, the Commission also notes that in several countries and for several products the combined market shares of the Notifying Parties would be greater than what is suggested by the data that they submitted. Indeed, on the basis of the market reconstruction the combined shares of the Notifying Parties would be **above [50-60]%** by volume also in the supply of: oxygen in Germany, Romania and Slovakia; nitrogen in Hungary; carbon dioxide in Hungary and Romania; and argon at EEA level as well as in Italy, Germany, Hungary, Romania, Bulgaria and Denmark. The combined market shares would be also **above [30-40]%** in the supply of: oxygen in Hungary and Italy; nitrogen in Bulgaria and Italy; carbon dioxide in Austria; argon in the Benelux. However, based on the results of the market reconstruction, the Commission notes that the combined market shares of the Notifying Parties would be lower than what the latter submitted in the supply of hydrogen in Germany, where they would be just **above [30-40]%**, and in the supply of carbon dioxide in the Benelux and oxygen in the Czech Republic, where they would be **above [40-50]%**.

(524) Therefore, the Commission considers that the Notifying Parties have relatively large, or, in some cases, even very large (above [50-60]%) combined sales shares in the horizontally affected bulk markets identified in Table 6 which are likely to lead to a significant increase of market power post-Transaction. Also considering the results of the Commission's market reconstruction, the only exceptions relate to the affected markets for the bulk supply of carbon dioxide in Slovakia and of oxygen in France, where the Notifying Parties' combined market shares are below [20-30]%.

ii. Closeness of competition

(525) As regards closeness of competition, the Commission notes that the bulk markets are very concentrated. This has been illustrated in Section 8.2.1.2.4. In this respect the Commission also notes that concentration levels are very high and above, or very close to, 2 000 in virtually all affected markets, with several markets where the HHI index is above [3500-4000].[564]

(526) Contrary to the Notifying Parties' arguments, the results of the market investigation indicate that in the very concentrated bulk markets only the Tier 1 players, and in particular the Notifying Parties and Air Liquide, compete closely with each other (Air Products is not present in any affected product market in Hungary, Romania, Denmark, Sweden, Norway and Bulgaria).[565] Messer and/or SOL follow at distance and only in the geographic areas where the latter's market shares are above [10-20]%, that is Austria (for argon, carbon dioxide, nitrogen and oxygen), Benelux (for carbon dioxide), Bulgaria (for argon, carbon dioxide, nitrogen and oxygen), the Czech Republic (for argon, carbon dioxide, nitrogen and oxygen), France (for oxygen), Hungary (for argon, carbon dioxide, nitrogen and oxygen), Italy (for argon, carbon dioxide, nitrogen and oxygen), Poland (for nitrogen and oxygen), Romania (for argon, carbon dioxide, nitrogen and oxygen) and Slovakia (for argon, carbon dioxide, nitrogen and oxygen).

(527) This is confirmed by the analysis of the Notifying Parties' internal documents where the main focus and key benchmarking of the Notifying Parties' activities in the various countries of the EEA is undertaken primarily against each other, Air Liquide

564 Based on the sales market shares provided by the Notifying Parties and illustrated in Section 8.2.2.2.1.a.i. and Annex I.

565 Responses to RFI Q17 to customers of industrial gases, questions 44 and 45 and RFI Q31 to competitors in industrial and medical gases, questions 43 and 44.

and Air Products, and only in certain geographies against Messer, SOL and other players.[566] In this respect, in the market investigation […] explained that "*the four main suppliers (Linde, Praxair, Air Liquide and Air Products) are similar in terms of both product quality and support services. Also with respect to their product portfolios and services,* […] *considers that the four main competitors' offerings are generally comparable. According to* […], *the only other industrial gas player other than the main four (Linde, Praxair, Air Liquide and Air products) that could be considered similar in terms of offering (quality and supporting services) is Messer. However, due to its very localized geographic presence, it cannot be considered as fully comparable*."[567]

(528) In this context it appears therefore that the Notifying Parties compete with each other as well as with other suppliers at the very least in line with what their market shares would suggest.[568]

(529) The Commission therefore considers that the Notifying Parties are close competitors to a significant degree so that the Transaction would be likely to give rise to significant price effects by removing the constraint exerted by the Notifying Parties on each other and on the other competitors.

iii. Specific assessment of the competitive constraint exerted by the Notifying Parties

(530) With the exception outlined in recital (540), the Commission considers that the Notifying Parties exert an important competitive constraint in the horizontally affected bulk markets identified in Table 6, which is not only due to their relatively large or very large market shares in some affected markets (illustrated in Section 8.2.2.2.3.a.i), but also to (i) their market performance with respect to the main parameters of competition, (ii) the density of their existing plant networks, and (iii) the competitive constraint that the Notifying Parties exert in the tonnage markets. These points are addressed in turn below.

(531) First, as regards performance with respect to the main parameters of competition identified in Section 8.2.1.2.4, in the market investigation customers rated Linde the most competitive player as regards timely deliveries, security of supply and price, closely followed by Praxair.[569]

(532) Second, such ratings are also a function of the density of the Notifying Parties' network in the affected markets. In this respect, the Commission notes the following.

(533) With respect to the EEA bulk supply of argon, the considerations on the economies of density enjoyed by the Notifying Parties, made in Section 8.2.2.2.1 with respect to the EEA tonnage supply of industrial gases, also apply. This is also because several

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566 For example, Linde's internal documents, Annex 11 to the Form CO, 5.4(iii) Non-transaction related documents, Executive Board of Linde AG, Competitors.

567 Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraphs 14 and 15, ID 6237.

568 This does not exclude that in certain geographies and for certain products the Notifying Parties are the closest competitors. This applies, for example, in relation to the supply of carbon dioxide in Ireland, where the Notifying Parties are the two only suppliers, or in Denmark and other countries, in particular due to the location of their production assets. In this respect, in the market investigation, […] stated that "*Praxair is the biggest competitor to Linde in the markets where we have the highest consumption of bulk [carbon dioxide]*" ([…]'s response to RFI Q17 to customers of industrial gases, question 44; ID 4203.

569 Responses to RFI Q17 to customers of industrial gases, questions 39 and 40.

bulk argon customers are also tonnage customers of oxygen and nitrogen and supplied from the same tonnage plant.

(534) With respect to the bulk national markets, the Commission notes that Linde operates:

(a) ASUs selling bulk nitrogen, oxygen and/or argon into the air gas bulk markets in all countries where affected markets for the bulk supply of nitrogen and/or oxygen and/or argon arise (that is to say, Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Spain, Sweden and United Kingdom) or, in any event, at a distance where it is economically profitable to sell from its plants located in neighbouring countries (that is to say, Slovakia, which can be served from Linde's plants in the Czech Republic, Hungary or Poland);[570]

(b) Plants selling hydrogen to bulk customers in Germany, and

(c) Plants selling carbon dioxide to bulk customers in all countries where affected markets for bulk carbon dioxide, arise (that is to say, Austria, Benelux, the Czech Republic, Finland, Germany, Hungary, Spain and Sweden) or in any event at a distance where it is economically profitable to sell from its plants located in neighbouring countries (Bulgaria, Denmark, Norway, Portugal, Romania, Slovakia).[571]

(535) Despite not operating carbon dioxide plants in Cyprus and Ireland, Linde supplies, respectively, [80-90]% and [40-50]% of the markets by value. The same applies to the United Kingdom where Linde is the third largest provider, after Air Liquide and Praxair, and there are no other meaningful players.

(536) Also Praxair has plants located in several of the countries where affected markets arise (for air gases: Benelux, the Czech Republic, Germany, Italy, Norway, Portugal, Romania, Spain, Sweden; for hydrogen: Germany, for carbon dioxide: Benelux, Germany, Italy, Norway, Spain and the United Kingdom) or in any event at a distance where it is economically profitable to sell from its plants located in neighbouring countries (for air gases: Austria, Bulgaria, Denmark, France, Finland, Hungary, Poland, and Slovakia; for carbon dioxide: Denmark, Finland, Ireland, Portugal and Sweden).[572]

(537) Third, with respect to air gases, the Commission notes that the constraint exercised by the Notifying Parties in the bulk markets is also linked to the competitive constraint that they exert in the tonnage markets. Indeed, as explained in Section 8.2.1.2.1, when bidding for a tonnage contract, industrial gas suppliers also take also into consideration bulk selling opportunities. Thus, to the extent that they allow for a further increase of the density of their respective networks, the important competitive constraints exerted by the Notifying Parties in the oxygen and nitrogen tonnage markets for the reasons outlined in Section 8.2.2.2.1 also translate in important competitive constraints in the corresponding bulk oxygen and nitrogen markets as well as in the bulk argon markets (being argon produced in the largest ASUs).[573] In

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570 As explained in Section 7.1.2.3, a national geographic scope of the market is used as a proxy of the effective dynamic of competition.

571 See footnote above. Moreover, as explained in the same Section 7.1.2.3, carbon dioxide travels at longer distances than oxygen and nitrogen.

572 For the location of the Notifying Parties' plants, Annexes 25, 26 and 27 to the Form CO.

573 This applies also to the bulk oxygen market in France where the Notifying Parties' combined market shares are below [20-30]%. Indeed, all considerations whereby the competitive constraint exerted by the

this respect the Commission also notes that the overwhelming majority of the Notifying Parties' ASUs serving the bulk markets for oxygen and nitrogen are in fact piggy-back plants.[574]

(538) With respect to carbon dioxide, in the market investigation, Linde and Praxair have been indicated by several customers as particularly strong players in the supply of carbon dioxide.[575] This is particularly the case for Praxair in the United Kingdom and Ireland. In this respect, for example, […] stated that "*[carbon dioxide] supply in the UK is almost a monopolised market by Praxair in the UK with the majority of supply coming in from the EU. The other main suppliers have some small localised sources but in the main also buy from Praxair to support their customers requirements*."[576] In the same vein, […] stated that "*Praxair would have a stronger supply chain, with [carbon dioxide] terminals in the UK and ships to ship product from Northern Europe*."[577] Likewise, […] stated that in the UK "*Praxair strength is Carbon Dioxide supply - difficult to switch supply to alternative suppliers due to logistics and demand profile – high demand in short time periods*."[578]

(539) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraints exerted by Notifying Parties are likely to deteriorate.

iv. Conclusion

(540) On the basis of recitals (515)-(539), the Commission considers that the Notifying Parties exert important competitive constraints in all the horizontally affected bulk markets identified in Table 6, on each other, as well as on their competitors. The only exception to this relates to the affected market for the bulk supply of carbon dioxide in Slovakia, where the Notifying Parties' combined market shares are below [20-30]% and where there do not appear to be other factors indicating that Linde and Praxair exert important competitive constraints.

**b. Assessment of the other competitive constraints in the markets**

(541) In this Section, the Commission assesses the competitive constraints which will remain post-Transaction in the horizontally affected bulk markets identified in Table 6 and whether these constraints would have the ability and incentives to counteract the loss of competition deriving from the Transaction and described in the previous Section.

i. Air Liquide

(542) Based on the market share data provided by the Notifying Parties, Air Liquide is not active in the supply of any of the affected markets in Hungary, Cyprus and Ireland and is not active in Norway in the affected markets for bulk oxygen and argon. It also has a limited market presence with market shares below or equal to [5-10]% by value and volume in all affected markets in the Czech Republic as well as in the supply of

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Notifying Parties in the bulk markets is a reflection of the competitive constraint they exert in the EEA tonnage markets apply also with respect to the bulk supply of oxygen in France.

574 See Section 8.2.1.1.2 on capacity shares.

575 Responses to RFI Q17 to customers of industrial gases. This does not apply to the bulk supply of carbon dioxide in Slovakia where the Notifying Parties' combined market shares are below [20-30]%. In particular Praxair has not a particular strong position in this market, not having production facilities in that countries or in neighbouring countries at a distance from which it would be economically profitable to sell.

576 […]'s response to RFI Q17 to customers of industrial gases, question 7, ID 3992.

577 […]'s response to RFI Q17 to customers of industrial gases, question 40, ID 2373.

578 […]'s response to RFI Q17 to customers of industrial gases, question 44, ID 4026.

carbon dioxide in Denmark and in the supply of nitrogen and carbon dioxide in Norway.

(543) Air Liquide enjoys significant market positions in the EEA supply of argon and in several national affected markets, where it holds market shares between 20% and 56% by value and volume, that is to say in: Austria (for carbon dioxide and oxygen), Benelux (for argon, carbon dioxide, nitrogen and oxygen), Denmark (for argon, nitrogen and oxygen), Finland (for argon and carbon dioxide), France (for oxygen), Germany (for argon, carbon dioxide, hydrogen, nitrogen and oxygen), Italy (for argon), Poland (for oxygen), Portugal (for argon, carbon dioxide, nitrogen and oxygen), Romania (for argon, carbon dioxide, nitrogen and oxygen), Spain (for argon, carbon dioxide, nitrogen and oxygen), Sweden (for nitrogen) and the United Kingdom (for carbon dioxide).

(544) In all other national affected markets Air Liquide holds moderate market shares between [5-10]% and [10-20]% by volume and value.

(545) The constraint exerted by Air Liquide in the bulk markets should also be assessed in the light of the important competitive position held by Air Liquide in the tonnage markets for hydrogen, oxygen and nitrogen. Thus, also in the countries where Air Liquide holds a moderate market share, the constraint it exerts is in fact stronger and a function of Air Liquide's ability to compete in the related tonnage markets. More generally, the competitive behaviour of Air Liquide in the bulk markets could be considered as linked to an overall strategy, which is in particularly reflected in Air Liquide's tonnage bidding activity.

(546) As outlined in Section 8.2.2.2.1.b.i, Air Liquide's pre-Transaction tonnage bidding strategy does not seem to be particularly aggressive. The information received by the Commission indicates that Air Liquide appears to rely on its strong existing market position rather than to bid aggressively where it is not the incumbent to extend the density of its plant network.[579]

(547) No evidence in the Commission's file suggests that, post-Transaction, Air Liquide would change its strategy. On the contrary, it may consider it more profitable to compete even less given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players. Financial analysts seem to have expressed such opinion, when, after the announcement of the Transaction, they upgraded Air Liquide's shares among the shares "*to Buy, with Target Price Change EUR* […]".[580] In the same vein, among customers responding to the market investigation […] believes that competitors "*will follow a price increase (of the merged entity) if feasible. (It does) not believe they will compete more aggressively on prices*."[581] This view is shared by several other customers in the market investigation.[582] Moreover, the overwhelming majority of customers and competitors who replied to the market investigation do not expect any expansion or organic growth in the bulk markets by existing gas suppliers.[583]

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579 Annex 1 to RFI 45.

580 Linde's internal documents, […]. Air Liquide's share price has never been above EUR 112, https://www.airliquide.com/investors/shareprice-performance (ID6422).

581 […]'s response to RFI Q17 to customers of industrial gases, question 54; ID 4203.

582 Responses to RFI Q17 to customers of industrial gases, question 54.

583 Responses to RFI Q17 to customers of industrial gases, question 43 and RFI Q31 to competitors in industrial and medical gases, question 42.

(548) Further, as discussed in Section 8.2.2.2.3.b.vi., to the extent that in certain bulk markets Air Liquide relies on wholesale and swap agreements with the Notifying Parties, its incentives to expand in those markets by installing new production capacity, and thus increase its competitive pressure to counteract the loss of competition deriving from the Transaction are likely to decrease.

(549) The Commission therefore considers that, while Air Liquide is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

ii. Air Products

(550) Based on the market share data provided by the Notifying Parties, Air Products is not active in several affected markets, namely the bulk markets for the supply of: argon in Austria, Bulgaria, Denmark, Finland, Hungary, Norway, Romania and Sweden; carbon dioxide in Austria, Bulgaria, Cyprus, Denmark, Finland, Germany, Hungary, Ireland, Norway, Romania, Sweden and United Kingdom, nitrogen in Austria, Bulgaria, Denmark, Hungary, Norway, Romania and Sweden; and oxygen in Austria, Bulgaria, Denmark, Hungary, Norway, Romania and Sweden. Moreover, it also holds a limited market share in the supply of bulk carbon dioxide in Italy ([0-5]% by value and [0-5]% by volume).

(551) Air Products enjoys significant market positions in a few affected markets, where it holds market shares between [20-30]% and [30-40]% by value and volume, that is to say in the supply of: argon in Benelux and the Czech Republic; carbon dioxide in the Czech Republic; nitrogen in Benelux, Italy, the Czech Republic, Spain, Poland and the United Kingdom; oxygen in Benelux, the Czech Republic and Poland.

(552) In all other affected markets Air Products holds moderate market shares between [5-10]% and [10-20]% by volume and value.

(553) The constraint exerted by Air Products in the bulk markets should also be assessed in the light of the constraint it exerts in the tonnage markets for hydrogen, oxygen and nitrogen. In fact, the competitive behaviour of Air Products in the bulk markets could be considered as a function of an overall strategy, which is in particularly reflected in Air Products' tonnage bidding activity. As illustrated in Section 8.2.1.1.3, the bidding analysis shows that Air Products appears not to be particularly aggressive in bidding and rather to rely on its existing position.

(554) No evidence in the Commission's file suggests that, post-Transaction, Air Products would change its strategy. On the contrary, it may consider it more profitable to compete even less given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players. In this respect, among customers responding to the market investigation […] stated that the competitors of the merged entity, experiencing "*Less completion*", "*will increase the price and lower the service level*."[584] Likewise, […] stated that "*Air products will also follow suit with a price increase*." [585] This view is shared by several other customers in the market investigation.[586] Moreover, the overwhelming majority of

584 […]'s response to RFI Q17 to customers of industrial gases, question 54; ID 3044.

585 […]'s response to RFI Q17 to customers of industrial gases, question 54; ID 3731.

586 Responses to RFI Q17 to customers of industrial gases, question 54.

customers and competitors who replied to the market investigation do not expect any expansion or organic growth in the bulk markets by existing gas suppliers.[587]

(555) Further, as discussed in Section 8.2.2.2.3.b.v., to the extent that in certain bulk markets Air Products relies on wholesale and swap agreements with the Notifying Parties, its ability and incentives to expand in those markets by installing new production capacity, and thus increase its competitive pressure to counteract the loss of competition deriving from the Transaction are likely to decrease.

(556) The Commission therefore considers that, while Air Products is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

iii. Messer

(557) Based on the market share data provided by the Notifying Parties, Messer is not active in several affected markets, that is the bulk markets for the supply of: argon in Denmark, Finland, Italy, Norway, Portugal and Sweden; carbon dioxide in Cyprus, Denmark, Finland, Ireland, Italy, Portugal, Sweden and the United Kingdom; nitrogen in Denmark, Italy, Norway, Portugal, Sweden and the United Kingdom; and oxygen in Denmark, Italy, Norway, Portugal and Sweden. Moreover it holds limited market shares below or equal to [0-5]% by value and volume in the supply of: argon in Benelux, Germany and Spain; carbon dioxide in Germany and Spain; hydrogen in Germany; nitrogen in Spain ; and oxygen in Germany and Spain.

(558) Messer holds a significant market position in a few affected markets in Central and Eastern Europe, where it holds market shares between [20-30]% and [40-50]% by value and volume, that is to say in the supply of: argon in Bulgaria, Hungary, Slovakia; carbon dioxide in Austria, Bulgaria, Hungary, Slovakia; nitrogen in Austria, Bulgaria, Hungary, Poland And Slovakia; and oxygen in Bulgaria, Hungary, Poland, Slovakia.

(559) In all other affected markets Messer holds moderate market shares between [5-10]% and [10-20]% by volume and value.

(560) While Messer plays an important competitive role in the bulk supply Central and Eastern Europe, its ability to compete in the bulk supply to other geographic areas, and, more generally, its ability to expand, are affected by its limited ability to compete in the tonnage markets as discussed in Section 8.2.1.2.1.b.iii. In this respect, in the market investigation […] stated that "*Messer is typically not present everywhere and has less extensive operational assets*".[588] […] stated that, in the areas where its production facilities are located, "*Messer is geograohically (sic) not the best located supplier compared to other suppliers including Linde*,"[589] whilst […] stated that it does not see Messer "*operating on all markets*".[590] In the same vein […] explained that "*Messer is a smaller player, which can be a viable substitute only in few markets*."[591]

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587 Responses to RFI Q17 to customers of industrial gases, question 43 and RFI Q31 to competitors in industrial and medical gases, question 42.

588 […]'s response to RFI Q17 to customers of industrial gases, question 40; ID 3789.

589 […]'s response to RFI Q17 to customers of industrial gases, question 44; ID 4203.

590 […]'s response to RFI Q17 to customers of industrial gases, question 44; ID 2819.

591 Agreed non-confidential minutes of conference call with […] of 3 September 2017, paragraph 20, ID 623.

(561) Further, as discussed in Section 8.2.2.2.3.b.v., to the extent that in certain bulk markets Messer relies on wholesale and swap agreements with the Notifying Parties, its ability and incentives to expand in those markets by installing new production capacity, and thus increase its competitive pressure to counteract the loss of competition deriving from the Transaction are likely to decrease.

(562) No evidence in the Commission's file suggests that, post-Transaction, Messer's capabilities are likely to change. Notably, the overwhelming majority of customers and competitors who replied to the market investigation do not expect any expansion or organic growth in the bulk markets by existing gas suppliers.[592]

(563) The Commission therefore considers that, post-Transaction, Messer is unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the bulk markets where it is not active or it holds moderate market shares. In the bulk markets where it holds significant market shares (indicated at recital (558)), Messer is unlikely to have the ability to expand to such an extent that it would counteract the loss of competition deriving from the Transaction.

v. Other players

(564) Several other Tier 2 players are active in several, albeit not all, of the affected markets, that is in the markets for the bulk supply of: argon in the EEA, as well as in Austria, Benelux, Bulgaria, Denmark, Finland, Germany, Hungary, Italy, Portugal, Sweden; carbon dioxide in Austria, Benelux, Bulgaria, Cyprus, Denmark, Finland, Germany, Hungary, Italy, Portugal, Spain, Sweden; hydrogen in Germany; nitrogen in Austria, Benelux, Bulgaria, Denmark, Germany, Hungary, Italy, Portugal, Sweden; and oxygen in Austria, Benelux, Bulgaria, Denmark, France, Germany, Hungary, Italy, Portugal and Sweden.[593] These players include SOL, Westfalen and Woikoski, and a number of others (such as ACP, Acail Gas, SWF and Strandmollen).

(565) However, the market presence of these players is generally limited to one product and/or country based on the operation of one plant or a limited number of plants. Moreover they rarely have shares above [0-5]% by value or volume, with the exception of SOL, Strandmollen, Westfalen, Woikoski, ACP, as well as Carboneco, KIMGAS and SICO.

(566) Importantly, only Carboneco (in the supply of carbon dioxide in Spain), SOL (in the supply of argon, nitrogen, oxygen and carbon dioxide in both Italy and Bulgaria); Strandmoller (in the supply of argon and oxygen in Denmark) and Woikoski (in the supply of carbon dioxide in Finland) hold market share above [10-20]%.

(567) Moreover, the ability of these players to compete and in particular to expand in the bulk markets are affected by their limited ability to compete in the tonnage markets as discussed in Section 8.2.1.2.1.b.iv.

(568) The limited ability to compete of Tier 2 players compared to Tier 1 has been acknowledged by customers responding to the market investigation.[594] For example, with respect to Woikoski in Finland, […] stated that "*Woikoski as a smaller supplier does not have similar capabilities*" to those of Linde and Air Liquide.[595]

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592 Responses to RFI Q17 to customers of industrial gases, question 43 and RFI Q31 to competitors in industrial and medical gases, question 42.

593 See Annex I to this Decision.

594 Responses to RFI Q17 to customers of industrial gases, questions 38 and following.

595 […]'s response to RFI Q17 to customers of industrial gases, question 40, ID 2395.

(569) No evidence in the Commission's file suggests that, post-Transaction, the capabilities of Tier 2 players other than Messer are likely to change. Notably, the overwhelming majority of customers and competitors who replied to the market investigation do not expect any expansion or organic growth in the bulk markets by existing gas suppliers.[596]

(570) Further, as discussed in Section 8.2.2.2.3.b.v., to the extent that in certain bulk markets these players rely on wholesale and swap agreements with the Notifying Parties, their ability and incentives to expand in those markets by installing new production capacity, and thus increase its competitive pressure to counteract the loss of competition deriving from the Transaction are likely to decrease.

(571) Finally, as explained in Section 8.2.5.1, entry of new bulk suppliers does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction.

(572) The Commission therefore considers that, post-Transaction, Tier 2 players other than Messer (with respect to which see Section 8.2.2.2.3.b.iii) are unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the horizontally affected bulk markets identified in Table 6.

vi. Impact of wholesale and swap agreements on gas suppliers' ability and incentives to compete

(573) As explained in Section 6.2, wholesale and swap agreements between competitors allow optimising transportation costs and enable gas suppliers to offer their products in areas where they cannot economically ship their production due to the distance of their production facilities, thus facilitating entry and expansion.

(574) Wholesale and swap agreements are common practice among Tier 1 players, but also between Tier 1 and Tier 2 players. Such agreements account for significant volumes compared to the Notifying Parties' total bulk sales volumes. Table 32 shows the ratio of the total gross volume of wholesale transactions of the Notifying Parties (the sum of wholesale sales, purchases and swaps) compared to the total bulk sales volumes of the Notifying Parties. Except for the wholesale agreements of Linde for argon, wholesale and swap transactions are significant compared to the total bulk sales volumes of both Notifying Parties.

**Table 32: Total gross wholesale and swap volumes as a ratio of total bulk sales of the Notifying Parties in the EEA (2016)**

| | Argon | Carbon – dioxide | Hydrogen | Nitrogen | Oxygen |
|---|---|---|---|---|---|
| Linde | […] | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] | […] |

*Source: Annex 1 to response to RFI 45 and Annex Q16 to response to RFI 48.*

(575) Wholesale agreements between Linde and industrial gas competitors are also significant compared to the total bulk sales volumes of competitors in the bulk markets for hydrogen and oxygen. Table 33(A) shows the ratio of the total gross volume of wholesale and swap transactions of the Notifying Parties compared to the total bulk sales volumes of their main industrial gas competitors. In the hydrogen

596 Responses to RFI Q17 to customers of industrial gases, question 43 and RFI Q31 to competitors in industrial and medical gases, question 42.

bulk markets there are significant wholesale links between […]. In the nitrogen bulk markets there are significant links between […]. In the oxygen bulk markets there are significant links between […].

**Table 33 (A): Total gross wholesale and swap volumes as a ratio of total bulk sales of competitors in the EEA (2016)**

*Source: Annex 1 to response to RFI 45 and Annex Q16 to response to RFI 48.***Table 33 (B):**

**Linde**

| | Argon | Carbon dioxide | Hydrogen | Nitrogen | Oxygen |
|---|---|---|---|---|---|
| Linde | […] | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] | […] |
| Air Liquide | […] | […] | […] | […] | […] |
| Air Products | […] | […] | […] | […] | […] |
| Messer | […] | […] | […] | […] | […] |
| Others | […] | […] | […] | […] | […] |

**Praxair**

| | Argon | Carbon dioxide | Hydrogen | Nitrogen | Oxygen |
|---|---|---|---|---|---|
| Linde | […] | […] | […] | […] | […] |
| Praxair | […] | […] | […] | […] | […] |
| Air Liquide | […] | […] | […] | […] | […] |
| Air Products | […] | […] | […] | […] | […] |
| Messer | […] | […] | […] | […] | […] |
| Others | […] | […] | […] | […] | […] |

**Ratio of total gross wholesale and swap volumes of the Notifying Parties to the total bulk sales of competitors, by country (2016)**

| | Argon | Carbon dioxide | Hydrogen | Nitrogen | Oxygen |
|---|---|---|---|---|---|
| ***Air Liquide*** | | | | | |
| Benelux | […] | | | […] | |
| Denmark | […] | […] | | | |
| France | | | | […] | […] |
| Germany | | […] | […] | […] | […] |
| Italy | | […] | […] | […] | […] |
| Norway | | […] | | […] | |
| Spain | | […] | […] | | |
| United Kingdom | | | | […] | […] |
| ***Air Products*** | | | | | |
| Benelux | | | | […] | […] |
| Czech Republic | | […] | […] | | |
| Germany | | | […] | […] | […] |
| Italy | […] | | […] | | |
| Poland | | […] | | | |
| Spain | | | | […] | […] |
| United Kingdom | | | […] | […] | […] |
| ***Messer*** | | | | | |
| Austria | | […] | […] | […] | […] |
| Czech Republic | | […] | […] | […] | […] |
| France | | […] | | | |
| Germany | […] | | […] | […] | […] |
| Hungary | | | […] | | |

| | Argon | Carbon dioxide | Hydrogen | Nitrogen | Oxygen |
|---|---|---|---|---|---|
| Poland | | […] | | | |
| Romania | | | | […] | […] |
| Spain | […] | | | […] | […] |
| ***SOL*** | | | | | |
| Benelux | […] | | | | |
| Germany | | […] | | | |
| Italy | […] | […] | | | […] |
| ***Strandmollen*** | | | | | |
| Denmark | […] | […] | | […] | […] |
| ***Westfalen*** | | | | | |
| Austria | | | | […] | […] |
| Benelux | | | | […] | |
| Germany | […] | | […] | […] | […] |

*Source: Annex 1 to response to RFI 45 and Annex Q16 to response to RFI 48.*

(576) In their reply to the market investigation Messer and SOL rated the importance of swap agreements, respectively, at 5 and 4 on a scale of 5.[597] In the market investigation Messer explained that "*swap and wholesale agreements are of key importance for their business as they allow them to benefit from significant synergies and be active in areas where they have no geographic presence with an own production source with competitive prices*." It also stated that the "*incentive for a supplier to enter into swap or wholesale agreements depends of (i) the load of the ASUs they operate in a particular area and (ii) the cost advantages such company might have by entering into a SWAP agreement. In this respect, the higher the load of an ASU and the more presence a company has in different regions, the less the supplier will be willing to enter into swap agreements with its competitors. A company with a wide regional spread of ASU's has no interest to optimize its transportation costs. Further, in case one company controls a huge part of the regional production capacity, such company may decide to shutdown one of the ASU's in order to operate the other plant more efficiently, which results in a decrease of the available product such company is willing to sell to other industrial gas companies*." Messer also stated that it "*is to some extent dependent on its competitors for being able to cover all of the needs in argon of its customers*."[598]

(577) Indeed, competitors depend in several countries strongly on wholesale transactions with the Notifying Parties. Table 33(B) shows at a national level the total gross wholesale transaction volumes of a competitor and the Notifying Parties as a ratio of the competitor's total bulk sales volumes.[599] The figures reveal that competitors depend on the Notifying Parties much more in certain national markets than the EEA-level figure in Table 33(A) indicate. There is a particularly strong wholesale dependency (ratio above […]%) between the Notifying Parties and […]in the argon bulk market in the Benelux, in the carbon-dioxide market in Denmark, Italy and Spain and in the hydrogen market in Germany. […] depends particularly strongly on

597 Messer's and SOL's responses to RFI Q31 to competitors in industrial and medical gases, question 123, ID 3201 and ID 1269.

598 Agreed non-confidential minutes of conference call with Messer of 24 October 2017, paragraphs 20-22, ID 698

599 The ratio can be larger than one because the gross wholesale volumes are compared to net bulk sales to customers. The ratio is replaced by […], because the swap figures are several magnitudes higher than […] bulk argon sales volumes provided by the Notifying Parties.

wholesale transactions with the Notifying Parties (ratio above […]%) in the hydrogen bulk market in the Czech Republic and the United Kingdom, in the nitrogen bulk market in the Benelux and the United Kingdom and in the oxygen bulk markets in the Benelux, Germany and the United Kingdom. […] depends particularly strongly on wholesale transactions with the Notifying Parties (ratio above […]%) in several bulk industrial gas markets: in the argon bulk market in Germany, in the carbon-dioxide market in the Czech Republic and France, in the hydrogen bulk market in Austria, in the Czech Republic, in Germany and in Hungary, in the nitrogen bulk market in the Czech Republic, Romania and Spain, in the oxygen bulk market in the Czech Republic, Germany, Romania and Spain. […] depends particularly strongly on wholesale transactions with the Notifying Parties (ratio above […]%) in the argon bulk market in the Benelux. […] depends particularly strongly on wholesale transactions with the Notifying Parties (ratio above […]%) in Denmark in the argon, carbon-dioxide, nitrogen and oxygen bulk markets. […] depends particularly strongly on wholesale transactions with the Notifying Parties (ratio above […]%) in the argon bulk market in Germany, in the nitrogen bulk market in Austria, Germany and the Benelux and in the oxygen bulk market in Austria.

(578) Pre-Transaction Linde and Praxair had the incentive to enter into wholesale and swap agreements with Messer, SOL and other Tier 2 players, to increase the geographic reach of their respective activities. The Transaction will confer the merged entity greater production capacity and a wider distribution network hence increasing its ability to act strategically in relation to swap and wholesale agreements. In this respect, in light of its increased market share, the merged entity will be better placed to decide whether to: (i) continue the swap and wholesale agreements currently in force between the Notifying Parties and their competitors in a certain area or (ii) terminate these agreements.

(579) As regards the first option, the merged entity may strategically decide to continue an existing swap agreement in a national market in order to reduce the incentives of competitors to install new production capacity in a that national market. From this perspective, wholesale and swap agreements create additional barriers to expand capacity and have the likely effect of reducing the overall production capacity and therefore supply in a national market. This likely reduction in supply can have the effect of strengthening the already existing market power of the Notifying Parties in the national market. In this respect in the market investigation [a competitor] stated that it "*has some particular concerns with regard to some product markets, namely argon, carbon dioxide, hydrogen (…). With regard to these products, the consolidation in the market could reduce the merged entity's willingness to enter into swap or wholesale agreements. Moreover,* [a competitor] *believes that the merged entity would be in a position to foreclose market players' access to (…) the wholesale supply of certain gases such as argon.* [a competitor]*'s ability to source argon could also be affected by the proposed merger in case the merged entity were to decide to shut down certain large ASUs in order to achieve synergies*."[600]

(580) Alternatively, post-Transaction the merged entity may strategically decide to offer worse conditions or terminate the wholesale agreements in an area where barriers to

[600] Agreed non-confidential minutes of conference call with [a competitor] of […].

expansions are sufficiently high to exclude the likelihood of competitors installing additional capacity.[601]

(581) Table 34 shows the total wholesale volumes of the Notifying Parties contracted among themselves and with competitors by country. The table demonstrates that there are several markets where the Notifying Parties will have increased ability to make strategic decisions either strengthening the barriers on capacity expansion or terminating the wholesale contracts with competitors and reducing their ability to compete. In the bulk national markets for argon after the Transaction the Notifying Parties could strengthen their strategic wholesale position or could potentially reduce their total outstanding wholesale contract volumes with competitors in Germany by […]% and in Denmark by […]%. Wholesale positions vis-à-vis competitors would increase in the Benelux by […]%. In Germany […], in Denmark […], in the Benelux […] depends strongly on argon wholesale transactions with the Notifying Parties as Table 33(B) demonstrated.

(582) In the bulk national markets for carbon-dioxide the Notifying Parties after the Transaction could strengthen their strategic wholesale position or could potentially reduce their total outstanding wholesale contract volumes with competitors in Benelux by […]%, in France by […]%, in Germany by […]% and in Spain by […]%. In France […] and in Spain […] depend strongly on carbon-dioxide wholesale transactions with the Notifying.

(583) In the bulk national markets for hydrogen the Notifying Parties after the Transaction could strengthen their strategic wholesale position or could potentially reduce their total outstanding wholesale contract volumes with competitors in Germany by […]%. In Germany […] and […] both depend strongly on hydrogen wholesale transactions with the Notifying Parties.

(584) In the bulk national markets for nitrogen the Notifying Parties after the Transaction could strengthen their strategic wholesale position or could potentially reduce their total outstanding wholesale contract volumes with competitors in Benelux by […]%, in Denmark by […]%, in Germany by […]%, in Italy […]%. In the Benelux […] and […], in Germany […] and in Denmark […] depend strongly on nitrogen wholesale transactions with the Notifying Parties.

(585) In the bulk national markets for oxygen the Notifying Parties after the transaction could strengthen their strategic wholesale position or could potentially reduce their total outstanding wholesale contract volumes with competitors in Benelux by […]%, in Germany by […]%, in Italy […]%, Spain […]%. In the Benelux […], in Germany […] and […], in Spain […] depend strongly on oxygen wholesale transactions with the Notifying Parties.

**Table 34: Total wholesale and swap purchase and sell volumes of the Notifying Parties by country and molecule (2016)**

| Molecules, parties and Country (region covered) | Contracting Party and Contract | | | |
|---|---|---|---|---|
| | Linde | | Praxair/Siad | |
| | Purchase | Sell | Purchase | Sell |
| ***Argon - Among the Notifying Parties*** | | | | |
| Germany | […] | […] | | |

601 A list of the agreement through which the Notifying parties purchase industrial gases from either […] or […] is contained in Annex 47 to the Form CO.

| Molecules, parties and Country (region covered) | Contracting Party and Contract | | | |
|---|---|---|---|---|
| | Linde | | Praxair/Siad | |
| | Purchase | Sell | Purchase | Sell |
| Italy | […] | […] | | |
| **Total** | […] | […] | | |
| ***Argon - With competitors*** | | | | |
| Belgium, Germany, France, Italy | […] | […] | […] | […] |
| Benelux | […] | […] | […] | […] |
| Denmark | […] | […] | […] | […] |
| Germany | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| Spain | […] | […] | […] | […] |
| United Kingdom | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |
| ***Carbon-Dioxide - Among the Notifying Parties*** | | | | |
| Czech Republic | […] | […] | […] | […] |
| Germany | […] | […] | […] | […] |
| Hungary | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| United Kingdom | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |
| ***Carbon-Dioxide - With competitors*** | | | | |
| Austria | […] | […] | […] | […] |
| Benelux | […] | […] | […] | […] |
| Czech Republic | […] | […] | […] | […] |
| Denmark | […] | […] | […] | […] |
| France | […] | […] | […] | […] |
| Germany | […] | […] | […] | […] |
| Germany, Netherlands, France | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| Poland | […] | […] | […] | […] |
| Romania | […] | […] | […] | […] |
| Spain | […] | […] | […] | […] |
| Sweden | […] | […] | […] | […] |
| United Kingdom | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |

| Molecules, parties and Country (region covered) | Contracting Party and Contract | | | |
|---|---|---|---|---|
| | Linde | | Praxair/Siad | |
| | Purchase | Sell | Purchase | Sell |
| ***Hydrogen - Among the Notifying Parties*** | | | | |
| Germany | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |
| ***Hydrogen - With competitors*** | | | | |
| Austria | […] | […] | […] | […] |
| Czech Republic | […] | […] | […] | […] |
| Germany | […] | […] | […] | […] |
| Hungary | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Poland | […] | […] | […] | […] |
| Spain | […] | […] | […] | […] |
| United Kingdom | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |
| ***Nitrogen - Among the Notifying Parties*** | | | | |
| Germany | […] | […] | […] | […] |
| Hungary | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |
| ***Nitrogen - With competitors*** | | | | |
| Austria | […] | […] | […] | […] |
| Belgium, Germany | […] | […] | […] | […] |
| Benelux | […] | […] | […] | […] |
| Czech Republic | […] | […] | […] | […] |
| Denmark | […] | […] | […] | […] |
| France | […] | […] | […] | […] |
| Germany | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| Norway, Denmark, Sweden | […] | […] | […] | […] |
| Romania | […] | […] | […] | […] |
| Spain | […] | […] | […] | […] |
| United Kingdom | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |

| Molecules, parties and Country (region covered) | Contracting Party and Contract | | | |
|---|---|---|---|---|
| | Linde | | Praxair/Siad | |
| | Purchase | Sell | Purchase | Sell |
| ***Oxygen - Among the Notifying Parties*** | | | | |
| Germany | […] | […] | […] | […] |
| Hungary | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |
| ***Oxygen - With competitors*** | | | | |
| Austria | […] | […] | […] | […] |
| Belgium, Germany | […] | […] | […] | […] |
| Benelux | […] | […] | […] | […] |
| Czech Republic | […] | […] | […] | […] |
| Denmark | […] | […] | […] | […] |
| France | […] | […] | […] | […] |
| Germany | […] | […] | […] | […] |
| Italy | […] | […] | […] | […] |
| Norway | […] | […] | […] | […] |
| Norway, Denmark, Sweden | […] | […] | […] | […] |
| Romania | […] | […] | […] | […] |
| Spain | […] | […] | […] | […] |
| United Kingdom | […] | […] | […] | […] |
| **Total** | […] | […] | […] | […] |

*Source: Annex 1 to response to RFI 45 and Annex Q16 to response to RFI 48.*

(586) In this context, the competitive constraint exerted pre-Transaction by […] and […], as well as other Tier 2 players relying on wholesale and swap agreements, may be reduced post-Transaction, at least in the geographies and/or for the products covered by the wholesale and swap agreements currently in force between these players and the Notifying Parties. Based on the list of wholesale and swap contracts provided by the Notifying Parties, this is in particular the case for […].[602] A concern in this respect has been expressed also by […] and […], as well as the majority of the competitors responding to the market investigation, which indicated that the Transaction may negatively impact their ability to engage in wholesale and swap agreements.[603] In particular, […] stated that the "*new Linde / Prax company shall reduce the SWAP agreements significantly vs today. The reason for a SWAP agreement is to save money concerning transportation cost. In case Linde/Prax with*

602 Annex 47 to the Form CO.

603 Responses to RFI Q31 to competitors in industrial and medical gases, question 124.

*a high density of own plants in the markets, it makes no sense for them to step into SWAP agreements; they cannot save money*."[604]

(587) This effect of wholesale and swap agreements is clearly illustrated in the Notifying Parties' internal documents. For example in a document discussing […]. In fact, it observes that "[…]."[605]

(588) In the same vein, in another document […] "[…]."[606] Likewise in an internal document […] "[…]."[607]

vii. Customer's switching possibilities

(589) As explained in Section 8.2.5.2, buyer power does not appear to be likely to off-set the potential adverse effects of the Transaction. In this respect the Commission notes that switching costs for customers appear to be not trivial. During the market investigation, customers indicated that switching costs mostly relate to the replacement of the equipment (tanks) that are generally owned by the gas supplier.[608] Customers have expressed mixed views as regards their ability to switch, with half of the customers indicating that switching is easy and the other half indicating that it is difficult or very difficult.[609] In fact the overwhelming majority of customers responding to the market investigation clearly indicated that they have not switched supplier in the past three years.[610] In this respect, for example, in the market investigation:

(a) […] stated that it is "*Very heavy to switch because need to change the container*."[611] In the same vein, […] stated that "[*w]henever gases ar [sic] supplied in bulk (as is our [carbon dioxide]), the deposits are property of the supplier and we cannot change*."[612]

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604 […]'s response to RFI Q31 to competitors in industrial and medical gases, question 124.5, […]. Also, agreed non-confidential minutes of the conference call with […] of […].

605 Linde's internal document, […].

606 Linde's internal document, […].

607 Praxair's internal document, […].

608 In this respect, for example, […] explained that: "*There are […] some switching costs linked to the fact that the tanks placed at* […]*'s facilities are generally owned by the gas supplier. When switching supplier, these tanks must be removed while new tanks from the new supplier must be installed. Tanks are normally owned by gas suppliers for technical and security reasons related to the gas being pressurised and very cold, so storage and transport is under strict rules, which are supplier's expertise. Further, the connection pipes can be tank-specific and only certain trucks can have the correct connection to fill the tanks on site"* (Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraph 21; ID 595, and […] indicated that: "*In the case of bulk, switching difficulties are linked to the need to install new equipment to receive the liquid gas*" (Agreed non-confidential minutes of conference call with […] of 10 October 2017, paragraph 16, ID 5561.

609 Responses to RFI Q17 to customers of industrial gases, question 47.

610 Responses to RFI Q17 to customers of industrial gases, question 46.

611 […]'s response to RFI Q17 to customers of industrial gases, question 22, ID 4041. Albeit the question related to the tonnage market, […] is a bulk (and cylinder) customer only (RFI Q17 to customers of industrial gases, question 3; ID 4041.

612 […]'s response to RFI Q17 to customers of industrial gases, question 22; ID 3084. Albeit the question related to the tonnage market, […] is a bulk (and cylinder) customer only (RFI Q17 to customers of industrial gases, question 3, ID 3084).

(b) […] referred that, to be able to switch, "*[you] need to change installation from one supplier to another, which have some level of security supply as much as time consuming process*".[613]

(c) […] explained that "*In markets where we have own storage tanks, we have less complexity in changing suppliers. In markets where we include renting of storage tanks, the process is more demanding. For markets where we fill Coca Cola and Pepsi, we rely on special approval of suppliers. Getting new suppliers through the audit can be time and resource demanding*".[614]

(d) […] explained that they "*are leasing a lot of tanks for the bulk products, and switching these is expensive and hard to do*."[615]

(e) […] stated that: "*It is difficult since the gas tanks are owned by the suppliers and if the supplier is changed the old tank needs to be removed and the tank of the new supplier installed*."[616]

(f) […] stated that "*With regard to the supply of liquid gas in connection with rental tanks, switching supplier is difficult due to high investment. Regarding the supply of liquid gas to own tanks, switching supplier is very easy*."[617]

(g) […] explained the difficulties in switching supplier by stating that the "*storage vessels (most often the asset of the current supplier) must be removed and replaced with those of the new supplier, this can incur significant transport, crane hire, commissioning charges and planning permission costs.*"[618]

(h) […] stated that there are two reasons why switching supplier is difficult: "*little competition between suppliers and difficulty in tank replacement*."[619]

(i) […] stated that "*Gas is supplied to an on site tank owned by the provider. Changing supplier would incur a cost to remove the tank and a cost to install a new tank from the new provider. This would also take time and disruption to our operation*."[620]

(j) […] stated that, "*In the case of bulk, switching difficulties are linked to the need to install new equipment to receive the liquid gas*."[621]

(k) […] explained that "*the time required to switch from one gas supplier to another depends on the contract and on the country. In general terms, the required time to switch supplier ranges from six months (shortest period regardless of country and contract) to three years (worst case scenario). Moreover, in changing a supplier, there are some costs related to the replacement or renewal of the existing infrastructures needed for the delivery*

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613 […]'s response to RFI Q17 to customers of industrial gases, question 22; ID 3397. Albeit the question related to the tonnage market, […] is a bulk (and cylinder) customer only (RFI Q17 to customers of industrial gases, question 3, ID 3397.

614 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 4203.

615 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 2819.

616 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 2395.

617 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 2808.

618 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 2373.

619 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 3126.

620 […]'s response to RFI Q17 to customers of industrial gases, question 47, ID 2501.

621 Agreed non-confidential minutes of conference call with […] of 10 October 2017, paragraph 16, ID 5561.

*phase (i.e. tanks, etc.). As a general trend,* […] *states that the contracts are usually renewed with the same supplier after their natural termination*."[622]

viii. Conclusion

(590) On the basis of the considerations set out in recitals (541)-(589), the Commission considers that, post-Transaction, any other competitive constraints present in the horizontally affected bulk markets identified in Table 6 are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely overall effects of the Transaction**

(591) The Commission notes that the Transaction would lead to the creation of a monopoly or quasi monopoly in the markets for the supply of carbon dioxide in Ireland and Norway, oxygen in Norway and argon in Norway, where the combined market shares of the Notifying Parties are, by either volume or value, **above [90-100]%** (based on the Notifying Parties' market share data).

(592) The merged entity will hold a market share **above [50-60]%** (the presumption of dominance threshold set forth by paragraph 17 of the Horizontal Merger Guidelines) in the bulk markets for the supply of argon in Austria, the Czech Republic, Finland, Spain and Sweden; carbon dioxide in Cyprus, the Czech Republic, Denmark, Finland, Germany and Sweden; nitrogen in Austria, the Czech Republic, Portugal, Romania, Sweden, the United Kingdom; and oxygen in the Czech Republic and Sweden.

(593) In several other affected markets the merged entity will have market shares **above [30-40]%** by volume and value, that is in the supply of: argon in the EEA, as well as in Bulgaria, Denmark, Germany, Hungary, Portugal, Romania; carbon dioxide in Benelux, Hungary, Portugal, Romania, Spain, the United Kingdom; hydrogen in Germany; nitrogen in Denmark, Germany, Hungary, Slovakia, Spain; and oxygen in Austria, Benelux, Denmark, Germany, Portugal, Romania, Slovakia and Spain.

(594) Finally, in a few affected markets the merged entity will hold market shares by either volume of value **above [20-30]%**, that is in relation to the supply of: argon in Benelux, Italy, Slovakia; nitrogen in Benelux, Bulgaria, Italy, Poland; and oxygen in Bulgaria, Hungary, Italy and Poland. The market shares of the merged entity will be **above [20-30]%** in the supply of carbon dioxide in Bulgaria and Slovakia and in the supply of oxygen in France.

(595) Based on the results of the market reconstruction, the Commission also notes that in several countries and for several products the merged entity's market shares would be greater than what the Notifying Parties submit. Indeed, on the basis of the market reconstruction the merged entity's market shares would be **above [50-60]%** by volume also in the supply of: oxygen in Germany, Romania and Slovakia; nitrogen in Hungary; carbon dioxide in Hungary and Romania; and argon at EEA level as well as in Italy, Germany, Hungary, Romania, Bulgaria and Denmark.

(596) Based on the results of the market reconstruction, the merged entity's market shares would be also **above [30-40]%** in the supply of: oxygen in Hungary and Italy; nitrogen in Bulgaria and Italy; carbon dioxide in Austria; argon in the Benelux. However, based on the results of the market reconstruction, the Commission notes that the merged entity's market shares would be lower than what the latter submitted

[622] Agreed non-confidential minutes of conference call with […] of 27 September 2017, paragraphs 17-19, ID 6237).

in the supply of hydrogen in Germany, where they would be just **above [30-40]%**, and in the supply of carbon dioxide in the Benelux and oxygen in the Czech Republic, where they would be **above [30-40]%**.

(597) Concentration levels will increase significantly. Out of the 67 affected markets, while pre-Transaction concentration levels are above 2 000 in 64 markets, post-Transaction concentration levels will be above 2 000 in 66 markets. In the only market where concentrations levels will be below 2 000, the merged entity's market share will be above [20-30]% (oxygen in Italy). The delta HHI will be above [200-300] in 53 markets, above [500-600] in 36 markets and above [1000-1500] in 10 markets.

(598) Moreover, the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, in all horizontally affected markets, including those where their combined shares will be below [50-60]% (but excluding the supply of carbon dioxide in Slovakia). Such constraints, which would be removed by the Transaction, exist not only as a result of their market shares, but for all the reasons illustrated in Section 8.2.2.2.3.a.

(599) The reduction of the competitive pressure resulting from the Transaction is not likely to be counteracted by other competitive constraints which will remain on the markets for the reasons illustrated in Section 8.2.2.2.3.b.

(600) In this context the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario. Indeed, while in the market investigation the bulk customers and competitors expressed mixed views as regards the effects of the Transaction, with half considering the Transaction to have negative effects and the other half considering it neutral,[623] the Transaction will further reduce the already limited number of players in the horizontally affected bulk markets identified in Table 6. At the very least with respect to the bulk markets referred to in recitals (591), (592) (594), the Transaction would result in the creation or strengthening of a dominant position.

(601) In this respect, the Commission notes that, among the customers expressing a negative view on the Transaction:

(a) […] stated that the "*elimination of Praxair as a competitive threat will have a huge impact on prices. Also in countries (e.g., Scandinavian countries) where Linde is the only supplier, the elimination of Praxair as a potential alternative, will have a negative impact on prices*."[624] Further […] considers that, post-Transaction "*Due to the less suppliers there will be less competitive pressure to provide lower prices and incentives*."[625]

(b) […] stated that, "*For Germany, Linde and Praxair are currently competitors on eye level, but also with a merger of Praxair and Linde, the competition would be minimized with the new Linde which would even be larger than Air*

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623 Responses to RFI Q17 to customers of industrial gases, question 56 and RFI Q31 to competitors in industrial and medical gases, question 50.

624 Agreed non-confidential minutes of the conference call with […] of 24 October 2017, paragraph 29; ID 704. Also, […]'s response to RFI Q17 to customers of industrial gases, question 51: "*Post transaction the combined Linde-Praxair entity would be dominant in selected markets, which will affect availability and cost. in particular the competition will not be intense in Italy, Hungary & Romania* ", ID 3798.

625 […]'s response to RFI Q17 to customers of industrial gases, question 3, ID 3798.

*Liquide*."[626] […] also stated that "*a merger between Praxair and Linde is expected to be harmful to its business, a trend that* […] *has experienced during different stages in the consolidation process over the past 10 years. This is because, already today, competition among gas suppliers (and also engineering companies) is limited in the EEA. This is also the case for the [carbon dioxide] market, where competition has already been limited significantly by the acquisition of Yara's [carbon dioxide] European business by Praxair. (...)* […] *stated that the worst effects have to be expected in the form of price increases. Despite some level of innovation in logistic which is relevant in air gases, according to* […]*, nothing is as important as the plurality of competitors active in the market.*"[627]

(c) […] stated that in Ireland "*The only companies therefore that supply [carbon dioxide] are BOC Linde and Praxair. (...) In our case and for all customers in Ireland that have a requirement for [carbon dioxide] it means that there will only be one viable supplier left to supply the market once the merger proceeds unless the merged company divests part of the [carbon dioxide] business to a 3rd party so that the status quo regarding two viable suppliers prevails in Ireland post the merger. In the UK following the merger there will still be two suppliers remaining, Air Liquide and the new merged company Praxair / Linde BOC. There are three at present : Air liquide , BOC linde and Praxair*."[628] Further, […] stated that "*With competition effectively being removed from the Irish [carbon dioxide] market with this merger, the future looks bleak for the competitiveness of [carbon dioxide] and the resulting negative consequences this would have on our business over time*."[629]

(d) […] stated that "*There is already right now limited numer (sic) of suppliers, there are just 4 big suppliers and Messer. not all of tchem (sic) are present all over European countries. after post transaction it will be even less*."[630]

(e) […] stated that "*our both strategic supplier will merge to one supplier, which mean less competition in Germany (sic)*".[631]

(f) […] fears, "*in some countries (the UK specifically), (...) the competition to become too low as Linde and Praxair are competing directly on [carbon dioxide] bulk*".[632]

(g) […] stated that, in "*the UK this will adversely affect the [carbon dioxide] supply as we will move from four to three providers and Praxair already supply over 90% of the UK's [carbon dioxide] including what it supply's to its competitors to sell on*."[633]

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626 […]'s response to RFI Q17 to customers of industrial gases, question 44, ID 3044.

627 Agreed non-confidential minutes of the conference call with […] of 29 September 2017, paragraphs 31 and 33, ID 5387.

628 […]'s response to RFI Q17 to customers of industrial gases, question 36, ID 2373.

629 […]'s response to RFI Q17 to customers of industrial gases, question 53 ID 2373.

630 […]'s response to RFI Q17 to customers of industrial gases, question 51, ID 1727.

631 […]'s response to RFI Q17 to customers of industrial gases, question 51, ID 3543.

632 […]'s response to RFI Q17 to customers of industrial gases, question 51, ID 3840.

633 […]'s response to RFI Q17 to customers of industrial gases, question 52, ID 3992.

(h) […] stated that, post-Transaction the merged entity "*will have less competion (sic) in several markets, which will allow (the merged enitity) to compete less aggressively (sic*)."[634]

(i) […] considers that "*Today Praxair and Linde compete for the bulk supply of industrial gasses and today they are the main competitors on the market. This competition will be lost on the market" so the merged entity will have less incentives to compete*.[635]

**d. Conclusion**

(602) For the reasons set out in recitals (515)-(601), the Commission's assessment is that the Transaction would significantly impede effective competition as result of horizontal non-coordinated effects in:

(a) the EEA bulk market for the supply of argon;

(b) the bulk markets for the supply of: argon in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Finland, Germany, Hungary, Italy, Norway, Portugal, Romania, Slovakia, Spain and Sweden; carbon dioxide in Austria, Benelux, Bulgaria, Cyprus, the Czech Republic, Denmark, Finland, Germany, Hungary, Ireland, Italy, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom[636]; hydrogen in Germany; nitrogen in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom; and oxygen in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, France, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Spain and Sweden.

(603) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[637] and, at the very least, in the removal of a significant competitive constraint in all other markets.

8.2.2.2.4. Cylinders and dry ice

(604) In the following the Commission analyses whether the Transaction would give rise to horizontal non-coordinated effects in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12 respectively. To this aim, first, it assesses the competitive constraints exerted by the Notifying Parties on each other and their

634 […]'s response to RFI Q17 to customers of industrial gases, question 53, ID 4203.

635 […]'s response to RFI Q17 to customers of industrial gases, question 53, ID 2819.

636 In relation to the market for the bulk supply of carbon dioxide in Slovakia, the Commission notes that, in any event, the commitments submitted by the Notifying Parties in 10 July 2018 to remedy the non-coordinated effects of the Transaction in relation to industrial gases would also exclude the possibility that the Transaction would lead to horizontal effects in the bulk supply of carbon dioxide in Slovakia. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in the latter market.

637 That is, the markets for the supply of carbon dioxide in Ireland and Norway, oxygen in Norway and argon in Norway, where the combined market shares of the Notifying Parties are, by either volume or value, above [90-100]% (based on the Notifying Parties' market share data), as well as the bulk markets for the supply of argon in Austria, Czech Republic, Finland, Spain, Sweden, Italy, Germany, Hungary, Romania, Bulgaria and Denmark and at EEA level; carbon dioxide in Cyprus, Czech Republic, Denmark, Finland, Germany, Sweden, Hungary and Romania; nitrogen in Austria, Czech Republic, Portugal, Romania, Sweden, United Kingdom and Hungary; and oxygen in Sweden, Germany, Romania and Slovakia, where the combined market shares of the Notifying Parties are above [50-60]% (based both on the Notifying Parties' market share data and the market reconstruction).

competitors pre-Transaction, which would be removed by the Transaction (Section 8.2.2.2.4.a); then, it assesses the other competitive constraints in the cylinder and dry ice markets, which will remain post-Transaction, and the likelihood that they will off-set the anticompetitive effects of the Transaction (Section 8.2.2.2.4.b). Finally, the Commission undertakes an overall assessment of likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.2.2.2.4.c), and draws conclusions (Section 8.2.2.2.4.d).

**a. Assessment of the competitive constraint exerted by the Notifying Parties**

(605) With the exceptions outlined in this Section, the Commission considers that the Notifying Parties exert important competitive constraints in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12, on each other, as well as on the remaining competitors, which would be removed by the Transaction. This is true both in light of their market shares, and the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), and in view of their market performance, as explained below.

i. Market shares

(606) As illustrated by Tables 11 and 12 and Annex I, in terms of sales, out of the 300 affected markets, pre-Transaction, **Linde** holds:

(a) **Market shares above [50-60]%** by either volume or value in: Austria (for the supply of carbon dioxide excluding dry ice (all purity grades, high purity and standard purity)); the Czech Republic (for the supply of acetylene (all purity grades, high purity and standard purity), argon (all purity grades and standard purity), dry ice, carbon dioxide excluding dry ice (all purity grades, high purity and standard purity), hydrogen (all purity grades and standard purity), nitrogen (all purity grades and standard purity), oxygen (all purity grades and standard purity)); Finland (for the supply of argon (all purity grades and standard purity), nitrogen (all purity grades and standard purity)); Hungary (for the supply of acetylene (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity), nitrogen (standard purity)); Ireland (for the supply of argon (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity), oxygen (all purity grades and standard purity); Norway (for the supply of acetylene (all purity grades, high purity and standard purity), argon (all purity grades, high purity and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity), nitrogen (all purity grades and standard purity); oxygen (all purity grades and standard purity)); Romania (for the supply of acetylene (all purity grades, standard purity and high purity), argon (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades, high purity and standard purity), oxygen (standard purity)); Sweden (for the supply of: acetylene (all purity grades, high purity and standard purity), argon (all purity grades, high purity and standard purity), dry ice, carbon dioxide excluding dry ice (all purity grades and standard purity), hydrogen (all purity grades and standard purity), nitrogen (all purity grades, high purity and standard purity), oxygen (all purity grades, high purity and standard purity)); the United Kingdom (for the supply of: acetylene all purity grades and standard purity), oxygen (all purity grades and standard purity)). In all these markets Linde is the market leader;

(b) **Market shares above [30-40]%** by either volume or value in: Austria (for the supply of: acetylene (all purity grades and standard purity), dry ice); Denmark (for the supply of: argon (all purity grades and standard purity), nitrogen (all

purity grades, high purity and standard purity), oxygen (all purity grades, high purity and standard purity)); Germany (acetylene (all purity grades, high purity and standard purity), carbon dioxide excluding dry ice (all purity grades, high purity and standard purity), carbon monoxide (standard purity), hydrogen (all purity grades, high purity and standard purity), nitrogen (all purity grades, high purity and standard purity)); Hungary (for the supply of: acetylene (high purity), argon (all purity grades and standard purity), dry ice, carbon dioxide excluding dry ice (high purity), nitrogen (all purity grades), oxygen (standard purity and all purity grades)); Lithuania (acetylene (all purity grades and standard purity)); Norway (for the supply of: hydrogen (standard purity), nitrogen (high purity) and oxygen (high purity); Poland (for the supply of: acetylene (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity), hydrogen (all purity grades and standard purity), oxygen (all purity grades and standard purity)); Romania (for the supply of: dry ice; hydrogen (all purity grades), nitrogen (all purity grades and standard purity), oxygen (all purity grades)); Slovakia (for the supply of: acetylene (all purity grades, high purity and standard purity), argon (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades, high purity and standard purity), hydrogen (all purity grades), nitrogen (all purity grades and standard purity), oxygen (all purity grades and standard purity)); the United Kingdom (for the supply of: argon (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity); hydrogen (all purity grades and standard purity); nitrogen (all purity grades and standard purity). In all these markets Linde is either the market leader or the second largest supplier.

(c) In all other affected markets Linde has more moderate market shares below [30-40]% by either volume or value, but above [10-20]%.[638]

(607) With respect to **Praxair**, based on the sales market shares provided by the Notifying Parties, the Commission notes that, pre-Transaction, Praxair holds:

(a) **Market shares above [50-60]%** by either volume or value in: the Czech Republic (for the supply of argon (high purity), carbon monoxide (standard purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Denmark (for the supply of dry ice); Norway (for the supply of dry ice, carbon dioxide excluding dry ice (high purity), hydrogen (high purity), nitrogen (high purity)); Romania (argon (high purity), hydrogen (high purity), nitrogen (high

638 With the exception of only the following markets where Linde's market share would be below 10%: at EEA level for the supply of hydrogen (high purity), in Austria for the supply of argon (high purity); in Benelux for the supply of dry ice and oxygen (standard purity); in Czech Republic for the supply of argon (high purity), carbon monoxide (standard purity) and nitrogen (high purity); in France for the supply of dry ice; in Hungary for the supply of argon (high purity), hydrogen (high purity), oxygen (high purity); in Ireland for the supply of dry ice; in Italy for the supply of acetylene (all purity grades and standard purity), argon (all purity grades, high purity and standard purity), dry ice, carbon dioxide excluding dry ice (all purity grades, high purity and standard purity), hydrogen (all purity grades, high purity and standard purity), nitrogen (all purity grades, high purity and standard purity), oxygen (all purity grades, high purity and standard purity), in Norway for carbon dioxide excluding dry ice (high purity) and hydrogen (high purity), in Romania for the supply of argon (high purity), in Slovakia for the supply of nitrogen (high purity) and oxygen (high purity), in Spain for the supply of dry ice, carbon dioxide excluding dry ice (all purity grades and standard purity) and hydrogen (all purity grades and standard purity).

purity), oxygen (high purity)) and Slovakia (for the supply of hydrogen (high purity)). In all these markets Praxair is the market leader;

(b) **Market shares above [30-40]%** by either volume or value in: EEA (for the supply of hydrogen (high purity); Bulgaria (for the supply of argon (all purity grades and standard purity), oxygen (all purity grades and standard purity), oxygen (standard purity)); Denmark (for the supply of hydrogen (high purity)); Hungary (for the supply of argon (high purity), hydrogen (high purity), oxygen (high purity)); Ireland (for the supply of dry ice); Italy (for the supply of argon (high purity), carbon dioxide excluding dry ice (high purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Norway (for the supply of hydrogen (all purity grades and standard purity), oxygen (all purity grades and standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Sweden (for the supply of carbon dioxide excluding dry ice (high purity)); and the United Kingdom (for the supply of dry ice). In all these markets Praxair is either the market leader or the second largest player;

(c) **Market shares above [20-30]%** by either volume or value in: EEA (for the supply of argon (high purity), hydrogen (high purity), nitrogen (high purity)); Austria (for the supply of argon (high purity)); Benelux (for the supply of dry ice); Bulgaria (for the supply of acetylene (standard purity) and hydrogen); Denmark (carbon dioxide excluding dry ice (all purity grades and standard purity), hydrogen (high purity), oxygen (all purity grades and standard purity)); Germany (for the supply of dry ice); Hungary (for the supply of nitrogen (high purity)); Italy (for the supply of argon (all purity grades and standard purity), dry ice, hydrogen (all purity grades), nitrogen (all purity grades), oxygen (all purity grades)); Norway ( for the supply of acetylene (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity), nitrogen (all purity grades and standard purity)); Portugal (for the supply of argon (standard purity), carbon dioxide excluding dry ice (high purity), nitrogen (all purity grades), nitrogen (standard purity)); Spain (for the supply of dry ice, carbon dioxide excluding dry ice (standard purity), nitrous oxide (standard purity)); and the United Kingdom (for the supply of dry ice);

(d) In all other affected markets Praxair has more limited market shares below [20-30]% by either volume or value.

(608) In the Czech Republic (for the supply of carbon monoxide (standard purity) and nitrogen (high purity)) and Norway (for the supply of carbon dioxide excluding dry ice (high purity), hydrogen (high purity) and nitrogen (high purity), the combined market shares of the Notifying Parties are, by either volume or value, **above [90-100]%**.

(609) The combined market shares of the Notifying Parties are **above [50-60]%** in: Austria (for the supply of carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice); Bulgaria (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), hydrogen (all purity grades), oxygen (all purity grades), oxygen (standard purity)); the Czech Republic (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity),carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), nitrogen (all purity

grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (high purity), nitrogen (high purity), oxygen (all purity grades), oxygen (standard purity)); Finland (for the supply of argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity)); Germany (for the supply of acetylene (all purity grades), acetylene (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity)); Hungary (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Ireland (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (standard purity)); Italy (for the supply of carbon dioxide excluding dry ice (high purity)); Norway (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Romania (for supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity)); Sweden (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); the United Kingdom (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), oxygen (all purity grades), oxygen (standard purity)).

(610) In several other affected markets the combined market shares of the Notifying Parties are **above [30-40]%** by volume and value, that is in: the EEA (for the supply of argon (high purity), carbon dioxide excluding dry ice (high purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Austria (for the supply of acetylene (all purity grades), acetylene (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)), Benelux (for the supply of dry ice, hydrogen (all purity grades), hydrogen (standard purity)); Bulgaria (for the supply of acetylene (all purity grades), carbon dioxide excluding dry ice (standard purity), nitrogen (standard purity)); Denmark (for the supply of acetylene (all purity grades), acetylene (standard purity), hydrogen (all purity grades), nitrogen (all purity grades), nitrogen (standard purity), oxygen (high purity)); Germany (for the supply of acetylene (high purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon

dioxide excluding dry ice (standard purity), carbon monoxide (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (high purity)); Hungary (for supply of argon (high purity), dry ice, hydrogen (high purity), oxygen (high purity)); Italy (for the supply argon (all purity grades), argon (high purity), argon (standard purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Lithuania (for the supply of acetylene (all purity grades), acetylene (standard purity)), Poland (for supply of acetylene (all purity grades), acetylene (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Portugal (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), nitrous oxide (standard purity), oxygen (all purity grades), oxygen (standard purity)); Romania (for the supply of dry ice); Slovakia (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Spain (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), nitrous oxide (standard purity)); Sweden (for the supply of hydrogen (high purity)); the United Kingdom (for the supply of carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity)).

(611) Finally, in a few affected markets the combined market shares of the Notifying Parties, by either volume of value, are **above [20-30]%**, that is in: the EEA (for the supply acetylene (high purity); Austria (for the supply of acetylene (high purity), argon (all purity grades), argon (high purity), argon (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity)); Benelux (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (high purity), hydrogen (high purity)); Bulgaria (for the supply of carbon dioxide excluding dry ice, nitrogen (all purity grades)); Denmark (for the supply hydrogen (standard purity)); France (for the supply of carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Germany (for the supply of argon (high purity), oxygen (all purity grades), oxygen (standard purity)), Hungary (for the supply of hydrogen (all purity grades), hydrogen (standard purity)); Italy (for the supply of dry ice, hydrogen (all purity grades), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Poland (for the supply of argon (all purity grades), argon (standard purity)); Portugal (for the supply of hydrogen (all purity grades), oxygen (high purity)); Spain (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (high purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)).

(612) The combined market shares of the Notifying Parties are just **above [20-30]%** in: Austria (for the supply hydrogen (all purity grades), hydrogen (standard purity)), Benelux (for the supply of acetylene (high purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (high purity)); France (for the supply of argon (all purity grades), argon (standard purity), dry ice); Italy (for the supply of acetylene (all purity grades), acetylene (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), hydrogen (standard purity)); Norway (for the supply of carbon monoxide (standard purity)); Spain (for the supply of hydrogen (all purity grades) and hydrogen (standard purity)).

(613) Therefore, the Commission considers that the Notifying Parties have relatively large, or, in some cases, even very large (above [50-60]%) combined sales shares in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12, respectively, which are likely to lead to a significant increase of market power post-Transaction. The only exceptions relate to the affected markets referred to in recital (611), where the Notifying Parties' market shares are below [20-30]%.

ii. Closeness of competition

(614) As regards closeness of competition, the Commission notes that the bulk markets are very concentrated. This has been illustrated in Section 8.2.1.2.5. In this respect the Commission also notes that concentration levels are very high: in the overwhelming majority of the affected markets concentration levels are above 2000 by volume and value.[639]

(615) Contrary to the Notifying Parties' arguments, the results of the market investigation indicate that in the very concentrated cylinder and dry ice markets only the Tier 1 players compete closely with each other. Messer and SOL only compete in some geographic areas.[640]

(616) This is confirmed by the analysis of the Notifying Parties' internal documents where the main focus and key benchmarking of the Notifying Parties' activities in the various countries of the EEA is undertaken primarily against each other, Air Liquide and Air Products, and only in certain geographies against Messer, SOL and other players.[641]

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639 With the only exception of the markets for the supply of: acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity) in Benelux; acetylene (all purity grades) in Bulgaria; argon (all purity grades), argon (high purity), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity) in Germany; acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity) in Italy; acetylene (high purity), argon (high purity), carbon dioxide excluding dry ice (high purity), nitrogen (high purity), oxygen (high purity) in the EEA.

640 Responses to RFI Q17 to customers of industrial gases, questions 96 and 97 and RFI Q31 to competitors in industrial and medical gases, questions 82 and 83. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

641 For example, Linde's internal documents, Annex 11 to the Form CO, 5.4(iii) Non-transaction related documents, Executive Board of Linde AG, Competitors.

(617) In this context it appears therefore that the Notifying Parties compete with each other and the other suppliers, at the very least in line with what their market share would suggest.

(618) The Commission therefore considers that the Notifying Parties are close competitors to a significant degree such that the Transaction would be likely to give rise to significant price effects by removing the constraint exerted by the Notifying Parties on each other and on their competitors.

iii. Specific assessment of the competitive constraint exerted by the Notifying Parties

(619) With the exceptions outlined in this Section, the Commission considers that the Notifying Parties exerts important competitive constraints in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12 respectively, which is not only due to their relatively large or very large market shares in some affected markets (illustrated in Section 8.2.2.2.4.a.i), but also to (i) their vertical integration in the production of industrial gases and the competitive constraint that the Notifying Parties exert in the bulk and tonnage markets, (ii) the density of their distribution networks and (iii) their market performance with respect to the main parameters of competition. These points are addressed in turn below.

(620) First, similarly to other gas suppliers, both Notifying Parties purchase from their competitors some quantities of industrial gases to resell them in the cylinder markets (for example, certain high purity grades of industrial gases[642]). At the same time, Linde and Praxair are vertically integrated in the production of industrial gases, as they are also important suppliers in the bulk and tonnage markets, as discussed in Sections 8.2.2.2.3 and 8.2.2.2.1. The constraint exercised by the Notifying Parties in the cylinder and dry ice markets thus reflects, and derives from, the competitive constraint that they exert in the bulk and tonnage markets.[643]

(621) Second, in this context, the considerations on the economies of density enjoyed by the Notifying Parties, made in Sections 8.2.2.2.1 and 8.2.2.2.3 with respect to the tonnage supply of carbon monoxide and the bulk supply of argon, oxygen, nitrogen, carbon dioxide and hydrogen also apply to the corresponding cylinder markets.

(622) Further, as explained in Section 6.2, agreements with depots are important for delivery network optimisation and to increase customer density in the cylinder markets. In this respect, the Commission notes that in several countries the Notifying

642 Form CO, Tables 10 and 11.

643 This applies also to the following cylinder markets where the Notifying Parties' combined market shares are below [20-30]%: the markets for the supply of hydrogen (all purity grades and standard purity) in Austria; argon (all purity grades and standard purity), nitrogen (standard purity), oxygen (all purity grades, high purity and standard purity) in Benelux; argon (high purity) in Denmark; argon (all purity grades and standard purity) in France; hydrogen (standard purity) in Italy; carbon monoxide (standard purity) in Norway; and hydrogen (all purity grades and standard purity) in Spain. Indeed, all considerations whereby the competitive constraint exerted by the Notifying Parties in the cylinder markets is a reflection of the competitive constraint they exert in the EEA tonnage and bulk markets apply also with respect to these markets.
This also applies to the markets for the cylinder supply of carbon dioxide excluding dry ice (all purity grades and standard purity) in Benelux and Italy in view of the very high market shares of the Notifying Parties in the upstream bulk markets for carbon dioxide in the respective countries. Indeed, on the basis of the Notifying Parties' market share information (which have been confirmed by the results of the market reconstruction), the combined shares of the Notifying Parties in the bulk carbon dioxide markets are [30-40]% in Benelux and [50-60]% in Italy.

Parties control important shares of depots through exclusivity agreements, as shown in Table 35 below.

**Table 35: Share of depots bound by an exclusivity arrangement by the Notifying Parties**

| Geography | Share of Linde depots bound by an exclusivity arrangement | Share of Praxair depots bound by an exclusivity arrangement |
|---|---|---|
| Austria | […] | […] |
| Belgium | […] | […] |
| Bulgaria | […] | […] |
| Croatia | […] | […] |
| Cyprus | […] | […] |
| Czech Republic | […] | […] |
| Denmark | […] | […] |
| France | […] | […] |
| Finland | […] | […] |
| Germany | […] | […] |
| Greece | […] | […] |
| Hungary | […] | […] |
| Iceland | […] | […] |
| Ireland | […] | […] |
| Italy | […] | […] |
| Liechtenstein | […] | […] |
| Lithuania | […] | […] |
| Luxembourg | […] | […] |
| Netherlands | […] | […] |
| Norway | […] | […] |
| Poland | […] | […] |
| Portugal | […] | […] |
| Romania | […] | […] |
| Slovakia | […] | […] |
| Slovenia | […] | […] |
| Spain | […] | […] |
| Sweden | […] | […] |
| United Kingdom | […] | […] |

*Source: Form CO, Table 49.*

(623) Third, the strengths of the Notifying Parties in terms of vertical integration and density are reflected in the ratings given to them by customers in the market investigation as regards their performance with respect to the main parameters of competition identified in Section 8.2.1.2.5. Indeed, in the market investigation customers considered Linde the most competitive player as regards supply security, followed by Air Liquide and Praxair. The same applies to timely deliveries, where Praxair is the second best according to customers. As regards price, Praxair was rated

the most aggressive.[644] Such ratings can be seen as a function of the density of the Notifying Parties' network in the affected markets.

(624) Linde was also rated the most competitive player as regards product range, followed by Praxair.[645] In this respect the Commission notes that both Notifying Parties are not only active, but also hold significant market positions, in several markets for the supply of specialty gases (see Sections 8.4, 8.5, 8.6 and 8.7) as well as of helium, both at wholesale and retail levels, with a specific competitive advantage in helium sourcing (see Sections 8.9 and 8.19).

(625) In the market investigation, Praxair has been indicated by several customers as a particularly strong player in the supply of carbon dioxide and dry ice, especially in the United Kingdom.[646] In this respect, for example, […] stated that "*Currently only Praxair can supply the quantities of the dry ice that we require. Other companies on the market either don't have the sufficient equipment or supply of liquid [carbon dioxide]*."[647]

(626) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraints exerted by Notifying Parties are likely to deteriorate.

iv. Conclusion

(627) On the basis of recitals (605)-(626), the Commission considers that the Notifying Parties exert important competitive constraints in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12 respectively, on each other, as well as on their competitors. The only exception to this relates to the affected markets for the supply of dry ice in France, acetylene (high purity) in Benelux and acetylene (all purity grades and standard purity) in Italy, where the Notifying Parties' combined market shares are below [20-30]% and where there do not appear to be other factors indicating that Linde and Praxair exert important competitive constraints.

**b. Assessment of the other competitive constraints in the markets**

(628) In this Section, the Commission assesses the competitive constraints which will remain post-Transaction in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12 respectively and whether these constraints would have the ability and incentives to counteract the loss of competition deriving from the Transaction and described in the previous Section.

i. Air Liquide

(629) The constraint exerted by Air Liquide in the cylinder and dry ice markets should also be assessed in the light of the important competitive position held by Air Liquide in the bulk and tonnage markets. As outlined in Section 8.2.1.2.1.b.i, Air Liquide's pre-Transaction strategy is not very aggressive and Air Liquide appears to rather rely on its strong existing market position.

644 Responses to RFI Q17 to customers of industrial gases, questions 91 and 92. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

645 Responses to RFI Q17 to customers of industrial gases, questions 96 and 97 and RFI Q31 to competitors in industrial and medical gases, questions 82 and 83. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

646 Responses to RFI Q17 to customers of industrial gases.

647 […]'s response to RFI Q17 to customers of industrial gases, question 35, ID 3035.

(630) No evidence in the Commission's file suggests that, post-Transaction, Air Liquide would change its strategy. On the contrary, it may consider it more profitable to compete even less given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players. Financial analysts seem to have expressed such opinion, when, after the announcement of the Transaction, they upgraded Air Liquide's shares among the shares "*to Buy, with Target Price Change EUR* […]".[648] In the same vein, among customers responding to the market investigation […]. believes that "*At the current economic status (…) the remaining players will also increase the price so that they could take advantage of the Transaction too, by following the tendency of a new big supplier. Besides, the already short list of suppliers would decrease*." [649] This view is shared by several other customers in the market investigation.[650]

(631) Moreover, the overwhelming majority of customers and competitors do not expect any expansion or organic growth in the cylinder markets by existing gas suppliers.[651]

(632) The Commission therefore considers that, while Air Liquide is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

ii. Air Products

(633) The constraint exerted by Air Products in the cylinder and dry ice markets should also be assessed in the light of the important competitive position held by Air Products in the bulk and tonnage markets. As outlined in Section 8.2.1.2.1.b.ii, Air Products' pre-Transaction strategy is not very aggressive and Air Products appears to rather rely on its existing market position.

(634) No evidence in the Commission's file suggests that, post-Transaction, Air Products would change its strategy. On the contrary, it may consider it more profitable to compete even less given the reduction of the competitive pressure in the market brought about by the elimination of Praxair and Linde as standalone players. In the same vein, among customers responding to the market investigation […] expects "*the prices of the competitors also to increase*."[652] This view is shared by several other customers in the market investigation.[653]

(635) Moreover, the overwhelming majority of customers and competitors do not expect any expansion or organic growth in the cylinder markets by existing gas suppliers.[654]

(636) The Commission therefore considers that, while Air Products is likely to have the ability to compete post-Transaction, it appears unlikely that it would have the

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648 Linde's internal documents, […]. Air Liquide's share price has never been above EUR 112, https://www.airliquide.com/investors/shareprice-performance, ID6422.

649 […]'s response to RFI Q17 to customers of industrial gases, question 105, ID 2129.

650 Responses to RFI Q17 to customers of industrial gases, question 105.

651 Responses to RFI Q17 to customers of industrial gases, question 95 and RFI Q31 to competitors in industrial and medical gases, question 81. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

652 […]'s response to RFI Q17 to customers of industrial gases, question 105, ID 3948.

653 Responses to RFI Q17 to customers of industrial gases, question 105.

654 Responses to RFI Q17 to customers of industrial gases, question 95 and RFI Q31 to competitors in industrial and medical gases, question 81. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

incentives to compete to such an extent as to counteract the loss of competition deriving from the Transaction.

iii. Messer

(637) While Messer plays an important competitive role in Central and Eastern Europe, its ability to compete in other geographic areas, and, more generally, its ability to expand in the cylinder supply, are affected by its limited ability to compete in the bulk and tonnage markets, as discussed in Sections 8.2.1.2.1.b.iii and 8.2.1.2.3.b.iii. In this respect, in the market investigation […] stated that "*Messer is likely to be a good competitor (…) in CEE (Central and Eastern Europe) for cylinders, not so much in rest of Europe*."[655]

(638) No evidence in the Commission's file suggests that, post-Transaction, Messer's capabilities are likely to change. Notably, the overwhelming majority of customers and competitors do not expect any expansion or organic growth in the cylinder markets by existing gas suppliers.[656]

(639) The Commission therefore considers that, post-Transaction, Messer is unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the cylinder and dry ice markets where it is not active or it holds only moderate market shares. In the bulk markets where it holds significant market shares (see recital (558)), Messer is unlikely to have the ability to expand to such an extent as to counteract the loss of competition deriving from the Transaction.

iv. Other players

(640) Several other players are active in several, albeit not all, of the affected markets.[657] These players include SOL, Westfalen and Woikoski, and a number of others (such as ACP, Acail Gas Medicare, SWF and Strandmollen).

(641) However, the market presence of these players is generally limited to one product and/or country based on the operation of one plant or a limited number of bulk production plants (Tier 2 players) or of filling stations and bulk supply contracts with Tier 1 or Tier 2 players (Tier 3 players). Moreover they rarely have shares above 5% by value or volume, with the exception of SOL, Strandmollen, Westfalen, Woikoski, ACP, as well as Carboneco and SICO.

(642) Importantly, only ACP (in the market for dry ice in Benelux), Carboneco (in the market for carbon dioxide excluding dry ice (standard purity) in Germany), Polar Ice (in the market for dry ice in Ireland), SOL (in Bulgaria for the supply of acetylene (all purity grades and standard purity), argon (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and standard purity), hydrogen (all purity grades), nitrogen (all purity grades and standard purity); in France for the supply of dry ice; in Italy for the supply of acetylene (all purity grades and standard purity), carbon dioxide excluding dry ice (all purity grades and high purity), hydrogen (all purity grades, standard purity and high purity), oxygen (all purity grades, standard purity and high purity)), Strandmollen (in Denmark for the supply of hydrogen (all purity grades and standard purity) and carbon dioxide excluding dry

655 […]'s response to RFI Q17 to customers of industrial gases, question 96, ID 3840.

656 Responses to RFI Q17 to customers of industrial gases, question 95 and RFI Q31 to competitors in industrial and medical gases, question 81. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

657 See Annex I to the Decision.

ice (all purity grades and standard purity), Westfalen (in Benelux for the supply of oxygen (all purity grades, standard purity and high purity) and argon (all purity grades, standard purity and high purity); in Germany for the supply of carbon dioxide excluding dry ice (high purity) and acetylene (high purity)) and Woikoski in Finland for the supply of argon (all purity grades) and nitrogen (all purity grades)) hold a market share equal or above 10%.

(643) Moreover, the ability to compete of these players and in particular to expand in the cylinder markets are affected by their limited ability to compete in the tonnage and bulk markets as discussed in Sections 8.2.2.2.1 and 8.2.2.2.3. No evidence in the Commission's file suggests that, post-Transaction, the capabilities of Tier 2 players other than Messer are likely to change. Notably, the overwhelming majority of customers and competitors responding in the market investigation do not expect any expansion or organic growth in the bulk markets by existing gas suppliers.[658] Further, to the extent that these Tier 2 players rely on wholesale agreements to supply certain products and/or countries through cylinders, the same considerations made in Section 8.2.2.2.3 on the impact of such agreements on the incentives to expand apply also to the markets for the cylinder and dry ice supply.

(644) In addition, the Commission notes that those players who are not vertically integrated in the bulk and/or tonnage production of industrial gases and rely on third parties for the production capabilities (Tier 3 players) were not indicated as credible competitors by respondents to the market investigation.[659] No evidence in the Commission's file suggests that, post-Transaction, the capabilities of Tier 3 players are likely to change. Notably, the overwhelming majority of customers and competitors do not expect any expansion or organic growth in the cylinder markets by existing gas suppliers.[660]

(645) Thus, the Commission considers that suppliers without production capabilities pose only a limited competitive pressure on suppliers with such in-house capabilities and this will remain the case post-Transaction. Further, the horizontal non-coordinated anticompetitive effects of the Transaction in the bulk markets discussed in Section 8.2.2.2.3, which are likely to give rise to prices increases, would also affect Tier 3 players, whose price competitiveness is likely to further deteriorate.

(646) Finally, as explained in Section 8.2.5.1, entry of new existing suppliers does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction.

(647) The Commission therefore considers that post-Transaction Tier 2 players other than Messer (with respect to which see Section 8.2.2.2.4.b.iii) and Tier 3 players are unlikely to have the ability to compete to such an extent as to counteract the loss of competition deriving from the Transaction in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12 respectively.

v. Customer’s switching possibilities

(648) As explained in Section 8.2.5.2, buyer power does not appear to be likely to off-set the potential adverse effects of the Transaction. While switching costs for customers

658 Responses to RFI Q17 to customers of industrial gases, question 95 and RFI Q31 to competitors in industrial and medical gases, question 81. No evidence in the Commission’s file provided indications suggesting that for dry ice the above findings do not apply.

659 See Section 8.2.1.2.5.

660 Responses to RFI Q17 to customers of industrial gases, question 95 and RFI Q31 to competitors in industrial and medical gases, question 81. No evidence in the Commission’s file provided indications suggesting that for dry ice the above findings do not apply.

appear to be lower than with respect to the other modes of supply,[661] in fact the overwhelming majority of customers responding to the market investigation clearly indicated that they have not switched supplier in the past five years[662] despite the usually short duration of cylinder and dry ice contracts. This appears to be linked to the cost and time to change equipment which is normally rented from the gas supplier.[663] In this respect, in the market investigation:

(a) With respect to dry ice, […] explained that, in their view, switching is not easy because "*Plate size for dry ice needs to be customized in oder to fit our needs, which caused significant delays when we switched suppliers in the past*."[664]

(b) With respect to cylinders, […] explained that "*Switching suppliers is not so simple, as Ineos has to manage returnable bottles before switching to a new supplier, otherwise significant fees can be incurred for non-return of bottles*."[665] Likewise, […] explained that "*the connections of the cylinders of one supplier (...) do not correspond with those of another (...). Hence, in the event of a change of supplier, all fittings must be replaced in our installations*."[666] In the same vein, […] explained that "*Switching and qualifying new suppliers is costly and time consuming*."[667]

vi. Conclusion

(649) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12 are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely overall effects of the Transaction**

(650) The Commission notes that the Transaction would lead to the creation of a monopoly or quasi monopoly in the Czech Republic (for the supply of carbon monoxide (standard purity) and nitrogen (high purity)) and Norway (for the supply of carbon dioxide excluding dry ice (high purity), hydrogen (high purity) and nitrogen (high purity), where the merged entity's market shares will be, by either volume or value, **above [90-100]%**.

(651) The merged entity will hold a market share **above [50-60]%** (the presumption of dominance threshold set forth by paragraph 17 of the Horizontal Merger Guidelines) in Austria (for the supply of carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice); Bulgaria (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), hydrogen (all purity grades), oxygen (all purity grades), oxygen (standard purity)); the Czech Republic (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard

661 Responses to RFI Q17 to customers of industrial gases, question 99. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

662 Responses to RFI Q17 to customers of industrial gases, question 98. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

663 Responses to RFI Q17 to customers of industrial gases, question 99. No evidence in the Commission's file provided indications suggesting that for dry ice the above findings do not apply.

664 […]'s response to RFI Q17 to customers of industrial gases, question 47; ID 2439.

665 Agreed non-confidential minutes of conference call with […] of 10 October 2017, paragraph 12; ID 1027.

666 […]'s response to RFI Q17 to customers of industrial gases, question 101; ID 2653.

667 […]'s response to RFI Q17 to customers of industrial gases, question 99; ID 4029

purity), argon (all purity grades), argon (high purity), argon (standard purity),carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (high purity), nitrogen (high purity), oxygen (all purity grades), oxygen (standard purity)); Finland (for the supply of argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity)); Germany (for the supply of acetylene (all purity grades), acetylene (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity)); Hungary (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Ireland (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (standard purity)); Italy (for the supply of carbon dioxide excluding dry ice (high purity)); Norway (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Romania (for supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity)); Sweden (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); the United Kingdom (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), oxygen (all purity grades), oxygen (standard purity)). In all these markets the merged entity will be the market leader.

(652) In several other affected markets the merged entity's market shares will be **above [30-40]%** by volume and value, that is in: the EEA (for the supply of argon (high purity), carbon dioxide excluding dry ice (high purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Austria (for the supply of acetylene (all purity grades), acetylene (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)), Benelux (for the supply of dry ice, hydrogen (all purity grades), hydrogen (standard purity)); Bulgaria (for the supply of acetylene (all purity grades), carbon dioxide excluding dry ice (standard purity), nitrogen (standard

purity)); Denmark (for the supply of acetylene (all purity grades), acetylene (standard purity), hydrogen (all purity grades), nitrogen (all purity grades), nitrogen (standard purity), oxygen (high purity)); Germany (for the supply of acetylene (high purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), carbon monoxide (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (high purity)); Hungary (for supply of argon (high purity), dry ice, hydrogen (high purity), oxygen (high purity)); Italy (for the supply argon (all purity grades), argon (high purity), argon (standard purity), hydrogen (high purity), nitrogen (high purity), oxygen (high purity)); Lithuania (for the supply of acetylene (all purity grades), acetylene (standard purity)), Poland (for supply of acetylene (all purity grades), acetylene (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Portugal (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), nitrous oxide (standard purity), oxygen (all purity grades), oxygen (standard purity)); Romania (for the supply of dry ice); Slovakia (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Spain (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), nitrous oxide (standard purity)); Sweden (for the supply of hydrogen (high purity)); the United Kingdom (for the supply of carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity)). In all these markets the merged entity will be the market leader or the second largest player.

(653) Finally, in a few affected markets the merged entity will hold market shares, by either volume of value, **above [20-30]%**, that is in: the EEA (for the supply acetylene (high purity); Austria (for the supply of acetylene (high purity), argon (all purity grades), argon (high purity), argon (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity)); Benelux (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (high purity), hydrogen (high purity)); Bulgaria (for the supply of carbon dioxide excluding dry ice, nitrogen (all purity grades)); Denmark (for the supply hydrogen (standard purity)); France (for the supply of carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Germany (for the supply of argon (high purity), oxygen (all purity grades), oxygen (standard purity)), Hungary (for the supply of hydrogen (all purity grades), hydrogen (standard purity)); Italy (for the supply of dry ice, hydrogen (all purity grades), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Poland (for the supply of argon (all purity grades), argon (standard purity)); Portugal (for the supply of hydrogen (all purity grades), oxygen (high purity)); Spain (for the supply of acetylene (all purity

grades), acetylene (high purity), acetylene (standard purity), argon (high purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)).

(654) The combined market shares of the Notifying Parties are just **above [20-30]%** in: Austria (for the supply hydrogen (all purity grades), hydrogen (standard purity)), Benelux (for the supply of acetylene (high purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (high purity)); France (for the supply of argon (all purity grades), argon (standard purity), dry ice); Italy (for the supply of acetylene (all purity grades), acetylene (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), hydrogen (standard purity)); Norway (for the supply of carbon monoxide (standard purity)); Spain (for the supply of hydrogen (all purity grades) and hydrogen (standard purity)).

(655) Concentration levels will increase significantly. Out of the 300 affected markets, while pre-Transaction concentration levels are above 2000 in 262 markets, post-Transaction concentration levels will be above 2000 in 280 markets. The only markets where concentrations levels will be below 2 000 are the ones for the supply of: acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity) in Benelux; oxygen (all purity grades) and oxygen (standard purity) in Germany; acetylene (all purity grades), acetylene (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity) and oxygen (standard purity) in Italy; and acetylene (high purity) in the EEA.

(656) Moreover, the Commission notes that, in Germany, Portugal and Spain, the merged entity will significantly increase the share of available third parties depots which it will control through exclusivity agreements, compared to the pre-Transaction scenario.[668]

(657) Moreover, the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, in all horizontally affected markets, including those where their combined shares will be below 50% (excluding the supply of dry ice in France, acetylene (high purity) in Benelux) and acetylene (all purity grades and standard purity) in Italy). Such constraints, which would be removed by the Transaction, exist not only as a result of their market shares, but for all the reasons illustrated in Section 8.2.2.2.4.a.

(658) The reduction of the competitive pressure resulting from the Transaction is not likely to be counteracted by other competitive constraints which will remain on the markets for the reasons illustrated in Section 8.2.2.2.4.b.

(659) In this context the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario. Indeed, while in the market investigation the cylinder customers and competitors expressed mixed views

668 Form CO, Table 49.

as regards the effects of the Transaction, with half considering the Transaction to have negative effects and the other half considering it neutral,[669] the Transaction will further reduce the already limited number of players in the horizontally affected cylinder and dry ice markets identified in Tables 11 and 12. At very least, with respect to the markets indicated at recitals (649) and (650) above, the Transaction would result in the creation or strengthening of a dominant position.

(660) In this respect the Commission notes that, among the customers expressing a negative view on the Transaction:

(a) […] stated that the "*Post transaction the combined Linde-Praxair entity would be dominant in selected markets, which will affect availability and cost. in particular the competition will not be intense in Italy*."[670]

(b) […] stated that "*Since the market structure can be characterised as oligopoly anyway, the merger of Praxair/ Linde will tighten the market even more*."[671]

(c) […] explained that, "*In (its) view, there are only 3 main suppliers that can provide all the products we need (under our experience). If it becomes a market with only 2 suppliers could there be problems of competitiveness*."[672]

**d. Conclusion**

(661) For the reasons set out in recitals (605)-(660) , the Commission's assessment is that the Transaction would significantly impede effective competition as result of horizontal non-coordinated effects in:

(a) the cylinder markets for the supply of: acetylene in Austria (all purity grades, high purity grades, standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Lithuania (all purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), the United Kingdom (all purity grades and standard purity grades)[673]; argon in Austria (all purity grades, high purity grades and standard purity grades),

669 Responses to RFI Q17 to customers of industrial gases, question 107 and RFI Q31 to competitors in industrial and medical gases, question 89. The market investigation did not provide any specific indication as regards dry ice. This aspect will be further assessed in the in depth investigation.

670 […]'s response to RFI Q17 to customers of industrial gases, question 51.3; ID 3798.

671 […]'s response to RFI Q17 to customers of industrial gases, question 26.2; ID 2786.

672 […]'s response to RFI Q17 to customers of industrial gases, question 102 (ID3513).

673 In relation to the cylinder supply of acetylene in Italy (all purity grades and standard purity) and in Benelux (high purity), the Commission notes that, in any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the non-coordinated horizontal effects of the Transaction in relation to industrial gases would also exclude the possibility that the Transaction would lead to horizontal effects in the cylinder supply of acetylene in Italy (all purity grades and standard purity) and in Benelux (high purity). Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in the latter markets.

Benelux (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Finland (all purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); carbon dioxide (excluding dry ice) in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades and standard purity grades), France (all purity grades, high purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades, high purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); carbon monoxide in the Czech Republic (standard purity grades), Germany (standard purity grades), and Norway (standard purity grades); hydrogen in Austria (all purity grades and standard purity grades), Benelux (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades, high purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades and high purity grades), Slovakia (all purity grades and high purity grades), Spain (all purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); nitrogen in Austria (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity

grades, high purity grades and standard purity grades), Finland (all purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); nitrous oxide in Portugal (standard purity grades), and Spain (standard purity grades); oxygen in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades, high purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades);

(b) the EEA cylinder markets for the supply of high purity grades of acetylene, argon, carbon dioxide excluding dry ice, hydrogen, nitrogen and oxygen;

(c) the markets for the supply of dry ice in Austria, Benelux, the Czech Republic, Denmark, Germany, Hungary, Ireland, Italy, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom.[674]

(662) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[675] and, at the very least, in the removal of a significant competitive constraint on all the other markets.

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674 In relation to the market for the supply of dry ice in France, the Commission notes that, in any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the non-coordinated horizontal effects of the Transaction in relation to industrial gases would also exclude the possibility that the Transaction would lead to horizontal effects in the supply of dry ice in France. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in the latter market.

675 That is, the markets for the supply of carbon monoxide (standard purity) and nitrogen (high purity) in the Czech Republic and for the supply of carbon dioxide excluding dry ice (high purity), hydrogen (high purity) and nitrogen (high purity) in Norway, where the merged entity's market shares will be, by either volume or value, above [90-100]% as well as the following markets where the merged entity will hold a market share above [50-60]%: Austria (for the supply of carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice

*8.2.3. Horizontal coordinated effects*

(663) In the Article 6(1)(c) Decision the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to potential horizontal coordinated effects in the tonnage, bulk, small on-site plant and cylinder markets for industrial gases, both at a national and EEA level. Such effects would have resulted from potential coordination between the Tier 1 players aimed at market repartition. Under the mechanism of coordination identified by the Commission, customers would have been allocated to suppliers on the basis of customers' geographic location, taking into account the proximity to the suppliers' production plants. This could have enabled the coordinating suppliers to increase margins by offering higher prices (as they would face no or reduced competition from rival bidders), thereby keeping prices for industrial gases at a higher level than absent the Transaction.[676]

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(standard purity), dry ice); Bulgaria (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), hydrogen (all purity grades), oxygen (all purity grades), oxygen (standard purity)); Czech Republic (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity),carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (high purity), nitrogen (high purity), oxygen (all purity grades), oxygen (standard purity)); Finland (for the supply of argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity)); Germany (for the supply of acetylene (all purity grades), acetylene (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity)); Hungary (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Ireland (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (standard purity)); Italy (for the supply of carbon dioxide excluding dry ice (high purity)); Norway (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Romania (for supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity)); Sweden (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); the United Kingdom (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), oxygen (all purity grades), oxygen (standard purity)).

676 As regards small-on site plants the market repartition between Air Liquide and the merged entity could potentially be based on allocating to Air Liquide hydrogen customers and to the merged entity oxygen/nitrogen customers.

(664) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives on the merged entity and its remaining Tier 1 competitors to coordinate post-Transaction. The Commission therefore considers that the Transaction would not significantly impede effective competition in the tonnage, bulk, small on-site plant and cylinder markets for industrial gases as a result of horizontal coordinated effects. The Commission also notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in those markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

*8.2.4. Vertical non-coordinated effects*

(665) As explained in Section 8.1, vertically affected markets arise in relation to the links between some upstream EEA/national/Benelux markets for the bulk supply of industrial gases and some downstream EEA/national/Benelux markets for the cylinder supply of industrial gases.

(666) No customer foreclosure concern has been raised in the market investigation in regard to these links.

(667) In the Article 6(1)(c) Decision the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement as a result of possible vertical input foreclosure effects in relation to access by Tier 3 players to bulk industrial gases belonging to markets where the merged entity would have more than 30% in the upstream markets (regardless of the increment brought by Praxair), i.e. the markets identified in Table 6 and Table 13.

(668) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change of the incentives to foreclose of the merged entity. Importantly, the Commission notes that the Transaction does not materially alter the degree of vertical integration of the Notifying Parties which already today both produce industrial gases in bulk and sell industrial gases in cylinders and dry ice. Therefore, also considering the limited ability to compete that characterises Tier 3 players already pre-Transaction with respect to vertical integration in the production of industrial gases, the Commission cannot conclude that a significant impediment to effective competition would arise on the cylinder and dry ice markets as a result of vertical non-coordinated effects in relation to the supply of bulk gas inputs. This is without prejudice to the relevance of this vertical relationship for the assessment of the ability to compete of Tier 3 players undertaken in Section 8.2.2.). Thus, the Commission considers that the Transaction would not significantly impede effective competition as a result of the vertical non-coordinated effects stemming from the links identified in recital (665).

(669) In any event, the Commission notes that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in relation to industrial gases would also exclude the possibility that the Transaction would lead to vertical effects in those markets. Indeed, those commitments would fully remove the overlaps between the Notifying Parties' activities in industrial gases in the relevant bulk and cylinder markets.

(670) Moreover, as explained in Section 8.1, vertically affected markets arise in relation to the links between some upstream EEA/national/Benelux markets for the bulk and cylinder (all purity, standard purity and high purity grades) supply of industrial gases

and some downstream EEA/national markets for the supply of bulk and cylinder specialty gas mixtures.

(671) No customer foreclosure concern has been raised in the market investigation in regard to these links.

(672) In the Article 6(1)(c) Decision the Commission did not conclude as to whether the Transaction would raise serious doubts as to its compatibility with the internal market as a result of possible vertical input foreclosure effects in relation to access to bulk and cylinder industrial gases belonging to markets where the merged entity would have more than 30% in the upstream markets (regardless of the increment brought by Praxair).[677]

(673) In the second phase investigation, the Commission found that the proportion of the Notifying Parties' sales of industrial gases (all purity, standard purity and high purity grades) to third party suppliers of specialty gases is, in general, not significant (Notifying Parties' reply to RFI48, questions 23.2 and 23.4). Therefore, the Commission considers that no material change of the incentives to foreclose of the merged entity would occur post-Transaction. Importantly, the Commission notes that the Transaction does not materially alter the degree of vertical integration of the Notifying Parties which already today both produce industrial gases in bulk and cylinders and sell specialty gas mixtures in bulk (to a lesser extent) and cylinders. Thus, the Commission considers that the Transaction would not significantly impede effective competition as a result of the vertical non-coordinated effects stemming from the links identified in recital (670).

(674) In any event, the Commission notes that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in relation to industrial and specialty gases would also exclude the possibility that the Transaction would lead to vertical effects in those markets. Indeed, those commitments would fully remove the overlaps between the Notifying Parties' activities in industrial and specialty gases in the relevant bulk and cylinder markets.

*8.2.5. Countervailing factors*

(675) Unless otherwise specified, the findings set out in this Section, and in particular the results of the market investigation, do not materially differ depending on the industrial gas type or the geographies at stake.[678] Therefore, the Commission's analysis and the results of the market investigation will be presented primarily by mode of supply.

8.2.5.1. Entry and expansion

(676) As regards entry, the Commission notes the following.

(677) First, entry in the tonnage, bulk and small on-site plant markets is infrequent and entails significant costs (and lead times) associated with building the production assets. The Notifying Parties estimate that, for example, the costs associated with building an ASU range from EUR […] million to EUR […] million and can rise up to EUR […] million for the very large ASUs. Moreover, the construction of

677 See Annex I.

678 Responses to RFI Q17 to customers of industrial gases and RFI Q31 to competitors in industrial and medical gases.

production plants and the production of gases themselves require specific engineering and process know-how.[679]

(678) Moreover, as regards tonnage, entry is highly unlikely, not only due to the industry's capital intensive nature, but also due to the need to complement tonnage production with a distribution network for bulk and cylinder deliveries to enable a faster depreciation of the high entry investments.[680] In this respect, in the market investigation, […] stated that "*High entry costs for a new supplier due to high capital intensity*."[681]

(679) Second, entry in the cylinder markets is easier compared to the other modes of supply, as the investments required are much more limited.[682] Indeed, entry into such markets can be done without building production sites, as it is possible to and rely on bulk suppliers for the gas provision. However, even in the event of likely and timely entry into the cylinder markets, the Commission considers that such entry would be unlikely to be sufficient to deter or defeat the anticompetitive effects of the Transaction. Indeed, the market investigation clearly indicated that gas suppliers active in cylinder markets but not vertically integrated in the production of the relevant gases (Tier 3 suppliers) can pose only a limited competitive constraint on vertically integrated suppliers.[683]

(680) Third, the overwhelming majority of customers and competitors who participated in the market investigation do not expect new players to enter the EEA in the next two years. This applies to all affected markets in relation to the supply of industrial gases via all distribution modes.[684]

(681) This view is shared by market analysts, according to which the " *probability of new vendors entering the market is relatively low because of the strong positions of leading vendors. In addition, initial investment cost is also high, which restricting the entry of new players in the market*"[685] and the "*threat of new entrants is low due to high entry and exit barriers to the firms. Industrial gas market is a capital intensive business as the raw materials and the processing capacity to produce a good product requires both skilled labor as well as costly equipment".*[686]

(682) In light of the above, the Commission considers that the likelihood of entry of new players and/or of expansion of existing players, post-Transaction, in the various markets for the supply of industrial gases is unlikely to be sufficient to counteract the loss of competition deriving from the Transaction.

8.2.5.2. Buyer power

(683) As regards buyer power, the Commission notes the following.

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679 Form CO, Chapter A, Section 8, paragraphs 426-427. Also, responses to RFI Q31 to competitors in industrial and medical gases, question 32 and 54.

680 Societe Generale, "Linde AG, "Praxairing" Linde", of 13 January 2017: "*The industry's capital-intensive nature and the need for significant (distribution) infrastructure creates high barriers to entry, and leveraging high customer density around facilities to ensure full loading is a key determinant of returns*," Annex 24 to the Form CO. See Section 8.2.1.2.1.on the importance of economies of density.

681 […]'s response to RFI Q17 to customers of industrial gases, question 20; ID 3008.

682 Form CO, Chapter A, Section 8, paragraphs 428-429.

683 See Section 7.2.1.2.

684 Responses to RFI Q17 to customers of industrial gases, questions 14, 42, 66 and 94 and RFI Q31 to competitors in industrial and medical gases, questions 22, 41, 63, and 80.

685 Technavio, Industrial gases market in Europe 2017-2021, Annex 24 to the Form CO, page 35.

686 IndustryARC, Industrial Gases Market forecast (2017-2022), Annex 24 to the Form CO, page 50.

(684) First, the results of the market investigation have been inconclusive as regards the bargaining power enjoyed by customers vis-à-vis industrial gas suppliers in their contract negotiations. Indeed, customers expressed mixed views. This applies to all affected markets in relation to the supply of industrial gases via all distribution modes.[687]

(685) However, the Commission notes that, in light of the wide variety of applications for industrial gases, the customer structure is generally characterised by a high degree of dispersion, both in terms of size and geography. Customers range from large companies (for example, in the chemicals, steel, and oil refining industries) to very small to small and medium-sized companies and research laboratories. The concentration of customers is more significant with regard to the tonnage supply of industrial gases, as fewer customers achieve the critical mass (that is, the production scale) that is necessary for justifying such supplies.[688]

(686) While it can be excluded that pre-Transaction cylinder and dry ice customers typically enjoy buyer power[689], and a similar finding is likely with respect to customers of bulk and small on-site plants, with respect to tonnage customers, in particular the largest ones, the question of whether they enjoy some degree of buyer power remains unclear.[690]

(687) Second, in any event, even if certain tonnage customers were to enjoy buyer power pre-Transaction, the Commission considers that it is unlikely that such power would have sufficient countervailing effects to off-set the anticompetitive impact of the Transaction.

(688) In this respect, the Commission notes that, according to the Horizontal Merger Guidelines, countervailing buyer power cannot be found to sufficiently off-set potential adverse effects of a merger if it only ensures that a particular segment of customers, with particular bargaining strength, is shielded from significantly higher prices or deteriorated conditions after the merger.[691] Therefore, even if some large buyers of industrial gases in tonnage may enjoy some degree of buyer power, this would not shield the smaller customers in tonnage from the anticompetitive effects of the Transaction.

(689) Moreover, according to the Horizontal Merger Guidelines, it is not sufficient that buyer power exists prior to the merger, as it must also exist and remain effective following the merger. This is because a merger of two suppliers may reduce buyer power if it thereby removes a credible alternative.[692] In this respect, the Commission notes that, while half of the tonnage customers indicated that they enjoy bargaining power pre-Transaction, the majority of those customers also considered that post-

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687 Responses to RFI Q17 to customers of industrial gases, questions 25, 49, 77 and 100.

688 Form CO, Chapter A, Section 8, paragraph 408.

689 With respect to dry ice, for example, […] explained that "*There are very limited suppliers of the dry ice in the UK. Only Praxair and Air liquid are capable to produce the dry ice from their direct supply of [carbon dioxide], so we do not have any bargaining power*" (response to RFI Q17 to customers of industrial gases, question 49.3; ID 3035.

690 For example, […]'s response to RFI Q17 to customers of industrial gases, question 48 ; ID 3044, a large cylinder, bulk and tonnage customer which explained that, in the past, to avoid a price increase from its supplier, it "*tried to avoid it by tendering our demand, but due to a limited competion (sic) as a consequence of a limited number suppliers, it was very hard to find alternatives of supply*."

691 Horizontal Merger Guidelines, paragraph 67.

692 Horizontal Merger Guidelines, paragraph 67.

Transaction they will not have enough alternative suppliers.[693] This indicates that their buyer power may decrease as a result of the Transaction. In this vein, in the market investigation […] explained that "*fewer suppliers means that there will be less competition and our bargaining power must be reduced as a direct result*".[694]

(690) Finally, it appears to be unlikely that tonnage customers could obviate to the reduction of alternative credible suppliers by purchasing gas plants and internalising the production of industrial gases. Indeed, it appears that self-supply as an alternative is not available to the majority of customers who do not currently already operate a gas plant on site.[695] This is because of the complexities of in-house operation of gas plants (which requires engineering and process skills), which makes it more convenient to source from third parties. In this respect, for example, […] stated that self-supply is not an alternative "[*d]ue to the responsibility and safety issues*",[696] while […] explained that they do not consider to operate a gas plant in-house because it is not their business.[697] In the same vein, […] explained that for them internalising the production of industrial gases is not possible because they "*do not have the technical expertise to run and maintain gas plants*".[698] Moreover, the tonnage customers who already operate a gas plant on site appear to be very few.[699]

(691) The above findings appear to be shared by market analysts according to which "*Buyers do not have many vendors to choose from. They are left with major vendors who have been in the market for a considerable amount of time. Additionally, the industry is going through a consolidation phase. Thus, calculated choice can be made with respect to the supplier that is offering industrial gas suitable for required applications. Therefore, the bargaining power of buyers is low*."[700]

(692) In light of the above, the Commission considers that, post-Transaction, buyer power in the various markets for the supply of industrial gases is unlikely to be sufficient to counteract the loss of competition deriving from the Transaction.

8.2.5.3. Conclusion

(693) For the reasons set out above, the Commission's assessment is that entry and buyer power are unlikely to countervail the anticompetitive effects potentially arising from the Transaction.

*8.2.6. Overall conclusion*

(694) For the reasons set out in Sections 8.2.2 and 8.2.4 the Commission's assessment is that the Transaction would significantly impede effective competition as a result of horizontal non-coordinated effects in:

(a) the EEA tonnage markets for carbon monoxide, nitrogen and oxygen;

(b) the EEA small on-site plant markets for oxygen and nitrogen;

(c) the EEA bulk market for the supply of argon;

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693 Responses to RFI Q17 to customers of industrial gases, question 26.

694 […]' response to RFI Q17 to customers of industrial gases, question 27, ID 3060.

695 Responses to RFI Q17 to customers of industrial gases, question 23.

696 […]'s response to RFI Q17 to customers of industrial gases, question 23, ID 2618.

697 […]'s response to RFI Q17 to customers of industrial gases, question 23, ID 3273.

698 […]' response to RFI Q17 to customers of industrial gases, question 23, ID 6030.

699 Form CO, Chapter A, Section 8, paragraph 199.

700 Technavio, Industrial gases market in Europe 2017-2021, Annex 24 to the Form CO, page 35.

(d) the bulk markets for the supply of: argon in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Finland, Germany, Hungary, Italy, Norway, Portugal, Romania, Slovakia, Spain and Sweden; carbon dioxide in Austria, Benelux, Bulgaria, Cyprus, the Czech Republic, Denmark, Finland, Germany, Hungary, Ireland, Italy, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom; hydrogen in Germany; nitrogen in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom; and oxygen in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, France, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Spain and Sweden;

(e) the cylinder markets for the supply of: acetylene in Austria (all purity grades, high purity grades, standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Lithuania (all purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), the United Kingdom (all purity grades and standard purity grades); argon in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Finland (all purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); carbon dioxide (excluding dry ice) in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades and standard purity grades), France (all purity grades, high purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity

grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades, high purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); carbon monoxide in the Czech Republic (standard purity grades), Germany (standard purity grades), and Norway (standard purity grades); hydrogen in Austria (all purity grades and standard purity grades), Benelux (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades, high purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades and high purity grades), Slovakia (all purity grades and high purity grades), Spain (all purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); nitrogen in Austria (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Finland (all purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); nitrous oxide in Portugal (standard purity grades), and Spain (standard purity grades); oxygen in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades, high purity grades and standard purity grades), Romania (all purity grades, high

purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades);

(f) the EEA cylinder markets for the supply of high purity grades of acetylene, argon, carbon dioxide excluding dry ice, hydrogen, nitrogen and oxygen;

(g) the markets for the supply of dry ice in Austria, Benelux, the Czech Republic, Denmark, Germany, Hungary, Ireland, Italy, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom.

(695) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[701] and, at least, in the removal of a significant competitive constraint on all the other markets.

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[701] That is, with respect to bulk, the markets for the supply of carbon dioxide in Ireland and Norway, oxygen in Norway and argon in Norway, where the combined market shares of the Notifying Parties are, by either volume or value, above [90-100]% (based on the Notifying Parties' market share data), as well as the bulk markets for the supply of argon in Austria, Czech Republic, Finland, Spain, Sweden, Italy, Germany, Hungary, Romania, Bulgaria and Denmark and at EEA level; carbon dioxide in Cyprus, Czech Republic, Denmark, Finland, Germany, Sweden, Hungary and Romania; nitrogen in Austria, Czech Republic, Portugal, Romania, Sweden, United Kingdom and Hungary; and oxygen in Sweden, Germany, Romania and Slovakia, where the combined market shares of the Notifying Parties are above [50-60]% (based both on the Notifying Parties' market share data and the market reconstruction).
With respect to cylinders, the markets for the supply of carbon monoxide (standard purity) and nitrogen (high purity) in the Czech Republic and for the supply of carbon dioxide excluding dry ice (high purity), hydrogen (high purity) and nitrogen (high purity) in Norway, where the merged entity's market shares will be, by either volume or value, above [90-100]% as well as the following markets where the merged entity will hold a market share above [50-60]%: Austria (for the supply of carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice); Bulgaria (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), hydrogen (all purity grades), oxygen (all purity grades), oxygen (standard purity)); Czech Republic (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity),carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (high purity), nitrogen (high purity), oxygen (all purity grades), oxygen (standard purity)); Finland (for the supply of argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity)); Germany (for the supply of acetylene (all purity grades), acetylene (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity)); Hungary (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Ireland (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (standard purity)); Italy (for the supply of carbon dioxide excluding dry ice (high purity)); Norway (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Romania (for supply of acetylene (all purity grades), acetylene (high purity),

(696) The Commission's findings are also corroborated by analyst and industry reports assessing the impact of the Transaction in the EEA. In this respect, for example, analysts of Deutsche Bank observe that "[the n]*ew entity will be focused on returns cash flow and value generation. Focus will not be on top line growth*".[702]

## 8.3. Medical gases

*8.3.1. Market structure and competitive parameters*

8.3.1.1. Market shares and concentration levels

(697) According to the Horizontal Merger Guidelines and the Non-Horizontal Merger Guidelines, market shares constitute useful first indications of the market structure and of the competitive importance of the market players.[703] Likewise, the overall concentration level in a market may also provide useful information about the competitive situation.[704]

8.3.1.1.1. Horizontally affected markets

(698) Tables 36 and 37 show the Notifying Parties' 2016 sales' market shares, as well as the concentration levels, in each of the **horizontally affected** markets[705] categories identified in Section 8.1.1., recital (240) (j) and (k), in terms of volume and value. Detailed market share tables, including information on the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

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acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity)); Sweden (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); the United Kingdom (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), oxygen (all purity grades), oxygen (standard purity)).

702 Linde's internal documents, […].

703 Horizontal Merger Guidelines, paragraph 14. See also Non-Horizontal Merger Guidelines, paragraph 24.

704 Horizontal Merger Guidelines, paragraph 16. See also Non-Horizontal Merger Guidelines, paragraph 24.

705 Affected markets are identified on the basis of the sale market shares by either value or volume.

a. **Bulk**

**Table 36: Market shares for bulk supply of medical gases (2016)[706]**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitrogen | Germany* | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| **Nitrogen** | **Hungary** | **[30-40]%** | **[20-30]%** | **[60-70]%** | **[3000-3500]** | **[5000-5500]** | **[1500-2000]** |
| Nitrogen | Italy | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| **Nitrogen** | **Norway** | **[40-50]%** | **[30-40]%** | **[80-90]%** | **[3500-4000]** | **[7000-7500]** | **[3000-3500]** |
| **Nitrogen** | **Portugal** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[500-600]** |
| **Nitrogen** | **Spain** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[500-600]** |
| **Nitrogen** | **Sweden** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4500-5000]** | **[4500-5000]** | **[0-100]** |
| Nitrous oxide | Spain | [10-20]% | [10-20]% | [20-30]% | [2500-3000] | [3000-3500] | [300-400] |
| **Oxygen** | **Czech Republic** | **[60-70]%** | **[10-20]%** | **[70-80]%** | **[4000-4500]** | **[6500-7000]** | **[2000-2500]** |
| **Oxygen** | **Germany** | **[30-40]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[3000-3500]** | **[800-900]** |
| **Oxygen** | **Hungary** | **[30-40]%** | **[20-30]%** | **[50-60]%** | **[3000-3500]** | **[5000-5500]** | **[1500-2000]** |
| **Oxygen** | **Portugal** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[400-500]** |
| **Oxygen** | **Romania** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4000-4500]** | **[200-300]** |
| **Oxygen** | **Slovakia** | **[40-50]%** | **[5-10]%** | **[50-60]%** | **[3000-3500]** | **[4000-4500]** | **[800-900]** |
| **Oxygen** | **Spain** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[600-700]** |

706 In relation to the HHI, it should be noted that in a handful of bulk markets the Notifying Parties have attributed market shares to a general category "Others" on an aggregated basis. Therefore, the inclusion of this category in the calculation of the HHI levels may in principle contribute to overestimate them to a limited extent. The Commission notes however that in the near totality of affected bulk markets listed in Table 36 above, the Notifying Parties attributed a market share in value to "Others" of <[10-20]% (only in two instances >[5-10]%). Only in one instance (medical nitrogen in Germany) the share attributed to "Others" is >[10-20]% ([10-20]%) in value (in volume the market share attributed to "Others" only amounts to [0-5]%). Even in this market, if the HHI is calculated excluding the category "Others", the concentration levels do not change substantially. The HHI pre-Transaction (excluding "Others") would be [2000-2500] and the HHI post-Transaction (excluding "Others") would be [2000-2500].

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitrogen | Germany | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| **Nitrogen** | **Hungary** | **[30-40]%** | **[20-30]%** | **[60-70]%** | **[3000-3500]** | **[5000-5500]** | **[1500-2000]** |
| Nitrogen | Italy | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| **Nitrogen** | **Norway** | **[40-50]%** | **[30-40]%** | **[80-90]%** | **[3500-4000]** | **[7000-7500]** | **[3000-3500]** |
| **Nitrogen** | **Portugal** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[500-600]** |
| **Nitrogen** | **Spain** | **[10-20]%** | **[20-30]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[500-600]** |
| **Nitrogen** | **Sweden** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4500-5000]** | **[4500-5000]** | **[0-100]** |
| Nitrous oxide | Spain | [10-20]% | [10-20]% | [20-30]% | [2500-3000] | [3000-3500] | [300-400] |
| **Oxygen** | **Czech Republic** | **[60-70]%** | **[10-20]%** | **[70-80]%** | **[4000-4500]** | **[6000-6500]** | **[2000-2500]** |
| **Oxygen** | **Germany** | **[20-30]%** | **[10-20]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[800-900]** |
| **Oxygen** | **Hungary** | **[30-40]%** | **[20-30]%** | **[50-60]%** | **[3000-3500]** | **[5000-5500]** | **[1500-2000]** |
| **Oxygen** | **Portugal** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[500-600]** |
| **Oxygen** | **Romania** | **[40-50]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4000-4500]** | **[200-300]** |
| **Oxygen** | **Slovakia** | **[40-50]%** | **[10-20]%** | **[60-70]%** | **[3500-4000]** | **[4500-5000]** | **[1000-1500]** |
| **Oxygen** | **Spain** | **[10-20]%** | **[10-20]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[500-600]** |

*Source: response of 9 February 2018 to RFI 45.*

b. **Cylinders**

**Table 37: Market shares for cylinder supply of medical gases (2016)[707]**

| | | VALUE | | | HHI[708] | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Argon | Portugal | [10-20]% | [10-20]% | [30-40]% | [2500-3000] | [3500-4000] | [600-700] |
| Argon | Spain | [10-20]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [700-800] |
| Carbon dioxide | Czech Republic | [60-70]% | [10-20]% | [80-90]% | [5000-5500] | [6500-7000] | [1500-2000] |
| Carbon dioxide | Denmark | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [3000-3500] | [100-200] |
| Carbon dioxide | Germany | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Carbon dioxide | Hungary | [60-70]% | [5-10]% | [60-70]% | [4500-5000] | [5500-6000] | [800-900] |
| Carbon dioxide | Italy | [5-10]% | [20-30]% | [30-40]% | [2000-2500] | [2000-2500] | [200-300] |
| Carbon dioxide | Norway | [70-80]% | [0-5]% | [70-80]% | [6000-6500] | [6500-7000] | [200-300] |
| Carbon dioxide | Portugal | [10-20]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [500-600] |
| Carbon dioxide | Slovakia | [30-40]% | [0-5]% | [40-50]% | [4000-4500] | [4000-4500] | [100-200] |
| Carbon dioxide | Spain | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [300-400] |
| Carbon dioxide | Sweden | [40-50]% | [0-5]% | [50-60]% | [4000-4500] | [4500-5000] | [100-200] |
| Nitric oxide | Italy | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| Nitric oxide | Norway | [70-80]% | [20-30]% | [90-100]% | [6000-6500] | [9500-10000] | [3500-4000] |

707 In relation to the market for the cylinder supply of medical nitric oxide in Germany, Table 37 includes data for 2017 (in value and volume), since Praxair entered the market that year.

708 In relation to the HHI, it should be noted that in a handful of cylinder markets the Notifying Parties have attributed market shares to a general category "Others" on an aggregated basis. Therefore, the inclusion of this category in the calculation of the HHI levels may in principle contribute to overestimate them to a limited extent. The Commission notes however that in the near totality of affected cylinder markets listed in Table 37 above, the Notifying Parties attributed a market share in value to "Others" of <[10-20]%. Markets marked with an asterisk in Table 37 are markets where the Notifying Parties have attributed a market share in value to the category "Others" of >[10-20]%. Only in two instances the market shares attributed to others would be above [10-20]% and, in any event, below [20-30]%. Even in these two markets, if the HHI is calculated excluding the category "Others", the concentration levels do not change substantially. More specifically, in the market for the cylinder supply of medical nitrogen in Germany, the HHI pre-Transaction (excluding "Others") would be [1500-2000] and the HHI post-Transaction (excluding "Others") would be [1500-2000] and in the market for the cylinder supply of medical oxygen in Romania, the HHI pre-Transaction (excluding "Others") would be [3500-4000] and the HHI post-Transaction (excluding "Others") would be [3500-4000].

| | | VALUE | | | HHI[708] | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitric oxide | Spain | [50-60]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [100-200] |
| Nitric oxide | Germany | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| Nitrogen | Czech Republic | [20-30]% | [40-50]% | [70-80]% | [2500-3000] | [5000-5500] | [2000-2500] |
| Nitrogen | Denmark | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [500-600] |
| Nitrogen | Germany* | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| Nitrogen | Hungary | [90-100]% | [0-5]% | [90-100]% | [9000-9500] | [9500-10000] | [700-800] |
| Nitrogen | Norway | [90-100]% | [0-5]% | [90-100]% | [8500-9000] | [9000-9500] | [200-300] |
| Nitrogen | Portugal* | [10-20]% | [10-20]% | [20-30]% | [2500-3000] | [3000-3500] | [200-300] |
| Nitrogen | Slovakia | [40-50]% | [5-10]% | [50-60]% | [3500-4000] | [4500-5000] | [800-900] |
| Nitrogen | Spain | [10-20]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [500-600] |
| Nitrous oxide | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [6000-6500] | [2000-2500] |
| Nitrous oxide | Denmark | [70-80]% | [0-5]% | [70-80]% | [5500-6000] | [6000-6500] | [300-400] |
| Nitrous oxide | Germany | [50-60]% | [5-10]% | [60-70]% | [4000-4500] | [4500-5000] | [600-700] |
| Nitrous oxide | Hungary | [50-60]% | [10-20]% | [70-80]% | [4000-4500] | [6000-6500] | [1500-2000] |
| Nitrous oxide | Italy | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| Nitrous oxide | Norway | [70-80]% | [20-30]% | [90-100]% | [5500-6000] | [8500-9000] | [3000-3500] |
| Nitrous oxide | Slovakia | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4500-5000] | [400-500] |
| Nitrous oxide | Spain* | [10-20]% | [5-10]% | [20-30]% | [2000-2500] | [2500-3000] | [200-300] |
| Nitrous oxide | Sweden | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5000-5500] | [200-300] |
| Oxygen | Austria | [10-20]% | [0-5]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| Oxygen | Czech Republic | [70-80]% | [10-20]% | [80-90]% | [5000-5500] | [7000-7500] | [1500-2000] |
| **Oxygen** | **Denmark*** | **[30-40]%** | **[0-5]%** | **[30-40]%** | **[2500-3000]** | **[2500-3000]** | **[100-200]** |
| **Oxygen** | **Germany** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[500-600]** |
| Oxygen | Italy | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |

| | | VALUE | | | HHI[708] | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| **Oxygen** | **Norway*** | **[50-60]%** | **[5-10]%** | **[60-70]%** | **[4000-4500]** | **[4500-5000]** | **[800-900]** |
| **Oxygen** | **Portugal** | **[10-20]%** | **[10-20]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[400-500]** |
| **Oxygen** | **Romania*** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[3500-4000]** | **[4000-4500]** | **[400-500]** |
| **Oxygen** | **Slovakia** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4500-5000]** | **[300-400]** |
| Oxygen | Spain | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [300-400] |
| **Oxygen** | **Sweden** | **[40-50]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4500-5000]** | **[200-300]** |

| | | VOLUME | | | HHI[709] | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Argon | Portugal | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3500-4000] | [700-800] |
| Argon | Spain | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [700-800] |
| Carbon dioxide | Czech Republic | [60-70]% | [10-20]% | [80-90]% | [5000-5500] | [6500-7000] | [1500-2000] |
| Carbon dioxide | Denmark | [30-40]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| Carbon dioxide | Germany | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| Carbon dioxide | Hungary | [50-60]% | [10-20]% | [60-70]% | [4000-4500] | [5500-6000] | [1000-1500] |
| Carbon dioxide | Italy | [0-5]% | [20-30]% | [30-40]% | [2000-2500] | [2000-2500] | [200-300] |
| Carbon dioxide | Norway | [80-90]% | [0-5]% | [80-90]% | [6500-7000] | [6500-7000] | [100-200] |
| Carbon dioxide | Portugal | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3500-4000] | [600-700] |

709 In relation to the HHI, it should be noted that in a handful of cylinder markets the Notifying Parties have attributed market shares in volume to a general category "Others" on an aggregated basis. Therefore, the inclusion of this category in the calculation of the HHI levels may in principle contribute to overestimate them to a limited extent. The Commission notes however that in the near totality of affected cylinder markets listed in Table 37 above, the Notifying Parties attributed a market share in volume to "Others" of <[10-20]%. Markets marked with an asterisk in Table 37 are markets where the Notifying Parties have attributed a market share in value to the category "Others" of >[10-20]%. Only in a few instances (two) the market shares attributed to others would be above [10-20]% and in any way up to [10-20]%. Even in these markets, if the HHI is calculated excluding the category "Others", the concentration levels do not change substantially. More specifically, in the market for the cylinder supply of medical nitrogen in Germany, the HHI pre-Transaction (excluding "Others") would be [1500-2000] and the HHI post-Transaction (excluding "Others") would be [1500-2000]; in the market for the cylinder supply of medical nitrogen in Portugal, the HHI pre-Transaction (excluding "Others") would be [2500-3000] and the HHI post-Transaction (excluding "Others") would be [2500-3000].

| | | VOLUME | | | HHI[709] | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Carbon dioxide | Slovakia | [40-50]% | [0-5]% | [40-50]% | [4000-4500] | [4500-5000] | [200-300] |
| Carbon dioxide | Spain | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [300-400] |
| Carbon dioxide | Sweden | [50-60]% | [0-5]% | [50-60]% | [4500-5000] | [4500-5000] | [100-200] |
| Nitric oxide | Italy | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| Nitric oxide | Norway | [70-80]% | [20-30]% | [90-100]% | [6000-6500] | [9500-10000] | [3500-4000] |
| Nitric oxide | Spain | [50-60]% | [0-5]% | [60-70]% | [4000-4500] | [4000-4500] | [100-200] |
| Nitric oxide | Germany | [40-50]% | <[0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| Nitrogen | Czech Republic | [20-30]% | [40-50]% | [70-80]% | [2500-3000] | [5000-5500] | [2500-3000] |
| Nitrogen | Denmark | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [600-700] |
| Nitrogen | Germany* | [20-30]% | [5-10]% | [30-40]% | [2000-2500] | [2000-2500] | [200-300] |
| Nitrogen | Hungary | [90-100]% | [0-5]% | [90-100]% | [8500-9000] | [9500-10000] | [600-700] |
| Nitrogen | Norway | [90-100]% | [0-5]% | [90-100]% | [8000-8500] | [8500-9000] | [0-100] |
| Nitrogen | Portugal* | [5-10]% | [10-20]% | [20-30]% | [2500-3000] | [3000-3500] | [200-300] |
| Nitrogen | Slovakia* | [30-40]% | [5-10]% | [40-50]% | [3000-3500] | [3500-4000] | [400-500] |
| Nitrogen | Spain | [10-20]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [500-600] |
| Nitrous oxide | Czech Republic | [50-60]% | [10-20]% | [70-80]% | [4000-4500] | [6000-6500] | [2000-2500] |
| Nitrous oxide | Denmark | [70-80]% | [0-5]% | [70-80]% | [5500-6000] | [6000-6500] | [300-400] |
| Nitrous oxide | Germany | [50-60]% | [5-10]% | [60-70]% | [4000-4500] | [5000-5500] | [600-700] |
| Nitrous oxide | Hungary | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5500-6000] | [1500-2000] |
| Nitrous oxide | Italy | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| Nitrous oxide | Norway | [70-80]% | [20-30]% | [90-100]% | [5500-6000] | [8500-9000] | [3000-3500] |
| Nitrous oxide | Slovakia | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4500-5000] | [400-500] |
| Nitrous oxide | Spain* | [10-20]% | [5-10]% | [20-30]% | [2000-2500] | [2500-3000] | [200-300] |
| Nitrous oxide | Sweden | [60-70]% | [0-5]% | [60-70]% | [5000-5500] | [5500-6000] | [200-300] |

| | | VOLUME | | | HHI[709] | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Oxygen | Austria | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| **Oxygen** | **Czech Republic** | **[70-80]%** | **[10-20]%** | **[80-90]%** | **[5000-5500]** | **[6500-7000]** | **[1000-1500]** |
| **Oxygen** | **Denmark** | **[30-40]%** | **[5-10]%** | **[30-40]%** | **[2500-3000]** | **[3000-3500]** | **[300-400]** |
| **Oxygen** | **Germany** | **[30-40]%** | **[5-10]%** | **[40-50]%** | **[2000-2500]** | **[2500-3000]** | **[400-500]** |
| Oxygen | Italy | [5-10]% | [10-20]% | [20-30]% | [1500-2000] | [2000-2500] | [300-400] |
| **Oxygen** | **Norway** | **[50-60]%** | **[10-20]%** | **[60-70]%** | **[3500-4000]** | **[5000-5500]** | **[1000-1500]** |
| **Oxygen** | **Portugal** | **[20-30]%** | **[10-20]%** | **[30-40]%** | **[3000-3500]** | **[3500-4000]** | **[500-600]** |
| **Oxygen** | **Romania*** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[3500-4000]** | **[4000-4500]** | **[400-500]** |
| **Oxygen** | **Slovakia** | **[50-60]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4500-5000]** | **[300-400]** |
| Oxygen | Spain | [10-20]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [400-500] |
| **Oxygen** | **Sweden** | **[40-50]%** | **[0-5]%** | **[50-60]%** | **[4000-4500]** | **[4500-5000]** | **[200-300]** |

*Source: response of 9 February 2018 to RFI 45*

8.3.1.1.2. Vertically affected markets

(699) Table 38 shows Linde's 2016 market shares based on **sales in volume and value** in the bulk and cylinder markets where it holds a market share of 30% or more, and Praxair is not currently active.[710] These markets are **vertically affected**[711] in view of the link with the supply of medical gases in cylinders (for bulk) and with homecare respiratory services (for medical oxygen in cylinders and bulk) identified in Section 8.1.2., and so are the markets illustrated in Table 36 and Table 37 (with respect to medical oxygen and nitrogen) where the combined market shares are above 30% (highlighted in bold in Table 36 and Table 37).

(700) Detailed market share data, based on sales in volume and value, including on the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

**Table 38: Linde's markets shares above 30% in markets for the bulk and cylinder supply of medical gases where Praxair is not active (2016)**

| Product | Mode of supply | Geography | VALUE | VOLUME |
|---|---|---|---|---|
| Carbon dioxide | Bulk | Germany | [30-40]% | [30-40]% |
| Carbon dioxide | Bulk | Hungary | [90-100]% | [90-100]% |

710 Based on the data submitted by the Notifying Parties, there are no markets where Praxair holds a market share of 30% or more, and Linde is not currently active.

711 Affected markets are identified on the basis of the sale market shares by either value or volume.

| Product | Mode of supply | Geography | VALUE | VOLUME |
|---|---|---|---|---|
| Carbon dioxide | Bulk | Sweden | [50-60]% | [50-60]% |
| Nitrogen | Bulk | Czech Republic | [80-90]% | [70-80]% |
| Nitrogen | Bulk | Denmark | [30-40]% | [30-40]% |
| Nitrogen | Bulk | Slovakia | [40-50]% | [40-50]% |
| Nitrous oxide | Bulk | Denmark | [50-60]% | [50-60]% |
| Oxygen | Bulk | Denmark | [30-40]% | [30-40]% |
| Oxygen | Bulk | Netherlands | [70-80]% | [70-80]% |
| Oxygen | Cylinder | Netherlands | [70-80]% | [70-80]% |
| Oxygen | Bulk | Norway | [70-80]% | [70-80]% |
| Oxygen | Bulk | Sweden | [40-50]% | [40-50]% |

*Source: response of 9 February 2018 to RFI 45*

8.3.1.2. Competitive parameters and general market conditions

(701) As regards the general market conditions in the markets for the supply of medical gases, the Commission preliminarily notes that these markets are intrinsically linked to the markets for the supply of industrial gases (in particular with respect to air gases). In this respect, as indicated in Section 6.1., medical gases are produced in the same facilities as industrial gases[712] (to the extent these facilities are certified for the production of medical gases).

(702) Due to this link at production level, the competitive landscape of the markets for medical gases is influenced by that of the markets for the supply of industrial gases (in particular with respect to air gases). Competitors confirmed during the second phase market investigation that it is certainly harder for a company that does not have a meaningful presence in industrial gases to successfully compete in the markets for medical gases.[713] Air Products explained that this is because: *"(i) the basic infrastructure which is necessary to participate in the market(s) medical gases is the same used for the production of industrial gases (e.g. ASUs and cylinder depot infrastructure) and (ii) being active in, for example, the hospital segment, utilises some of the capabilities which are used for industrial gases (tank installations at the hospital site, for example)."*[714] In the same vein, Air Liquide explained that: "*[t]he "engineering" required for medical gases is similar to the one required for industrial gases. This applies to the generic part of engineering (e.g. installing bulk stations next to the hospital to ensure security of supply and sufficient back up)."*[715]

(703) That being said, the market investigation indicated that the relative strength of suppliers in individual markets for the supply of medical gases does not always necessarily reflect their position in the corresponding industrial gases markets.[716]

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712 With the exception of medical nitric oxide that belongs to the category of specialty gases and is sold in the EEA mostly as a mixture with nitrogen. With respect to medical nitrous oxide, Linde […]. In the remaining affected markets, Linde […]. Praxair […] (Form CO, Annex 56).

713 Agreed non-confidential minutes of conference call with Air Products of 10 April 2018, paragraph 14; ID 6333.

714 Agreed non-confidential minutes of conference call with Air Products of 10 April 2018, paragraph 14; ID 6333.

715 Agreed non-confidential minutes of conference call with Air Liquide of 22 March 2018, paragraph 24; ID 6404.

716 Agreed non-confidential minutes of conference call with Air Products of 10 April 2018, paragraph 13; ID 6333.

Industrial gas suppliers may sometimes decide not to participate in the medical segment or in the supply of certain medical gases in a country in which they supply industrial gases, due to the higher costs connected to the provision of medical gases compared to their industrial equivalent (due, for example, to the costs of obtaining the necessary certifications and country specific marketing authorisations as well as to the provision of related services) and the specificities of the supply chain of medical gases (in terms for example of regulatory requirements).

(704) However, overall, the (few) suppliers that can credibly compete in the markets for the supply of medical gases appear to coincide with the credible suppliers of industrial gases, i.e. Tier 1 players (in particular the Notifying Parties and Air Liquide), together with some Tier 2 players in certain geographies (for example Messer in Germany and Central and Eastern Europe, SOL in Italy and Westfalen in Germany). This was widely confirmed by the market investigation.[717]

(705) As regards the general market conditions of the markets for the **bulk supply of medical gases**, customers that responded to the market investigation rated the level of competitiveness of these markets on average at around 3 on a scale of 5 points and specified that their response would not change depending on the medical gas supplied.[718] The same customers described these markets as characterised by the presence of very few suppliers.[719] The majority of respondents indicated that, in their view, the credible suppliers in the markets for the bulk supply of medical gases are Linde, Praxair and Air Liquide and, depending on the country, some respondents also indicated Messer and Air Products as credible. Other suppliers such as Westfalen are also sometimes mentioned; however their footprint appears to be limited to one specific country.[720] Importantly, a significant number of bulk customers (approximately one third of respondents) consider that there is limited competition in the market which means either that the offers they receive are typically not very competitive or they are not competitive at all.[721]

(706) As regards the markets for the supply of **medical gases** in **cylinders**, customers rated the level of competitiveness of these markets, on average, at 3 on a scale of 5 points and specified that their response would not change depending on the medical gas supplied.[722] The majority of respondents indicated that, in their view, Linde, Praxair and Air Liquide are credible suppliers. Depending on the country, also Air Products, Messer and SOL were mentioned by some customers as credible competitors.[723] As for bulk, other suppliers with local presence such as Westfalen are sometimes mentioned among the credible competitors. However, their presence appears to be limited to one specific country.[724] A significant number of customers that responded to the market investigation (more than one third) indicated that they consider that competition is limited and that, as a result, they either receive offers that are typically not competitive or they are not able to elicit competitive offers.[725]

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717 Responses to RFI Q18 to customers of medical gases, questions 12 and 36.
718 Responses to RFI Q18 to customers of medical gases, questions 9 and 9.1.
719 Responses to RFI Q18 to customers of medical gases, question 9.2.
720 Responses to RFI Q18 to customers of medical gases, question 12.
721 Responses to RFI Q18 to customers of medical gases, questions 23.
722 Responses to RFI Q18 to customers of medical gases, questions 32 and 32.1.
723 Responses to RFI Q18 to customers of medical gases, question 36.
724 Responses to RFI Q18 to customers of medical gases, questions 36 (for cylinder) and 12 (for bulk).
725 Responses to RFI Q18 to customers of medical gases, question 47.

(707) In terms of **parameters of competition**, on the basis of the results of the first and second phase market investigations, the Commission notes the following.

(708) First, the market investigation highlighted the critical importance of timely deliveries and supply security as factors strongly influencing customers' choice of medical gas supplier (even more than in the markets for the supply of industrial gases). These two parameters are considered by the customers that responded to the market investigation, on average, as the most important parameters driving their selection of suppliers of medical gases in both **bulk** and **cylinders** (irrespective of the gas considered).[726] Notably, with respect to timely deliveries, customers (in particular hospitals) indicated that it is indeed crucial that these gases are delivered on time, given that they are essential to treat patients.[727] As regards supply security, a customer explained that: "*To conduct medical treatments a reliable supply chain is highly important for us and the safety of our hospital patients.*"[728] The key importance of these two parameters was also confirmed by the Notifying Parties' competitors.[729] In this respect, Air Liquide stated that "[…] *suppliers of medical gases must* […] *ensure the continuity and security of supply (in particular to hospitals) (which requires specific storage solutions with several backup options), as well as the timeliness of deliveries even more than in the industrial gas business.*"[730][731]

(709) Second, as part of their offering to medical gas customers, medical gas suppliers provide certain products and services related to the provision of these gases.[732] These products and services can either be provided by third parties or in-house by the gas suppliers.[733] The market investigation indicated that these services and equipment (which appear to be generally tendered together with the gases)[734] and their overall level are considered by customers as a very important factor both in the markets for the bulk and for the cylinder supply of medical gases. This view was also confirmed by the Notifying Parties' competitors during the market investigation. In this respect, Messer indicated that: "*services required in the tenders are getting more and more important in order to fulfil either legal and logistic requirements (keeping of*

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726 Responses to RFI Q18 to customers of medical gases, questions 10 and 33.

727 Responses to RFI Q18 to customers of medical gases, question 10.2.2.

728 […]' response to RFI Q18 to customers of medical gases, question 10.5.2. [ID 3706]

729 Responses to RFI Q31 to competitors of industrial and medical gases, questions 90 and 106. For example in its response to RFI Q31 to competitors of industrial and medical gases, question 94.4.10 [ID 4528], Air Products stated that: "*Security of supply is critical to the medical bulk market.*"

730 Agreed non-confidential minutes of conference call with Air Liquide of 22 March 2018, paragraph 23; ID 6404.

731 Responses to RFI Q18 to customers of medical gases, questions 10 and 33 and Responses to RFI Q31 to competitors of medical gases, question 90. In relation to bulk, customers identify other factors in the selection such as quality control, traceability of the product, background check of the suppliers and drug regulatory compliance, while bulk competitors mentioned possession of authorizations for production, distribution and selling of medical gases in bulk, and pharmaceutical competence and assistance. In relation to cylinders, factors such as traceability of the product and drug regulatory compliance are mentioned as relevant parameters.

732 These products and services include piping networks used for the delivery of the gas to the hospital, logistic management of cylinders inside the hospitals, quality control services, training of staff, cylinder monitoring, maintenance of gas mixing systems.

733 In this respect, Linde […]. Praxair also […]. (Form CO, Chapter B, Section 6).

734 Agreed non-confidential minutes of conference call with SOL, paragraph 17: "[…] *as a general trend, these products and services are almost always tendered together with the gas*", ID 6243. Also, agreed non-confidential minutes of conference call with Messer of 15 March 2018, paragraph 31, ID 6240.

*stocks/tracing of cylinders/recall-actions)* [sic]."[735] The importance of the scope and quality of the services offered by medical gas suppliers as a factor through which medical gas suppliers "*aim at differentiating their offering*" was also acknowledged by the Notifying Parties in the Form CO.[736]

(710) Third, the market investigation indicated that medical gas customers often organise tenders and conclude contracts covering their entire demand of medical gases.[737] This appears to be particularly true for hospitals (or, depending on the tender system for the procurement of medical gases adopted by a specific country, by regional authorities) which are, by definition, the largest customers.[738] Therefore, having the ability to supply the full range of medical gases and related services in a country (which entails having a broad portfolio of marketing authorisations for the sale of all medical gases in that specific country) appears to be critical to be able to address the demand of these customers. In this respect, Messer explained that: "*If you cannot supply the full product range in public tenders in most of the cases you are delisted for tender participation*."[739] During the market investigation, the Notifying Parties' competitors regarded product range as a very important parameter of competition (rating this parameter on average above 4 in a scale of 5).[740] With respect to the importance of being able to offer the full product range of gases, Messer also indicated that "*[m]ore and more hospitals organize joint tenders at different locations where it is getting harder for small competitors to succeed"*[741] and that the ability of a supplier to provide nitric oxide (and related mixtures) may constitute a competitive advantage.[742]

(711) Lastly, the market investigation indicated that being active in the medical gas business requires "*deeper customer knowledge and the ability to master the supply chain.*"[743]

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735 Messer's response to RFI Q31 to competitors of industrial and medical gases, question 106.3.3., ID 3201.

736 Form CO, Chapter B, Section 6, paragraph 579.

737 In this respect, SOL stated that "*medical gas customers usually organise tenders to procure their entire demand of medical gases (in bulk and/or in cylinders), this happens both for public hospitals and private clinics, in almost all the EEA countries where SOL operates*" (Agreed non-confidential minutes of conference call with SOL of 23 March 2018, paragraph 18, ID 6243. Messer also indicated that: "*As a rule (in 80% of cases), customers put out for tender their entire gas requirement (i.e. the tender is organised for all gases), but they could sometimes choose a different supplier per supply mode. In a maximum of 10 - 15 % of cases, the complete gas requirement is divided into various slots. Hospitals never tender per gas type."* (Agreed non-confidential minutes of conference call with Messer, paragraph 32, ID 6240). This is consistent with the information submitted by the Notifying Parties in the Form CO. Table 81 (Form CO, Chapter B, Section 8) provides an overview of the tender systems for medical gases that are typically conducted in the countries where affected markets arise. Table 81 shows that in all affected markets public tenders typically cover all gases and all modes of supply.

738 According to Messer: "*the biggest customers for medical gases are hospitals*" (Agreed non-confidential minutes of conference call with Messer of 15 March 2018, paragraph 32, ID 6240).

739 Messer's response to RFI Q31 to competitors of industrial and medical gases, question 106.5.3 [ID 3201]. Similarly, Woikoski stated that: "*It is generally a requirement to fulfill all or most requested gas types to be accepted in a tender."* (Woikoski's response to RFI Q31 questionnaire to competitors of industrial and medical gases, question 106.5.3; ID3530).

740 Responses to RFI Q31 to competitors of industrial and medical gases, question 106.5.

741 Messer's response to RFI Q31 to competitors of industrial and medical gases, question 100.1, ID 3201.

742 Messer's response to RFI Q31 to competitors of industrial and medical gases, question 106.8.4, ID 3201.

743 Agreed non-confidential minutes of conference call with Air Liquide of 22 March 2018, paragraph 23, ID 6404.

*8.3.2. Horizontal non-coordinated effects*

(712) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive horizontal non-coordinated effects in the affected markets for medical gases identified in Section 8.3.1.1.1.. Unless otherwise specified, the findings set out this Section, and in particular the results of the market investigation, do not materially differ depending on the gas type.[744] As regards possible differences depending on the EEA country, although national specificities indeed exist, the overall structure and the main characteristics of supply and demand in the markets for the (bulk and cylinder) supply of medical gases do not appear to vary significantly across countries. Therefore, unless otherwise specified, the findings of this Section do not materially differ depending on the geography at stake.[745] Hence, the results of the market investigation will be presented primarily by mode of supply.

8.3.2.1. Notifying Parties' view

(713) In the Form CO, the Notifying Parties acknowledged that, given their significant market shares and/or the non-negligible market share increment, the Transaction may prima facie raise serious doubts as to its compatibility with the single market within the meaning of Article 6(1)(c) of the Merger Regulation in a number of affected markets (so defined "Category 2").[746] In relation to the near entirety of so called "Category 1" markets,[747] the Notifying Parties did not express a view as to the effects of the Transaction, as, according to them, the divestment envisaged in the Form CO for the "Category 2" markets in medical gases and/or in industrial gases[748] would have removed the full overlap between the Notifying Parties' activities also in these "Category 1" markets. In the "Category 1" markets where the divestment as envisaged in the Form CO would not have fully eliminated the overlap between the Notifying Parties' activities (i.e. the Category 1 markets for medical gases in Italy as identified in Table 71 of the Form CO),[749] the Notifying Parties submitted that in the markets where the current market share of Linde in Italy is smaller than the share of SIAD (i.e. bulk supply of medical nitrogen, cylinder supply of medical carbon dioxide and cylinder supply of medical oxygen in Italy) competition concerns can be excluded at the outset since, as a result of the envisaged divestment of SIAD,[750] the combined market share post-divestment would have been smaller than the current share of Praxair/SIAD. The Notifying Parties reiterated their position in this respect in the Thematic Papers.[751]As regards the markets for the cylinder supply of medical nitric oxide and medical nitrous oxide in Italy, the Notifying Parties claim in the Form CO that competition concerns could be excluded since the proposed divestitures would have removed the overlap to a very large extent.[752] In the Thematic Papers, the Notifying Parties added that the Transaction will not raise

744 For example, responses to RFI Q18 to customers of industrial gases, question 32.2.8.

745 The Commission notes that the near entirety of medical gas customers that responded to the market investigation is only active in one country.

746 "Category 2" markets are those where the Notifying Parties have a combined market share in excess of [50-60]% with an increment of at least [0-5]%, or a combined market share in excess of [40-50]% with an increment of at least [5-10]%, as identified in Form CO, Chapter B, Section 6, Table 70.

747 "Category 1" markets are all other affected markets that do not fall under the "Category 2".

748 As identified in Section 8.2.2.2.1 above in relation to Category 2 markets in industrial gases.

749 Form CO, Chapter B, Section 6, Table 71.

750 Note on contemplated divestments submitted by the Notifying Parties on 24 November 2017.

751 Thematic Paper "The EEA Divestment Business Does Not Need to Include Praxair's Shareholding in Rivoira S.p.A.", 15 March 2018, paragraph 10.

752 Form CO, Chapter B, Section 6, paragraphs 523-526.

competition concerns in any of the affected markets for the supply of medical gases in Italy as the merged entity would be constrained by a number of sizable competitors, including Air Liquide, Sapio/Air Products and SOL.[753]

(714) As regards closeness of competition, the Notifying Parties submitted in the Form CO that Linde and Praxair are not closely competing in the markets for the supply of medical gases, as Linde is more focused on related ancillary services that are provided together with medical gases than Praxair.[754] According to the Notifying Parties, Air Liquide has the most comparable service offering and is, therefore, the closest competitor to Linde, while Air Products is the closest competitor to Praxair in the field of medical gases.[755]

(715) In relation to entry, the Notifying Parties acknowledged that no third party entered the EEA market with production capabilities in the past five years. According to the Notifying Parties, in the markets for medical gases the most likely event is the one of a supplier of medical gases that is already present in one or more Member States expanding to another Member State. They provided the example of Messer and SOL that recently expanded their activities in the EEA.[756]

8.3.2.2. Results of the market investigation and Commission's assessment

(716) In the following, the Commission analyses whether the Transaction would give rise to horizontal non-coordinated effects in the horizontally affected national markets for the bulk supply of medical nitrogen, medical nitrous oxide and medical oxygen as well as in the horizontally affected national markets for the cylinder supply of medical argon, medical oxygen, medical nitrogen, medical carbon dioxide, medical nitrous oxide and medical nitric oxide. To this aim, first, it assesses the competitive constraints exerted by the Notifying Parties on each other and on their competitors pre-Transaction, which would be removed by the Transaction (Section 8.3.2.2.a.). Second, it assesses the other competitive constraints in the markets for the bulk and cylinder supply of medical gases, which will remain post-Transaction, and the likelihood that they would off-set the anticompetitive effects of the Transaction (Section 8.3.2.2.b.). Finally, the Commission undertakes an overall assessment of likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.3.2.2.c.), and draws conclusions (Section 8.3.2.2.d).

**a. <u>Assessment of competitive constraint exercised by the Notifying Parties</u>**

(717) With the exceptions outlined in this Section, the Commission considers that the Notifying Parties exert important competitive constraints in the horizontally affected bulk and cylinder markets identified in Table 36 and Table 37, on each other, as well as on the remaining competitors, which would be removed by the Transaction. This is true both in light of the Notifying Parties' market shares, the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), and in view of their market performance, as explained below.

753 Thematic Paper "The EEA Divestment Business Does Not Need to Include Praxair's Shareholding in Rivoira S.p.A.", 15 March 2018, paragraph 10.

754 Form CO, Chapter B, Section 8, paragraph 593.

755 Form CO, Chapter B, Section 8, paragraph 594.

756 Form CO, Chapter B, Section 8, paragraph 595.

i. Market shares

A. Bulk

(718) In relation to the markets for the **bulk** supply of **medical nitrogen**:

(a) In Norway, the Transaction would combine the number one (Linde) and number two (Praxair) players in the market. The combined market share of the Notifying Parties would amount to [80-90]% in both value and volume with a very significant increment ([30-40]% in both value and volume) brought by Praxair. The only remaining competitor would be Air Liquide, with a market share of [10-20]% in value and volume.

(b) In Hungary, the combined market share of the Notifying Parties would amount to [60-70]% in both value and volume, with a significant increment brought by Praxair (SIAD) of [20-30]% in both value and volume. The merged entity would become the market leader, followed only by Messer (with a market share of [40-50]% in both value and volume).

(c) In Sweden, the Notifying Parties would have a combined market share of [50-60]% in value and [50-60]% in volume, with an increment brought by Praxair of [0-5]% in value and [0-5]% in volume, followed only by one significant competitor, Air Liquide, with a market share of [40-50]% in value and [40-50]% in volume.[757]

(d) In Spain and Portugal, the Notifying Parties would have combined market shares of [30-40]% in value and volume in Spain and [30-40]% ([30-40]% in volume) in Portugal respectively, with increments brought by Linde of [10-20]% (in value and volume) in Spain and [10-20]% in value and volume in Portugal. In Spain, the merged entity would become the market leader together with Air Liquide with a market share of [30-40]% closely followed by Air Products with a market share of [30-40]% in value and volume and Messer, with a market share of only [0-5]% in value and volume. In Portugal, the merged entity would be number two in the market, after Air Liquide holding a share of [40-50]% in value and volume. Air Products would also be present with a market share of [10-20]% in value and volume, as well as Messer with a limited market share of [5-10]% in value and volume.

(e) In Germany, post-Transaction, the merged entity would have a market share of [20-30]% in both value and volume, with an increment (brought by Praxair) of [0-5]%. The market leader would continue to be Air Liquide, with a market share in value and volume of [30-40]%. Other competitors remaining in the market with a more limited presence would be Westfalen (with a market share of [10-20]% in value and [10-20]% in volume), followed by SWF (with a market share of [5-10]% in value and [5-10]% in volume), and Tyczka (with a market share of [0-5]% in value and [5-10]% in volume). Messer and Air Products would also have a minimal market share ([0-5]%).[758]

(f) In Italy, the Notifying Parties would have a combined market share of [20-30]% in value and [20-30]% in volume, with an increment, brought by Linde, of [0-5]% in value and volume. The market leader is and would remain Air

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757 The Notifying Parties attribute [0-5]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

758 The Notifying Parties attribute [10-20]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

Liquide, with a market share of [30-40]% in value and [20-30]% in volume. SOL and Air Products (Sapio) would remain in the market with respective shares of [20-30]% and [20-30]% in value, respectively and [10-20]% and [20-30]% in volume respectively.[759]

(719) As regards the **bulk** supply of **medical oxygen**:

(a) In the Czech Republic, the Transaction would combine the market leader (Linde) with the number two supplier in the market, Praxair (SIAD). Notably, the merged entity would have a combined market share of [70-80]% in both value and volume, with a substantial increment brought by Praxair (SIAD) of [10-20]% in value and volume. The only competitors remaining in the market would be Air Products (with a market share of [10-20]% in value and volume) and Messer (with a market share of [5-10]% in value and volume).

(b) In Germany, the Notifying Parties would have a combined market share of [40-50]% in value and [40-50]% in volume, with an increment brought by Praxair of [10-20]% in value and [10-20]% in volume. The merged entity would become the market leader, followed by Air Liquide, holding a market share of [30-40]% in value and [20-30]% in volume. Other competitors would remain on the market with a significantly smaller presence, namely Westfalen ([10-20]% in value and [5-10]% in volume), SWF ([5-10]% in value and [5-10]% in volume), Air Products ([0-5]% in value and [0-5]% in volume) and Messer ([0-5]% in both value and volume).

(c) In Hungary, the merged entity would become the market leader with a combined market share of [50-60]% in value and volume, with an increment brought by Praxair (SIAD) of [20-30]% in value and [20-30]% in volume. The only competitor remaining in the market would be Messer, with a market share of [40-50]% in value and volume.

(d) In Spain and Portugal, the Notifying Parties would have a combined market share in value of [30-40]% and [30-40]% respectively, with significant increments. In this respect, in Spain the increment in value (brought by Linde) would amount to [10-20]%, and in Portugal the increment in value (brought by Praxair) would amount to [10-20]%. In volume, the Notifying Parties would have a combined market share of [30-40]% in Spain and [30-40]% in Portugal, again with significant increments of [10-20]% (brought by Linde) in Spain and [10-20]% (brought by Praxair) in Portugal. In Spain, the merged entity would be closely followed by Air Liquide, which has a [30-40]% market share in value and [30-40]% market share in volume and by Air Products, which is similarly placed on the market, with market shares of [30-40]% in value and [30-40]% in volume. Messer is also present on the Spanish market, albeit with a much less significant market share of [0-5]% in value and volume, respectively. In Portugal, the merged entity would be number two on the market, following Air Liquide which holds a market share of [40-50]% in value and volume, respectively. Air Products would also be present on the market, with a market share of [10-20]% in value and volume, respectively, alongside Messer which has a more modest market share of [5-10]% in value and volume, respectively.

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759 The Notifying Parties attribute [0-5]% in value and [10-20]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

(e) In Romania, the combined market share of the Notifying Parties would amount to [50-60]% in value and [50-60]% in volume, with an increment brought by Praxair (SIAD) of [0-5]% in value and volume, respectively. The merged entity would become the market leader, followed by Messer, with a market share of [30-40]% in value and [40-50]% in volume, and Air Liquide, which has a much smaller presence of only [0-5]% market share in value and volume, respectively.[760]

(f) In Slovakia, the Notifying Parties would have a combined market share of [50-60]% in value and [60-70]% in volume, with a significant increment brought by Praxair (SIAD) of [5-10]% in value and of [10-20]% in volume. The Notifying Parties would be followed by Messer, holding a market share of [30-40]% in value and in volume, respectively, and by Air Products, with a market share of [0-5]% in value and [0-5]% in volume.[761]

(720) As regards the bulk supply of **medical nitrous oxide** in Spain (the only EEA Member State where an affected market arises with respect to this gas), the combined market share of the Notifying Parties would amount to [20-30]% in value and [20-30]% in volume, with substantial increments of [10-20]% in value and [10-20]% in volume, both brought by Praxair. The only two other sizable players remaining on the market would be Air Products with a [40-50]% market share in both value and volume, and Air Liquide with a [30-40]% market share in value and volume. Messer, Contse, and Oxigen Salud are also present on the market each with only a minor market share of [0-5]% in value and volume, respectively.[762]

(721) In all markets described above, concentration levels post-Transaction (in value and volume), would be very significant (above [3000-3500] in all bulk markets described above, with the exception of the markets for the supply of bulk medical nitrogen in Italy and Germany, where the concentration levels would be in any event above 2000), with HHI deltas above 250 in the near totality of markets (with the exception of the markets for bulk medical nitrogen in Germany, Italy and Sweden).

(722) Therefore, the Commission considers that the Notifying Parties would have relatively large or, in some cases, even very large (in some cases well >[50-60]%) combined market shares in the horizontally affected markets for the bulk supply of medical nitrogen in Norway, Hungary, Sweden, Spain, Portugal and Germany, the horizontally affected markets for the bulk supply of medical oxygen in the Czech Republic, Germany, Hungary, Portugal, Romania, Slovakia and Spain and the horizontally affected market for the bulk supply of medical nitrous oxide in Spain which, combined with the high concentration levels and HHI deltas, are likely to lead to a significant increase of market power post-Transaction. The only exception relates to the market for the bulk supply of medical nitrogen in Italy, where the Notifying Parties' combined market shares would be below [20-30]%.

B. Cylinders

(723) In relation to the markets for the **cylinder supply** of **medical argon**:

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760 The Notifying Parties attribute [5-10]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

761 The Notifying Parties attribute [5-10]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

762 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

(a) In Portugal, the combined market share of the Notifying Parties would amount to [30-40]% in value and [30-40]% in volume, with a significant increment brought by Praxair of [10-20]% in both value and volume. The merged entity would be number two on the Portuguese market, following Air Liquide, which holds a market share of [40-50]% in value and [40-50]% in volume. The other competitors remaining on the market would be Air Products with [10-20]% market share in both value and volume, along with Messer and Acail Gas Medicare, each holding minor market shares of [0-5]% in value and volume, respectively.

(b) In Spain, the Notifying Parties would have a combined market share of [30-40]% in value and volume, respectively, with an increment of [10-20]% in value brought by Linde and an increment of [10-20]% in volume brought by Praxair. The merged entity would be followed by Air Liquide and Air Products, both with [30-40]% market shares in volume and value, respectively. Messer and Contse would also be present on the market, each with a minor market share of [0-5]% in volume and value, respectively.

(724) With respect to the markets for the **cylinder supply** of **medical carbon dioxide**:

(a) In the Czech Republic, the merged entity would be the market leader, with a combined market share of [80-90]% in value and [80-90]% in volume, and significant increments of [10-20]% in both value and volume brought by Praxair (SIAD). Air Products would be present on the market with a [10-20]% market share in value and volume, followed by Messer, which would have a [5-10]% market share in value and volume, respectively.[763]

(b) In Germany, the merged entity would be the market leader with a market share of [40-50]% in value and [40-50]% in volume, with a [5-10]% increment in value and a [5-10]% increment in volume, brought by Praxair. The second largest competitor would be Air Liquide, with a [30-40]% market share in value and volume. Also present on the market would be Westfalen with an [5-10]% market share in value and [5-10]% in volume, followed by SWF with a [0-5]% market share in value and [0-5]% in volume, Air Products with a more modest [0-5]% market share in value and volume, Tyczka with a [0-5]% market share in value and a [0-5]% market share in volume, and Messer with a [0-5]% market share in value and [0-5]% in volume.

(c) In Hungary, the merged entity would be the number one supplier in the market with a market share of [60-70]% in value and volume, respectively, and increments brought by Praxair (SIAD) of [5-10]% in value and [10-20]% in volume. The only other competitor in the market would be Messer with a [30-40]% market share in value and volume, respectively.

(d) In Norway, the merged entity would be market leader with a combined market share of [70-80]% in value and [80-90]% in volume, with an increment, brought by Praxair of [0-5]% in value and [0-5]% in volume. The only remaining player in the market would be Air Liquide with a [10-20]% market share in value and volume, respectively.[764]

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763 The Notifying Parties attribute [0-5]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

764 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

(e) In Portugal, the merged entity would be number two on the market with [30-40]% combined market share in value and [30-40]% in volume, with a significant increment brought by Praxair of [10-20]% in value and [10-20]% in volume. Air Liquide would be market leader with a [40-50]% market share in value and [40-50]% in volume, followed by Air Products with a [10-20]% market share in value and [10-20]% in volume, and Messer with a [5-10]% market share in value and volume, respectively.

(f) In Slovakia, the Notifying Parties would have a combined market share of [40-50]% in value and [40-50]% in volume with an increment brought by Praxair (SIAD) of [0-5]% in value and [0-5]% in volume. The only significant competitor in the market would be Messer which would remain the market leader with a [50-60]% market share in value and volume, respectively. Air Products would also be present on the market with market share of [0-5]% in value and volume.[765]

(g) In Sweden, the Notifying Parties would have a combined market share of [50-60]% in value and volume, respectively, with a small increment of [0-5]% in value and [0-5]% in volume brought by Praxair. The merged entity would be followed by the only remaining significant competitor in the market, i.e. Air Liquide which has a [40-50]% market share in both value and volume.[766]

(h) In Denmark, the Notifying Parties would have a combined market share of [30-40]% in value and [30-40]% in volume with an increment, brought by Praxair of [0-5]% in value and [0-5]% in volume. Post-Transaction, two other players would remain in the market. Strandmollen would be the market leader, with a market share of [30-40]% in value and [30-40]% in volume.[767]Air Liquide would also be present with a market share of [20-30]% in value and [20-30]% in volume.

(i) In Spain, the Notifying Parties would have a combined market share of [20-30]% in value and volume, respectively, with a significant increment, brought by Praxair of [10-20]% in value and volume. Air Liquide (with a market share of [30-40]% in value and [30-40]% in volume) and Air Products (with a market share of [30-40]% in value and [30-40]% in volume) would remain on the market. Messer would also be present with a small share of [0-5]% in both value and volume.[768]

(j) In Italy, the Notifying Parties would have a combined market share of [30-40]% in value and [30-40]% in volume, with an increment brought by Linde of [5-10]% in value and [0-5]% in volume. The merged entity would be followed by Air Liquide with [20-30]% market share in value and [20-30]% in volume, SOL with [10-20]% in value and [10-20]% in volume, Air Products (Sapio) with [10-20]% in value and [10-20]% in volume, Medicair with [0-5]% in value and volume, and SICO with [0-5]% in value and volume.

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765 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

766 The Notifying Parties attribute [0-5]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

767 The Notifying Parties attribute [5-10]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

768 The Notifying Parties attribute [5-10]% in value and [10-20]% in volume to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

(725) With respect to the markets for the **cylinder supply** of **medical nitric oxide**:

(a) In Italy, the combined entity would be the market leader with a market share of [40-50]% in value and volume, respectively, with a significant increment brought by Linde of [20-30]% in both value and volume. SOL with a [20-30]% market share in both value and volume, Air Liquide with a [20-30]% market share in both value and volume, and Air Products (Sapio) with a [5-10]% market share in both value and volume would remain in the market.[769]

(b) In Norway, the Transaction would create a monopoly. The increment, brought by Praxair, would be very significant: [20-30]% in value and volume, respectively.

(c) In Spain, the Notifying Parties would have a combined market share of [60-70]% in both value and volume, with an increment of [0-5]% brought by Praxair in value and volume, respectively. The combined entity would be the market leader followed by Air Liquide, which has a market share of [20-30]% in value and volume, and Air Products with a [10-20]% market share in value and volume, respectively.[770]

(d) In Germany,[771] the Notifying Parties' combined market share would amount to [40-50]% in value and volume, with an increment (brought by Praxair that recently entered the market) of [0-5]%. Other competitors would remain in the market, namely Air Liquide (with a market share of [30-40]% in value and [20-30]% in volume), Westfalen (with a market share of [5-10]% in value and [5-10]% in volume) and Tyczka ([5-10]% in value and [0-5]% in volume). Air Products, Messer and SWF would also be present each with market shares in value and volume of [0-5]%.[772].

(726) With respect to the markets for the **cylinder supply** of **medical nitrogen**:

(a) In the Czech Republic, the merged entity would become the market leader with a market share amounting to [70-80]% in both value and volume, and a significant increment of [20-30]% in value and [20-30]% in volume brought by Linde. The remaining players on the market would be Air Products with a [10-20]% market share in value and [10-20]% in volume, and Messer with a [5-10]% market share in value and [5-10]% in volume.[773]

(b) In Denmark, the Notifying Parties would have a combined market share of [30-40]% in value and [30-40]% in volume, with an increment of [10-20]% in value and [10-20]% in volume brought by Praxair. The combined entity would be followed by only two competitors, Strandmollen with a [30-40]% market

769 The Notifying Parties attribute [0-5]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

770 The Notifying Parties attribute [0-5]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

771 As indicated in Section 8.3.1.1, Praxair entered the market for medical nitric oxide in Germany in 2017. The market share estimate submitted by the Notifying Parties are calculated on the basis of 2017 data (Notifying Parties' response to RFI 36, Annex 11).

772 The Notifying Parties attribute [5-10]% in value and [10-20]% in volume to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 36, question 39, Annex 11.

773 The Notifying Parties attribute [10-20]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

share in value and [30-40]% in volume, and Air Liquide with [20-30]% in value and [20-30]% in volume.[774]

(c) In Germany, the Notifying Parties would have a combined market share of [20-30]% in value and [30-40]% in volume, with an increment brought by Praxair of [0-5]% in value and [5-10]% in volume. Air Liquide would remain the market leader, with a market share of [30-40]% in value and [30-40]% in volume. Other competitors with a less significant presence would remain in the market, Tyczka with a [5-10]% market share in value and volume, Westfalen with a [5-10]% market share in value and volume, Messer with a [0-5]% market share in value and [5-10]% in volume, Air Products with a [0-5]% market share in value and volume, and SWF with a [0-5]% market share in value and [0-5]% in volume.[775]

(d) In Hungary, the merged entity would have a monopoly. The increment, brought by Praxair (SIAD) in both value and volume would be [0-5]%.[776]

(e) In Norway, the merged entity would be market leader with a combined market share of [90-100]% in value and [90-100]% in volume, with an increment, brought by Praxair, of [0-5]% in value and volume. The only significant competitor remaining in the market would be Air Liquide with a minimal presence ([0-5]% market share in value and volume, respectively).[777]

(f) In Portugal, the Notifying Parties would have a combined market share of [20-30]% in value and [20-30]% in volume with an increment brought by Linde of [5-10]% in volume and [10-20]% in value. Air Liquide would be market leader with a [40-50]% market share in value and volume. Air Products would also remain in the market with a [10-20]% market share in value and volume. Messer and Acail Gas Medicare would also continue to be present, but their presence would be much less significant ([0-5]% in both value and volume).[778]

(g) In Slovakia, the Notifying Parties would have a combined market share of [50-60]% in value with an increment of [5-10]% brought by Praxair (SIAD) and [40-50]% in volume with an increment of [5-10]% brought by Praxair (SIAD). Messer would follow with a [30-40]% market share in value and [40-50]% in volume, and Air Products with [0-5]% in both value and volume, respectively.[779]

(h) In Spain, the Notifying Parties would have a combined market share of [30-40]% in value and [30-40]% in volume, with a rather significant increment of [10-20]% brought by Praxair in both value and volume, respectively. The only other sizable competitors remaining in the market would be Air Liquide with a market share of [30-40]% in value and volume and Air Products with a market

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774 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

775 The Notifying Parties attribute [20-30]% in value and [10-20]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

776 The Notifying Parties attribute [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

777 The Notifying Parties attribute [0-5]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

778 The Notifying Parties attribute [10-20]% in value and [10-20]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

779 The Notifying Parties attribute [0-5]% in value and [10-20]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

share of [30-40]% in value and volume. Messer, Contse, and Oxigen Salud would be in the market, but their presence is minimal (each of them has a market share of [0-5]% in value and volume, respectively).

(727) With respect to the markets for the **cylinder supply** of **medical nitrous oxide**:

(a) In the Czech Republic, the merged entity would become market leader with a combined market share of [70-80]% in value and [70-80]% in volume and a significant increment brought by Praxair (SIAD) of [10-20]% in value and [10-20]% in volume. The merged entity would be followed by the only two remaining competitors, Air Products with a [10-20]% market share and Messer with a [5-10]% market share in value and volume, respectively.[780]

(b) In Denmark, the merged entity would become market leader with a combined market share of [70-80]% in both value and volume, and a [0-5]% increment brought by Praxair in value and volume, respectively. Air Liquide would be the only competitor remaining in the market with a market share of [20-30]% in value and volume, respectively.

(c) In Germany, the Notifying Parties would have a combined market share of [60-70]% in both value and volume, with an increment of [5-10]% in value and volume brought by Praxair. Westfalen would be the only remaining significant competitor with a market share of [20-30]% in value and [30-40]% in volume.[781]

(d) In Hungary, the merged entity would become market leader with a combined market share of [70-80]% in value and [70-80]% in volume, with an increment of [10-20]% brought by Praxair (SIAD) in both value and volume. The only remaining significant competitor would be Messer with a market share of [20-30]% in value and volume, respectively.[782]

(e) In Italy, the Notifying Parties would have a combined market share of [20-30]% in both value and volume, with an increment of [5-10]% brought by Linde in volume and value, respectively. Air Liquide would remain in the market with a market share of [30-40]% in value and volume, Air Products (Sapio) with [20-30]% in value and volume, SOL with [10-20]% in value and [10-20]% in volume, and SICO with [0-5]% in value and volume.[783]

(f) In Norway, the merged entity would become market leader with market shares of [90-100]% in both value and volume, and a significant increment of [20-30]% brought by Praxair in value and volume, respectively.[784]

(g) In Slovakia, the Notifying Parties would have a combined market share of [50-60]% in both value and volume, with an increment of [0-5]% brought by Praxair (SIAD) in value and volume, respectively. They would be followed by Messer which would have a market share of [40-50]% in value and [30-40]%

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780 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

781 The Notifying Parties attribute [10-20]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

782 The Notifying Parties attribute [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

783 The Notifying Parties attribute [5-10]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

784 The Notifying Parties attribute [5-10]% (in value and volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

in volume, and Air Products with a [0-5]% market share in value and [0-5]% in volume.

(h) In Spain, the Notifying Parties would have a combined market share of [20-30]% in value, with a significant increment, brought by Praxair, of [5-10]% in value and volume. The only two sizable competitors remaining in the market would be Air Liquide with a market share of [30-40]% in value and [30-40]% in volume and Air Products with a market share of [30-40]% in value and [30-40]% in volume. Messer would be present with a market share of [0-5]% in value and volume.[785]

(i) In Sweden, the Notifying Parties would have a combined market share of [60-70]% in value and [60-70]% in volume, with an increment of [0-5]% brought by Praxair in value and volume, respectively. They would be followed by Air Liquide which has a market share of [30-40]% in value and volume, respectively.[786]

(728) With respect to the markets for the **cylinder supply** of **medical oxygen**:

(a) In the Czech Republic, the merged entity would become the market leader with a market share amounting to [80-90]% in value, with an increment of [10-20]% brought by Praxair (SIAD) and [80-90]% in volume, with an increment of [10-20]% brought by Praxair (SIAD). The only two competitors left on the market would be Air Products with a market share of [5-10]% in value and [5-10]% in volume and Messer with [5-10]% in both value and volume.[787]

(b) In Denmark, the Notifying Parties would have a combined market share of [30-40]% in value and [30-40]% in volume, with an increment, brought by Praxair of [0-5]% in value and [5-10]% in volume. The other sizable competitors remaining in the market would be Air Liquide, with a market share of [20-30]% in value and [20-30]% in volume, Strandmollen, with a market share of [30-40]% in value and [30-40]% in volume.[788]

(c) In Germany, the Notifying Parties would have a combined market share of [40-50]% in value and [40-50]% in volume, with an increment of [5-10]% brought by Praxair in both value and volume, respectively. Air Liquide would have a [30-40]% market share in value and volume, Air Products a [0-5]% market share in value and volume, Messer a [0-5]% market share in value and volume, SWF a [5-10]% market share in value and [5-10]% in volume, Tyczka a [0-5]% market share in value and volume, Westfalen a market share of [10-20]% in value and [10-20]% in volume.

(d) In Italy, the Notifying Parties would have a combined market share of [20-30]% in value and [20-30]% in volume, with an increment of [0-5]% in value and [5-10]% in volume brought by Linde. The players remaining in the market would be Air Liquide (with a market share of [30-40]% in value and [20-30]% in volume), Air Products (Sapio), which has a market share of [20-30]% in

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785 The Notifying Parties attribute [10-20]% in value and [10-20]% in volume to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

786 The Notifying Parties attribute [0-5]% in value of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

787 The Notifying Parties attribute [5-10]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

788 The Notifying Parties attribute [10-20]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

value and [20-30]% in volume and SOL (with a market share of [10-20]% in value and [10-20]% in volume).[789]

(e) In Norway, the Notifying Parties would have a combined market share of [60-70]% in value and [60-70]% in volume with an increment brought by Praxair of [5-10]% in value and [10-20]% in volume. The only significant competitor remaining on the market would be Air Liquide with a [20-30]% market share in both value and volume.[790]

(f) In Portugal, the Notifying Parties would have a combined market share of [30-40]% in value and [30-40]% in volume, with a substantial increment of [10-20]% brought by Praxair in both value and volume. The combined entity would be superseded by Air Liquide with a [40-50]% market share in both volume and value. The other companies remaining on the market would be Air Products with a [10-20]% market share in both volume and value, and Messer and Acail Gas Medicare each with minor market shares of a [0-5]% in both volume and value.[791]

(g) In Romania, the merged entity would have a combined market share of [50-60]% in value and [50-60]% in volume, with an increment of [0-5]% in both value and volume brought by Praxair (SIAD). The merged entity would be followed by Messer with a market share of [20-30]% in value and [20-30]% in volume. Air Liquide would also have a minimal presence in the market with a market share of [0-5]% in value and volume.[792]

(h) In Austria, the merged entity would have a combined market share of [10-20]% in value and [20-30]% in volume with an increment brought by Praxair of [0-5]% in value and volume. Other competitors would remain in the market, namely Air Liquide (with a market share of [20-30]% in value and [20-30]% in volume, Messer (with a market share of [10-20]% in value and volume), Draeger (with a market share of [10-20]% in value and [10-20]% in volume and SOL (with a market share of [10-20]% in value and [10-20]% in volume) and Kern (with a market share of [10-20]% in value and volume).[793]

(i) In Slovakia, the Notifying Parties would have a combined market share of [50-60]% in value and volume, with an increment of [0-5]% brought by Praxair (SIAD) in value and volume, respectively. Messer would follow with a market share of [30-40]% in value and [30-40]% in volume, and Air Products with a [0-5]% market share in value and [5-10]% in volume.[794]

(j) In Spain, the Notifying Parties would have a combined market share of [20-30]% in value and [20-30]% in volume, with a substantial increment of [10-20]% bought by Praxair in value and [10-20]% brought by Linde in volume.

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789 The Notifying Parties attribute [5-10]% in value and [10-20]% in volume of the market to "Other" competitors without specifying their identity. Notifying Parties' response to RFI 45, question 7.

790 The Notifying Parties attribute [10-20]% in value and [10-20]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

791 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

792 The Notifying Parties attribute [10-20]% in value and [10-20]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

793 The Notifying Parties attribute [5-10]% in value (and [0-5]% in volume) of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

794 The Notifying Parties attribute [0-5]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

Air Liquide would have a [30-40]% market share in value and volume, Air Products a [30-40]% market share in value and volume, and Messer, Contse, and Oxigen Salud would follow each with market shares of [0-5]% in both value and volume.[795]

(k) In Sweden, the Notifying Parties would have a combined market share of [50-60]% in value and [50-60]% in volume, with an increment of [0-5]% in value and [0-5]% in volume brought by Praxair. They would be followed by Air Liquide which has a [40-50]% market share in value and volume, respectively.[796]

(729) Furthermore, concentration levels post-Transaction (in value and volume) in the majority of the affected markets described above would be very significant (in any event above 2000) in the near totality of horizontally affected markets described above (with the exception of the market for the cylinder supply of medical oxygen in Austria).

(730) Therefore, the Commission considers that the Notifying Parties would have relatively large or, in some cases, even very large combined market shares in the horizontally affected markets for the cylinder supply of medical argon in Portugal and Spain, the horizontally affected markets for the cylinder supply of medical carbon dioxide in the Czech Republic, Denmark, Germany, Hungary, Italy, Norway, Portugal, Slovakia, Spain and Sweden, the horizontally affected markets for the cylinder supply of medical nitric oxide in Italy, Norway, Spain and Germany, the horizontally affected markets for the cylinder supply of medical nitrogen in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia, and Spain, the horizontally affected markets for the cylinder supply of medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia and Sweden, and the horizontally affected markets for the cylinder supply of medical oxygen in the Czech Republic, Denmark, Germany, Norway, Portugal, Romania, Slovakia and Sweden, which are likely to lead to a significant increase of market power post-Transaction. The only exceptions relate to the horizontally affected markets for the cylinder supply of medical nitrogen in Portugal, the cylinder supply of medical nitrous oxide in Italy and Spain and the cylinder supply of medical oxygen in Austria, Italy and Spain, where the Notifying Parties' combined market shares are equal or below [20-30]%.

ii. Closeness of competition

(731) As regards closeness of competition, contrary to their claim in the Form CO, based on the results of the market investigation, the Notifying Parties indeed appear to closely compete in the markets for the bulk and cylinder supply of medical gases with each other and with other Tier 1 players. A few other Tier 2 players follow at a distance and only in certain geographic areas.

(732) In this respect, Tier 1 players (in particular the Notifying Parties and Air Liquide) are the only players that can credibly and effectively compete in the markets for the supply of medical gases. This is among others due to: (i) their significant presence and footprint in the markets for industrial gases, which provides them, as indicated in

795 The Notifying Parties attribute [5-10]% in value and [5-10]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

796 The Notifying Parties attribute [5-10]% in value and [0-5]% in volume of the market to "Other" competitors, without specifying their identity. Notifying Parties' response to RFI 45, question 7.

Section 8.3.2.1. with a significant competitive advantage in terms of production capabilities also in relation to the supply of medical gases, (ii) their distribution network that is also relevant in the supply of medical gases where, due to the strict regulations applicable to the marketing of these products, suppliers tend to sell the gases directly on the market relying on their own sales force[797] and (iii) the importance of financial strength in the markets for the supply of medical gases which require high investment levels, due to their specificities in terms, for example, of regulatory requirements. The Commission notes that, in the countries in which they are active, also Tier 2 players like Messer appear to be able to credibly compete (which is reflected in a significant market presence in some countries). However, as also confirmed by the market investigation, their footprint is more limited and they are generally not considered as competitive as Tier 1 players.[798]

(733) The fact that the Notifying Parties closely compete with each other (as well as with the other Tier 1 players and some Tier 2 players in specific geographies) was confirmed by the market investigation. While customers and competitors identified Air Liquide, on average, as the closest competitor to Linde in both the markets for the **bulk** and **cylinder** supply of medical gases (irrespective of the gas supplied) the same respondents also indicated that Praxair is closely competing with Linde (followed at some distance by Air Products and Messer).[799] Importantly, both bulk and cylinder customers identified Linde as a very close competitor to Praxair (on average the closest) followed by Air Liquide and at a distance by Messer and Air Products. The Notifying Parties' competitors appear, on average, to share the views expressed by the customers with respect to closeness of competition.[800] Contrary to the Notifying Parties' claim, Air Products was generally not considered a close competitor to Praxair, either by (bulk and cylinders) customers or by the Notifying Parties' competitors.[801] In particular, in terms of overall service level (including services and equipment), Praxair appears to be considered on average as more comparable to Linde and Air Liquide, rather than to Air Products in particular with respect to bulk.[802] Importantly, the market investigation revealed that, among the limited number of bulk and cylinder customers that indicated that they switched suppliers of medical gases in the past three years, some switched from Linde to Praxair (SIAD), further evidencing the fact that the Notifying Parties actively and closely compete against each other to win customers.[803]

(734) On the basis of the above considerations, the Commission considers that the Notifying Parties are close competitors to a significant degree so that the Transaction would be likely to give rise to significant price effects by removing the constraint exerted by the Notifying Parties on each other and on the other competitors.

iii. Specific constraints exercised by the Notifying Parties

(735) With the exceptions outlined in this Section, the Commission considers that the Notifying Parties exert an important competitive constraint in the horizontally

797 Form CO, Chapter B, Section 6, paragraph 542.
798 Responses to RFI Q18 to customers of medical gases, questions 37 and 38.
799 Responses to RFI Q18 to customers of medical gases, questions 18 and 42 and RFI Q31 to competitors of medical gases, questions 98 and 115.
800 Responses to RFI Q31 to competitors of medical gases, questions 98 and 115.
801 Responses to RFI Q18 to customers of medical gases, questions 19 and 43 and RFI Q31 to competitors of medical gases, questions 99 and 116.
802 Responses to RFI Q18 to customers of medical gases, question 14.
803 Responses to RFI Q18 to customers of medical gases, questions 20 and 44.

affected bulk and cylinder markets identified in Table 36 and Table 37 respectively, which is not only due to their relatively large, large or even very large market shares in some affected markets (illustrated in Section 8.3.1.1.1. ), but also to their market performance with respect to the main parameters of competition and their unmatchable position in terms of production capabilities, distribution network and product offering, derived from their position in industrial gas markets. The Notifying Parties also hold a particularly strong position with respect to the supply of medical nitric oxide mixtures. As a result of the Transaction, such important competitive constraint would be eliminated.

(736) When looking at the **most important parameters of competition** discussed in Section 8.3.1.2., **bulk** customers consider Praxair on average as the most competitive in terms of timely deliveries, closely followed by Linde and Air Liquide. Linde, on the other hand, is rated as, on average, the most competitive in terms of overall service level by bulk customers, followed closely by Air Liquide and Praxair.[804] As regards supply security, although Air Liquide is considered, on average, as the most competitive, both Linde and Praxair are also considered to be very competitive (rated on average well above 4 points on a scale of 5). The Notifying Parties' competitors also considered Linde and Praxair as two particularly strong competitors with respect to these important parameters of competition. Importantly, competitors indicated that, with respect to bulk, Praxair and Linde are indeed competitive in terms of timely deliveries and security of supply (rated on average well above 4 on a scale of 5). In terms of overall service level, the Notifying Parties' competitors consider that Air Liquide is the most competitive, immediately followed by Linde and Praxair. Messer and Air Products are considered to be less competitive.[805] Bulk customers also identified Linde and Praxair, on average, as the most aggressive suppliers in terms of price.[806] With respect to the **cylinder supply of medical gases**, customers that responded to the market investigation consider that Linde and Praxair are both very competitive in terms of timely deliveries and security of supply (although Air Liquide is considered slightly more competitive than the Notifying Parties with respect to these two parameters).[807] In terms of overall service level, Linde is considered as, on average, to be the most competitive. Praxair is also regarded, on average, as competitive.[808]

(737) Furthermore, as noted in Section 8.3.1.2., due to their established presence in the markets for industrial gases, the Notifying Parties have (together with the other Tier 1 players) an unmatchable advantage not only in terms of production capabilities, but also, and importantly, in terms of distribution network that they can leverage in the markets for medical gases.[809]

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804 Responses to RFI Q18 to customers of medical gases, questions 14.1 and 14.2.

805 Responses to RFI 31 to competitors of industrial and medical gases, question 94.2.

806 Responses to RFI Q18 to customers of medical gases, questions 13 and 37.

807 Response to RFI Q18 to customers of medical gases, questions 38.1 and 38.5.

808 Responses to RFI Q18 to customers of medical gases, question 38.2.

809 The Commission considers that the Notifying Parties constitute important competitive constraints which would be removed by the Transaction also in the market for the bulk supply of medical nitrogen in Italy, albeit the fact that their combined market share is below [20-30]%. This is because of the very high market share of the Notifying Parties in the bulk supply of industrial nitrogen in Italy, given that medical and industrial nitrogen are produced in the same facilities. Indeed, the combined shares of the Notifying Parties in the bulk industrial nitrogen market in Italy is [40-50]%, based on the results of the Commission's market reconstruction. Further, all considerations whereby the competitive constraint exerted by the Notifying Parties in the medical gas markets is a reflection of the competitive constraint

(738) In addition, the Notifying Parties are among the few players that appear to hold and competitively offer a broad portfolio of medical gases and marketing authorisations in a variety of countries. This, as explained in Section 8.3.1.2. above, appears to be an important parameter of competition and hence a strong competitive advantage, as it allows the Notifying Parties (and a few other players) to effectively address the demand of those customers (in particular hospitals) that, as explained in Section 8.3.1.2. above, increasingly decide to put out for tender their entire demand of medical gases.

(739) With specific respect to the supply of **medical nitric oxide**,[810] the market investigation provided strong indications that the Notifying Parties have a strong position in this market and exercise a significant competitive constraint on each other and on the other players. As explained in Section 7.2.2., medical nitric oxide is supplied to customers as a nitric oxide / nitrogen mixture.[811] These mixtures are in some cases sold to customers together with services and specific equipment (including delivery and monitoring systems). Linde sources the necessary devices

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they exert in the industrial gas markets apply also with respect to the bulk supply of medical nitrogen in Italy. Further, the Commission considers that the Notifying Parties constitute important competitive constraints which would be removed by the Transaction also in the market for the cylinder supply of medical nitrogen in Portugal and of medical oxygen in Austria, Italy and Spain, albeit their combined market shares is below [20-30]%. This is because of the very high market share of the Notifying Parties in the bulk supply of industrial nitrogen and oxygen in those countries, given that medical and industrial nitrogen/oxygen are produced in the same facilities. Indeed, on the basis of the Notifying Parties' market share information (which has been confirmed by the results of the market reconstruction), the combined shares of the Notifying Parties are [60-70]% in the bulk industrial nitrogen market in Portugal, [40-50]% in the bulk industrial oxygen market in Austria and [40-50]% in the bulk industrial oxygen market in Spain. Based on the results of the Commission's market reconstruction, the combined shares of the Notifying Parties are [40-50]% in the bulk industrial oxygen market in Italy. Further, all considerations whereby the competitive constraint exerted by the Notifying Parties in the medical gas markets is a reflection of the competitive constraints they exert in the industrial gas markets apply also with respect to the bulk supply of medical nitrogen in Portugal and medical oxygen in Austria, Italy and Spain.

Despite the low increment in this market the Commission considers that both Notifying Parties constitute important competitive constraint which would be removed by the Transaction also in the market for the bulk supply of medical nitrogen in Germany. This is because of the very high market share of the Notifying Parties in the bulk supply of industrial nitrogen in Germany, given that medical and industrial nitrogen are produced in the same facilities. Indeed, the combined shares of the Notifying Parties in the bulk industrial nitrogen market in Germany is [50-60]%, based on the results of the Commission's market reconstruction. Further, all considerations whereby the competitive constraint exerted by the Notifying Parties in the medical gas markets is a reflection of the competitive constraint they exert in the industrial gas markets apply also with respect to the bulk supply of medical nitrogen in Germany.

Further, despite the low increment in this market the Commission considers that both Notifying Parties constitute important competitive constraint which would be removed by the Transaction also in the market for the bulk supply of oxygen in Austria. This is because of the very high market share of the Notifying Parties in the bulk supply of industrial oxygen in Austria, given that medical and industrial oxygen are produced in the same facilities. Indeed, on the basis of the Notifying Parties' market share information (which has been confirmed by the results of the market reconstruction), the combined share of the Notifying Parties is [40-50]% in the bulk industrial oxygen market in Austria. Further, all considerations whereby the competitive constraint exerted by the Notifying Parties in the medical gas markets is a reflection of the competitive constraint they exert in the industrial gas markets apply also with respect to the bulk supply of medical oxygen in Austria.

810 Praxair purchases this gas from […] in Spain, Norway and Germany and from […] in Italy. Linde currently purchases medical nitric oxide from […].

811 This mixture is used in the healthcare field to achieve potent and sustained pulmonary vasodilatation (e.g. to treat respiratory failure in premature babies). Notifying Parties' response to RFI 36, question 45.

from […].[812] Until recently (2016),[813] Linde, which markets this mixture under the brand name INOmax, held a patent with respect to this mixture, which recently expired. The second phase market investigation indicated that, although Linde, following the expiration of this patent, may have partly lost its first mover advantage,[814] it continues to have a strong position in the market. Conversely, Praxair has been growing its presence and competing aggressively in the market. This is evidenced by Praxair's recent entry in Germany in 2017.[815] In 2016, Praxair internalised the production of delivery and monitoring systems for medical nitric oxide by acquiring NoxBox Ltd. ("NoxBox"), a nitric oxide (INO) device manufacturer. The Notifying Parties' internal documents provide indications that […]. Notably, in an email exchange discussing […].[816] The Commission notes that this statement appears to suggest that […].[817] As indicated in Section 8.3.1.2., during the market investigation, the ability to supply medical nitric oxide has been indicated as a possible relevant factor influencing the choice of medical gas supplier. In the Reply to the Statement of Objections, the Notifying Parties argued that the Commission mis-interpreted the content of this Linde internal email exchange. More specifically, according to the Notifying Parties, this document confirms that […]. In this respect, the Commission notes that, while it is true that […], the document does not exclude, as the Notifying Parties infer, that […]. The Commission further notes that, contrary to the Notifying Parties contentions in the Reply to the Statement of Objections, Linde's internal document does also refer to […]. More specifically, the document states: […].

(740) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Praxair and/or Linde is likely to deteriorate.

iv. Conclusion

(741) On the basis of the above considerations, the Commission considers that the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, in the horizontally affected bulk markets identified in Table 36 and in the horizontally affected cylinder markets identified in Table 37, which would be removed by the Transaction. The only exception to this relates to the affected markets for the cylinder supply of medical nitrous oxide in Italy and Spain, where the Notifying Parties' combined market shares are below [20-30]%.

**b. Assessment of other competitive constraints in the market**

i. Other players

(742) As evidenced by Section 8.3.1.1. and Annex I, in the majority of the markets affected by the Transaction, other suppliers would remain in the market.[818] As indicated in

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812 Notifying Parties' response to RFI 36, question 43, footnote 16.

813 Linde internal document, email from […] refers to "[…]". […] [ID4760-76028].

814 Agreed non-confidential minutes of conference call with SOL of 23 March 2018, paragraph 24. [ID 6243].

815 Notifying Parties' response to Request for information 36, question 39.

816 Linde's internal e-mail of […] [ID 4760-76028].

817 The Commission notes that, based on the results of the market test, while some customers consider it advantageous to purchase the gas and the delivering and monitoring devices from the same supplier, another portion of customers responded that they do not usually purchase the gas and the equipment jointly (responses to RFI Q61 Market Test – Customers of medical gases and homecare services, question 5.2).

818 In some affected markets, for example in the market for the cylinder supply of medical nitrogen in Norway, the Transaction would lead to a monopoly of the merged entity.

Section 8.3.1.1., the presence, strength and, importantly, the ability to compete of these players in the markets for the supply of medical gases are linked, to an extent, to their position in industrial gases and their density (in terms of production facilities and distribution network) in a certain area and therefore may vary depending on the geography considered. The Commission notes however that, as explained in Section 8.3.1.2., due to the costs and specificities in terms for example of services and expertise involved in the medical gas business, industrial gas suppliers may in some instances decide not to participate in the medical segment or in the supply of certain medical gases in a country in which they supply industrial gases.

A. Air Liquide

(743) As illustrated by Section 8.3.2.2.i. and Annex I, Air Liquide holds a strong position in some of the markets for the bulk and cylinder supply of medical gases affected by the Transaction. For example, Air Liquide is and would remain the market leader in the markets for the bulk supply of medical oxygen and medical nitrogen in Portugal (with markets shares in value of [40-50]% and [40-50]% respectively) and in the market for the cylinder supply of medical nitrogen in Germany (with a market share in value of [30-40]%). In other affected markets, Air Liquide holds a significant market presence (despite not being the market leader) and, in some instances, it would be the only competitor (or the only significant competitor) remaining in the market alongside the merged entity (this is the case for example of the market for the bulk supply of medical nitrogen in Sweden where Air Liquide would be the only significant competitor of the merged entity with a market share in value of [40-50]%). In a few national (affected) markets, Air Liquide would either have a small presence or not be present at all (for example, in the markets for the bulk supply of medical nitrogen and medical oxygen in Hungary).

(744) As noted in Section 8.2.2.2.1.b.i., Air Liquide enjoys a dense network of plants across the EEA and consequently (similarly to the Notifying Parties) holds a particularly advantageous position in terms of production capabilities and distribution network that it can in principle leverage in the markets for the supply of medical gases. In addition, customers responding to the market investigation rated Air Liquide as the most competitive in terms of supply security and timely deliveries in both the markets for the bulk and the cylinder supply of medical gases.[819]

(745) However, the market investigation provided indications that, despite its strong position in the markets, Air Liquide does not compete particularly aggressively to grow its market position or to expand its footprint in the markets for the supply of medical gases. In this respect, for example, customers during the market investigation rated Air Liquide as less aggressive in terms of price compared to Linde and Praxair in bulk[820] and less aggressive compared to Linde (and slightly more aggressive than Praxair) in cylinders.[821] Notably, the Notifying Parties' competitors consider Air Liquide as less aggressive in terms of prices not only compared to Praxair and Linde, but also compared to Messer and Air Products.[822] In addition, in their internal documents, the Notifying Parties appear to suggest that

819 Response to RFI Q18 questionnaire to customer of medical gases, questions 14 and 38.

820 Responses to RFI Q18 questionnaire to customers of medical gases, question 13.

821 Responses to RFI Q18 questionnaire to customers of medical gases, question 37.

822 Responses to RFI 31 questionnaire to competitors of industrial and medical gases, question 93.1. and 110.1.

[…]. In this respect, in a Linde presentation […].The document continues by stating that […][823] showing that […].

(746) No evidence in the Commission's file suggests that, post-Transaction, Air Liquide would change its strategy. On the contrary, it may consider it to be more profitable to compete even less given the reduction of the competitive pressure in the market brought about by the elimination of Linde and Praxair as standalone players. Financial analysts seem to have expressed such opinion, when, after the announcement of the Transaction, they have upgraded the Air Liquide "*to Buy, with Target Price Change EUR* […]."[824]

(747) In light of the above, the Commission considers that, while Air Liquide is likely to have the ability to compete post-Transaction, it is unlikely that it would have the incentives to compete to such an extent that it would counteract the loss of competition deriving from the Transaction.

B. Air Products

(748) As illustrated by Section 8.3.2.2.i. and Annex I, Air Products' position in the markets for the supply of medical gases is overall more contained than the position that Air Liquide and the merged entity would enjoy post-Transaction. Based on the market shares provided by the Notifying Parties, Air Products' presence appears to be quite substantial in a (rather limited) number of markets (for example in the market for the bulk supply of medical nitrous oxide in Spain or in the market for the bulk supply of medical nitrogen in Spain where Air Products has market shares in value of [40-50]% and [30-40]% respectively). In the remaining affected markets, Air Products has either a more limited market share (for example in the market for the supply of bulk medical oxygen in the Czech Republic where it holds a market share of [10-20]%) or is not present.

(749) As indicated in Section 8.2.2.2.1.ii., Air Products, compared to other Tier 1 players (in particular Linde and Air Liquide) has a more limited and less dense network of plants in the EEA. Air Products' ability to effectively compete in the markets for the supply of medical gases is therefore also, by definition, in principle more limited in terms of production capabilities and distribution network compared to its Tier 1 competitors at least in the areas in which it has a more limited presence in terms of production capabilities and distribution network. The market investigation indicated that Air Products is generally viewed as less competitive with respect to the key parameters of competition compared to its Tier 1 competitors. In this respect, customers that responded to the market investigation consider Air Products to be less competitive than Linde, Praxair and Air Liquide (although more competitive than Messer) in terms of timely deliveries, supply security and overall service level with respect to bulk[825] and less competitive than the Notifying Parties and Air Liquide in terms of product range and timely deliveries with respect to cylinders.[826]

(750) In addition, the market investigation revealed that, already today, Air Products does not compete particularly aggressively in the markets for the supply of medical gases. In this respect, customers responding to the market investigation rated Air Products

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823 Linde's internal presentation, […] [ID4762-40829].

824 […]. Air Liquide's share price has never been above EUR 112, https://www.airliquide.com/investors/shareprice-performance (ID6422).

825 Responses to RFI Q18 questionnaire to customers of medical gases, question 14.

826 Responses to RFI Q18 questionnaire to customers of medical gases, question 38.

as the least price aggressive among the Tier 1 players with respect to both bulk and cylinders.[827]

(751) No evidence in the Commission's file suggests that, post-Transaction, Air Products would change its strategy. On the contrary, it may consider it to be more profitable to compete even less given the reduction of the competitive pressure in the market brought about by the elimination of Praxair as standalone player.

(752) In light of the above, the Commission considers that, while Air Products, although generally less competitive than the other Tier 1 players, is likely to have the ability to compete post-Transaction as much as it was pre-Transaction at least in the areas in which it has density, it is unlikely that it would have the incentives to compete to such an extent that it would counteract the loss of competition deriving from the Transaction.

C. Messer and other suppliers

(753) As regards other players, the Commission notes that, as indicated in Section 8.3.1.2. and as evidenced by Annex I, also some Tier 2 players (Messer and, to a more limited extent, players such as SOL, Westfalen and Strandmollen) are considered credible and may hold, in the countries in which they are active and have a certain degree of presence and density, significant positions in relation to the supply of one or more medical gases. Messer, for example, has a significant presence is certain medical gas markets in Eastern Europe (for example in the markets for the bulk supply of medical oxygen and medical nitrogen in Hungary, where Messer holds market shares of [40-50] and [40-50]% respectively). SOL, on the other hand, has a moderate position in a limited number of affected markets (for example in the market for the cylinder supply of medical nitric oxide in Italy, where it holds a market share of [20-30]% in value). Strandmollen also holds a significant market share in some markets for the cylinder supply of medical gases in Denmark (for example in the market for the cylinder supply of medical carbon dioxide).

(754) The geographic footprint of these players is significantly more limited than the footprint of their Tier 1 competitors (also in view of their significantly less dense networks and presence in industrial gases). Therefore, while in a very limited number of affected markets, as indicated above, they may have a more significant presence, in the majority of affected markets these players are not present (or they have a minimal presence). In addition, the level of competitiveness of these players as regards the most important parameters of competition does not appear to be comparable with that of Tier 1 players. This was confirmed by the market investigation. Messer, which, among the Tier 2 players appears to have a more significant presence (at least in Eastern Europe) is considered by customers as the least competitive (at a distance) in terms of timely deliveries, supply security and overall service level, when compared with Tier 1 players.[828]

(755) In light of the above, the Commission considers that, in the majority of affected markets, the ability of these players to constraint the merged entity is limited or non-existent today (depending on the geography) and will continue to be limited or non-existent (depending on the geography) post-Transaction, especially in the countries in which these players do not have a geographic presence in industrial gases. On the other hand, in the few markets in which these players do hold a strong position and

827 Responses to RFI Q18 questionnaire to customers of medical gases, questions 13 and 37.

828 Responses to RFI Q18 to customers of medical gases, questions 14 and 38.

currently have the ability to compete and act as a competitive constraint, players like Messer may consider it to be more profitable to compete less given the reduction of the competitive pressure in the market brought about by the elimination of Praxair as standalone player.

ii. Barriers to entry and expansion

(756) The Commission considers that market entry and expansion do not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. In this respect the Commission notes the following.

(757) As regards entry, in the markets for the supply of medical gases **barriers to entry are high**.

(758) First, the time and costs associated with entering these markets are particularly significant due to the need of obtaining the required certifications and marketing authorisations.[829] In this respect, based on the data submitted by the Notifying Parties, the cost required to certify a plant that has not originally been built for the production of medical gases amounts to [hundreds of thousands of euro]. The Notifying Parties estimate that the time required would be […] years. [830]

(759) To this end, the majority of competitors that responded to the market investigation indicated that it is not possible for a company that is not active in the supply of medical gases (even if active in industrial gases) to obtain the required certifications and start supplying medical gases promptly and in a timely manner at a customer's request.[831]

(760) Furthermore, as indicated in Section 8.3.1.2., specific competences and expertise in terms of customer knowledge, supply chain and services, are needed to be able to

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829 Gases produced in a plant (for both bulk and cylinder supply) can only be sold to medical customers if the production site has obtained a Manufacturing Licence. The licensing process normally takes place throughout the building stages of a manufacturing site, although it is also technically possible to upgrade a plant that has not been originally built for the production of medical gases. However, reconstructing and re-fitting a plant may take between […] years, at a cost [of hundreds of thousands of euro]. A Manufacturing Licence may be obtained at a cost of around [thousands of euro] over a period of ≥ […] days and is issued by the local competent authority. In the case of medical gases sold in cylinders, the filling plant at which the cylinders are filled must also be certified, following the same process. In order to promote and sell medical gases, gas suppliers must obtain a Marketing Authorisation (one for each gas sold). Marketing Authorisations are issued by the competent authorities in each Member State. For companies that are active in several Member States, Marketing Authorisations can be obtained under three procedures: (i) the mutual recognition procedure, (ii) the decentralised recognition procedure or (iii) the centralised procedure, the latter involving the submission of a single marketing authorisation application directly to the European Medicines Agency. The cost of obtaining a Marketing Authorisation ranges between around [thousands of euro] and [tens of thousands euro] and may take ≥ […] days. Separately, certain medical gases, such as carbon dioxide, are typically classified as medical devices due to their intended use, which is comparable to that of medical equipment. The equipment used for the administration and storage of medical gases also qualifies as a medical device. Such medical devices are subject to an EEA-wide regulatory approval system, which defines essential requirements to be met before the devices can be placed on the EEA market. Unlike for medicinal products, there is no formal marketing authorisation granted by a health authority. However, a conformity assessment procedure is in place under the EU regulatory system, whereby medical devices must satisfy a number of essential safety and performance requirements. Once such requirements are satisfied, the device receives a so-called "CE marking" which will allow it to be traded within the EEA, without the need for further confirmation of approval procedures. (Form CO, Chapter B, Section 8, paragraphs 61and followings).

830 Form CO, Chapter B, Section 8, paragraph 606.

831 Responses to RFI Q31 to competitors of industrial and medical gases, question 4.

successfully compete in the markets for medical gases. The second phase market investigation revealed that this is even more the case with respect to medical nitric oxide and medical nitrous oxide. In this respect, the market investigation revealed that supplying these gases requires "*critical skills and competences*" and that, for this reason, "*barriers to entry exist […] (in particular with respect to NO).*"[832]

(761) In line with the Notifying Parties' submission in the Form CO, the market investigation confirmed that entry of new players with production capabilities has not occurred in any of the markets for medical gases in the past five years.[833] Importantly, the market investigation also indicated that entry is not expected in the next two years.[834]

(762) As regards **expansion**, the market investigation did provide some indications that SOL and Westfalen have expanded their activities in the markets for medical gases (by obtaining the required marketing authorisations) in recent years.[835] However, importantly, neither customers nor competitors expect that expansions would occur in these markets in the next two years.[836]

iii. Countervailing buyer power

(763) The Commission considers that buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction.

(764) In this respect, the Commission notes that switching is difficult and does not occur often.

(765) Notably, the majority of both bulk and cylinders customers that responded to the market investigation indicated that switching is either difficult (long and expensive) or very difficult (very long and very expensive process that rarely occurs).[837] Importantly, while the Notifying Parties' competitors indicated that they are aware of customers that have switched supplier,[838] a large majority of customers of medical gases in both bulk and cylinders indicated during the market investigation that they have not switched supplier in the past three years.[839]

(766) With respect to bulk, the Notifying Parties themselves acknowledge in the Form CO that, although switching costs are not particularly significant,[840] in view of the overall efforts related to the replacement of bulk tanks that are installed at the hospital premises, hospitals tend to stick to their existing supplier (in situations in which the bulk tank is owned by the gas supplier, which appear to be often the case). In this respect, the Notifying Parties specify that "*reliability of service is understandably important to hospitals and it appears they prefer not to risk the well-functioning supply service by changing equipment and/or supplier."*[841] Also as regards cylinders, contrary to the Notifying Parties' claims, the market investigation

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832 Agreed non-confidential minutes of conference call with Air Liquide of 23 March 2018, paragraph 26 ID6404.

833 Response to RFI Q18 to customers of medical gases, questions 15 and 39.

834 Response to RFI Q18 to customers of medical gases, questions 16 and 40.

835 Responses to RFI Q31 to competitors of industrial and medical gases, question 95.

836 Responses to RFI Q18 to customers of medical gases, questions 16 and 40 and RFI Q31 to competitors of industrial and medical gases, questions 96 and 113.

837 Responses to RFI Q18 to customers of medical gases, questions 20, 21, 44 and 45.

838 Responses to RFI Q31 to competitors of industrial and medical gases, question 100.

839 Responses to RFI Q18 to customers of medical gases, questions 20 and 44.

840 The Notifying Parties estimate that it will cost around EUR […] (Form CO, Chapter B, Section 6, footnote 338).

841 Form CO, Chapter B, Section 6, paragraph 583.

provided some indications that there may indeed be technical difficulties related to switching cylinder supplier. In this respect, a customer explained that: "*The difficulty that exists on switching the gas supplier relates to the fact that the cylinders do not end all at the same time, and so by switching the supplier we would have to deliver many cylinders almost or at least partially full of gas, which implies the lost of a large amount of money. As an alternative we could deliver only the cylinders after the gas ended, but in that case we would have to pay two cylinder rentals during some time (the rental of the cylinder of the former supplier until the gas ended and the rental of the cylinder of the new supplier).*"[842]

(767) In any event, and irrespective of the technical barriers to switching laid out above, the market investigation revealed that, while switching may be easier for smaller customers, it may be more difficult and less common for larger customers (such as large hospitals). According to Messer, this is due to the "*range of products required*" and the "*higher supply risk*"[843] of these customers.

(768) Furthermore, a number of medical gas customers (although not the majority) that responded to the market investigation explained that already pre-Transaction they do not believe that they enjoy bargaining power vis-à-vis suppliers of medical gases. A significant number of these customers believes that this situation will either not change post-Transaction or will worsen.[844]

iii. Conclusion

(769) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the relevant markets are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely effects of the Transaction**

(770) On the basis of the considerations expressed in Sections 8.3.2.2.a. to 8.3.2.2.b, the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases.[845] This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario.

(771) This view is shared by the participants to the market investigation.

(772) In this respect, a significant number of medical gas customers that responded to the market investigation believe that the Transaction would have a negative impact (including in terms of possible price increases) on the market both in the bulk and in the cylinder supply of medical gases.[846] Furthermore, a number of bulk and cylinder customers (including hospitals) indicated that, in case of a price increase by the merged entity, the remaining players would likely follow such price increase and increase their prices as well.[847]

(773) As discussed in Section 8.3.2.2.b, the Commission considers that countervailing factors such as market entry and expansion, and buyer power are unlikely to off-set the anticompetitive effects arising from the Transaction.

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842 […]'s response to RFI Q18 to customers of medical gases, question 45.2. [ID1941]

843 Responses to RFI Q31 to competitors of industrial and medical gases, question 100.

844 Responses to RFI Q18 to customers of medical gases, questions 25 and 49.

845 The only exceptions to this relate to the affected markets for the cylinder supply of medical nitrous oxide in Italy and Spain.

846 Responses to RFI Q18 to customers of medical gases, questions 29 and 53.

847 Responses to RFI Q18 to customers of medical gases, questions 27 and 51.

**d. Conclusion**

(774) For the reasons set out in recitals (712)-(773), the Transaction would significantly impede effective competition as a result of horizontal non-coordinated effects in the national bulk markets for the supply of medical oxygen, medical nitrogen and medical nitrous oxide identified in Table 36 and the national cylinder markets for the supply of medical carbon dioxide, medical argon, medical nitrogen, medical nitrous oxide (excluding in Spain and Italy[848]), medical nitric oxide and medical oxygen identified in Table 37.

(775) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[849] and, at least, to a removal of a significant competitive constraint on all the other markets.[850]

*8.3.3. Horizontal coordinated effects*

(776) In the Article 6(1)(c) Decision the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects in relation the national (affected) bulk markets for the supply of medical oxygen, medical nitrogen and medical nitrous oxide; the national (affected) cylinder markets for the supply of medical carbon dioxide, medical argon, medical nitrogen, medical nitrous oxide, medical nitric oxide and medical oxygen identified and the EEA (affected) markets for the cylinder supply of medical nitric oxide and for the bulk and cylinder supply of medical nitrous oxide identified.

(777) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change of the incentives to coordinate of the merged entity and its remaining Tier 1 competitors post-Transaction. Thus, the Commission considers that the Transaction would not significantly impede effective competition in the bulk and cylinder markets for medical gases as a result of horizontal coordinated effects. The Commission also notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in those markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

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848 In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the non-coordinated horizontal effects of the Transaction in relation to medical gases would also exclude the possibility that the Transaction will lead to horizontal effects in the markets for the cylinder supply of medical nitrous oxide in Italy and Spain. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in the latter markets.

849 That is, with respect to bulk, the markets for the supply of medical nitrogen in Hungary, Norway, and Sweden; medical oxygen in the Czech Republic, Hungary, Romania, and Slovakia, where the combined market shares of the Notifying Parties are above 50%. With respect to cylinders, the markets for the supply of medical carbon dioxide in the Czech Republic, Hungary, Norway and Sweden; medical nitric oxide in Norway and Spain; medical nitrogen in the Czech Republic, Hungary, Norway, and Slovakia; medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia and Sweden; medical oxygen in the Czech Republic, Norway, Romania, Slovakia, and Sweden where the merged entity will hold a market share above 50%.

850 The only exceptions to this relate to the affected markets for the cylinder supply of medical nitrous oxide in Italy and Spain.

*8.3.4. Vertical non-coordinated effects*

(778) In relation to the potential vertical non-coordinated effects of the Transaction the Commission notes the following.

(779) First, as explained in Section 8.1, vertically affected markets arise in relation to the links between some upstream national markets for the bulk supply of medical gases and some downstream national markets for the cylinder supply of medical gases.

(780) No customer foreclosure concern has been raised in the market investigation in regard to these links.

(781) In the Article 6(1)(c) Decision the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement as a result of possible vertical input foreclosure effects in relation to access to bulk medical gases belonging to markets where the merged entity would have more than 30% in the upstream markets (regardless of the increment brought by Praxair), i.e. the markets identified in Table 36 and Table 38. In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives on the merged entity to foreclose. Importantly, the Commission notes that the Transaction does not materially alter the degree of vertical integration of the Notifying Parties, both of which already currently produce medical gases in bulk and sell medical gases in cylinders. The Commission therefore considers that the Transaction would not significantly impede effective competition as a result of the vertical non-coordinated effects stemming from the links identified in recital (779).

(782) In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the non-coordinated horizontal effects of the Transaction in relation to medical gases would also exclude the possibility that the Transaction would lead to vertical effects in those markets. Indeed, those commitments would fully remove the overlaps between the Notifying Parties' activities in medical gases in the relevant bulk and cylinder markets.

(783) Second, as explained in Section 8.1, vertically affected markets arise in relation to the links between some upstream national markets for the bulk and cylinder supply of medical oxygen and some downstream national markets for the provision of (oxygen-based) respiratory homecare services and possible sub-markets (GOX and LOX).

(784) No customer foreclosure concern has been raised in the market investigation in regard to these links.

(785) In the Article 6(1)(c) Decision, the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement as a result of possible vertical input foreclosure effects in relation to access to medical oxygen supplied in bulk and cylinders belonging to markets where the merged entity would have a market share of more than 30% in the upstream markets (regardless of the increment brought by Praxair), i.e. the markets for medical oxygen identified in Table 36, Table 37 and Table 38. In the second phase investigation, the Commission did not find compelling evidence pointing to a material change of the incentives to foreclose of the merged entity. Importantly, the Commission notes that the Transaction does not materially alter the degree of vertical integration of the Notifying Parties which already today both produce medical oxygen and sell respiratory homecare services (in particular GOX and LOX). Thus, the Commission considers that the Transaction would not significantly

impede effective competition as a result of the vertical non-coordinated effects stemming from the links identified in recital (783).

(786) In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the non-coordinated horizontal effects of the Transaction in relation to medical gases would also exclude the possibility that the Transaction would lead to vertical effects in the downstream markets. Indeed, those commitments would fully remove the overlap between the Notifying Parties' activities in medical gases in the relevant bulk and cylinder markets.

*8.3.5. Overall conclusion*

(787) For the reasons set out in Section 8.3.2, the Commission's assessment is that the Transaction would significantly impede effective competition as a result of horizontal non-coordinated effects in:

(a) the bulk markets for the supply of: medical nitrogen in Hungary, Germany, Italy, Norway, Portugal, Spain and Sweden; medical nitrous oxide in Spain; and medical oxygen in the Czech Republic, Germany, Hungary, Portugal, Romania, Slovakia and Spain;

(b) the cylinder markets for the supply of: medical argon in Spain and Portugal; medical carbon dioxide in the Czech Republic, Denmark, Germany, Hungary, Italy, Norway, Portugal, Slovakia, Spain and Sweden; medical nitric oxide in Germany, Italy, Norway and Spain; medical nitrogen in the Czech Republic, Denmark, Germany, Hungary, Norway, Portugal, Slovakia and Spain; medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia and Sweden; medical oxygen in Austria, the Czech Republic, Denmark, Germany, Italy, Norway, Portugal, Romania, Slovakia, Spain and Sweden.

(788) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[851] and, at least, to a removal of a significant competitive constraint on all the other markets.[852]

## 8.4. Noble gases and noble gas mixtures

*8.4.1. Market structure and competitive parameters*

8.4.1.1. Market shares and concentration levels

(789) Table 39 shows the Notifying Parties' 2016 market shares based on **sales in value and volume**[853], as well as the concentration levels, in each of the horizontally

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851 That is, with respect to bulk, the markets for the supply of medical nitrogen in Hungary, Norway, and Sweden; medical oxygen in the Czech Republic, Hungary, Romania, and Slovakia, where the combined market shares of the Notifying Parties are above 50%. With respect to cylinders, the markets for the supply of medical carbon dioxide in the Czech Republic, Hungary, Norway, and Sweden; medical nitric oxide in Norway and Spain; medical nitrogen in the Czech Republic, Hungary, Norway, and Slovakia; medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia, and Sweden; medical oxygen in the Czech Republic, Norway, Romania, Slovakia, and Sweden where the merged entity will hold a market share above 50%.

852 The only exceptions to this relate to the affected markets for the cylinder supply of medical nitrous oxide in Italy and Spain.

853 With the exception of noble gas mixtures, for which the Notifying Parties could not provide reliable data in volume.

affected markets for noble gases and noble gas mixtures identified in Section 8.1.1 in the EEA.

(790) Further detailed market share data, based on sales in value and volume, including information on the Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms integral part of this Decision.

Table 39: Market shares for cylinder supply of noble gases and noble gas mixtures in the EEA (2016)[854]

| | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|
| **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Krypton | [20-30]% | [5-10]% | [30-40]% | [2500-3000] | [2500-3000] | [300-400] |
| Neon | [20-30]% | [5-10]% | [20-30]% | [1000-1500] | [1000-1500] | [100-200] |
| Xenon | [10-20]% | [5-10]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| Brominated compound gas mixtures | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |
| Fluorine noble gas mixtures | [50-60]% | [0-5]% | [50-60]% | [3000-3500] | [3000-3500] | [0-100] |
| Hydrogen chloride noble gas mixtures[855] | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |
| Inert noble gas mixtures | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | VOLUME | | | HHI | | |
| **Product** | Linde | Praxair | Comb. | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Krypton | [20-30]% | [0-5]% | [30-40]% | [2500-3000] | [2500-3000] | [200-300] |
| Neon | [20-30]% | [0-5]% | [20-30]% | [1000-1500] | [1000-1500] | [0-100] |
| Xenon | [10-20]% | [5-10]% | [10-20]% | [2000-2500] | [2000-2500] | [100-200] |
| Brominated compound gas mixtures | NA | NA | NA | NA | NA | NA |
| Fluorine noble gas mixtures | NA | NA | NA | NA | NA | NA |
| Hydrogen chloride noble gas mixtures | NA | NA | NA | NA | NA | NA |

854 The Notifying Parties have provided their competitors' market shares in ranges. For the purposes of the calculation of the HHI, the mean value (within a given interval) has been considered. It should be noted that the market shares of all players active on the markets concerned do not generally sum up to 100%.

855 While Praxair did not enjoy sales of hydrogen chloride noble gas mixtures in the period 2014-2016, it did so in 2017. Therefore, while no overlap (and thus no affected market) would arise in the period 2014-2016, an overlap between the Notifying Parties' activities, resulting in an affected market, would arise in 2017. In particular, the Notifying Parties submit that in 2017, in the EEA, Linde had a market share of [60-70]% and Praxair of [10-20]%, resulting in a combined market share of [70-80]% (in value). While the HHI pre-Transaction amounts to [4500-5000], post-Transaction it reaches [6500-7000], with an increment of [1500-2000] points (Notifying Parties' reply to RFI 44, question 1 and Annex 1).

| Product | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|
| | Linde | Praxair | Comb. | HHI PRE | HHI POST | Δ HHI |
| Inert noble gas mixtures | NA | NA | NA | NA | NA | NA |

*Source: Commission's compilation based on Annex Q28.1 to RFI 48*

(791) In relation to pure noble gases (krypton, neon and xenon) in the EEA, post-Transaction the merged entity will have a combined market share in value between [20-30]% and [30-40]%, with an increment of at least about [5-10]%. Even though the HHI delta is not always above 250, the HHI post-Transaction will be well above 2 000 in relation to krypton and xenon, which indicates that the markets will be highly concentrated. According to the data submitted by the Notifying Parties, the main competitors active on these markets which hold a market share of more than [5-10]% are: for all three pure noble gases, Air Liquide and Aerogas, and, only for neon, also Messer, Cryoin, and Ingas. Currently, Air Liquide is the market leader on the markets for krypton and xenon (with a market share in value of about [40-50]%), while Air Liquide and Linde enjoy a comparable position on the market for neon (market share in value around [20-30]% each). Post-Transaction, the merged entity will become the market leader on the market for neon and will be the second strongest player on the markets for krypton and xenon, following Air Liquide.

(792) In relation to gas mixtures which contain noble gases (that is to say, brominated compound gas mixtures, fluorine noble gas mixtures, hydrogen chloride noble gas mixtures, and inert noble gas mixtures) in the EEA, the Transaction will strengthen Linde's position, which is already either very strong or dominant, depending on the market concerned. In relation to fluorine noble gas mixtures and inert noble gas mixtures, the merged entity will have a combined market share in value of about [50-60]%, while it will reach over [70-80]% for brominated compound gas mixtures and hydrogen chloride noble gas mixtures.[856] Despite the relatively modest HHI delta, post-Transaction, in all these markets, the HHI levels will be very high, ranging between [3000-3500] and over [5000-5500]. According to the data submitted by the Notifying Parties, the main competitors active on these markets which hold a market share of more than [5-10]% are Air Liquide (for all noble gas mixtures) and Nova Gas (for fluorine, hydrogen chloride, and inert noble gas mixtures).

8.4.1.2. Competitive parameters and general market conditions

(793) As briefly discussed in Section 7.3.1, the **supply chain** of the markets for noble gases and noble gas mixtures consists of four main steps: generation of the crude noble gas in large ASUs, purification of the generated crude noble gas in a separate facility, transfilling of the purified gas into cylinders, and blending (for noble gas mixtures only). Suppliers of noble gases and mixtures may be active at different levels of the supply chain.

(794) The generation of crude noble gases is intrinsically linked to the production of industrial gases given that the same assets (that is to say, ASUs, provided that these have an adequate size and dedicated equipment) are used to produce noble gases. Krypton, xenon and neon are contained in the air in particularly low concentration levels. Noble gas producers collect crude gases as by-products when processing large volumes of air in ASUs, which are used primarily for the production of atmospheric gases such as oxygen and nitrogen. They first separate air into nitrogen, oxygen and

856 In relation to hydrogen chloride noble gas mixtures in 2017, see footnote 855.

argon in the ASU's main column, and then transfer nitrogen and oxygen to dedicated rare-gas columns to separate noble gases.[857] In order to extract noble gases, an ASU needs to be equipped with a dedicated column to produce neon, and separately a dedicated column to produce both krypton and xenon. The gases are then purified in separate facilities. Krypton and xenon are typically purified together; they are separated into distinct gases in a subsequent step.[858] Due to their concentration levels in the air, the typical ratio of xenon to krypton produced is usually approximately 1:8.[859] As explained in Section 7.3.2, the supply chain of noble gases has a global dimension; once a gas is generated, it can travel long distances in order to be further processed and/or sold to customers.

(795) An important characteristic of the markets concerned, particularly of xenon and neon (and the mixtures containing such gases), is that **supply and demand for these products are very volatile**. In the recent past, these markets have been subject to severe shortages leading to significant price increases both at EEA and global levels. In fact, the vast majority of customers responding to the second phase market investigation indicated that they experienced a shortage in the markets for noble gases and mixtures in the past five years, in particular regarding xenon and neon.[860] Significant shortages in these markets occurred between 2014 and 2016, leading to "*skyrocketing pricing",*[861] with price increases up to 100 times for customers in the case of neon.[862] These shortages were mainly caused by sharp increases in demand and by the exacerbation of a political conflict between Russia and Ukraine (where a relevant part of the generation and purification capacity for these gases is located). While competitors explained that currently the situation on the market for neon is more stable, the supply of xenon remains tight.[863] In addition, the demand for noble gases, in particular for neon and xenon, is expected to increase in the near future due to their use in growing technologies.[864]

(796) Customers responding to the market investigation rated, on average, **the level of competitiveness** of the markets for the cylinders supply of noble gases and noble gas mixtures in the EEA at about 2.8 on a scale of 5 points. In particular, a lower level of

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857 Krypton and xenon are extracted from liquid oxygen while neon is extracted from the nitrogen process stream (Form CO, Chapter C, Section 6, paragraph 650).

858 Form CO, Chapter C, Section 6, paragraph 650.

859 Annex 62 to Form CO, paragraph 12.

860 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 11.

861 […]'s and […]'s responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 11, ID 5822 and ID 5306, respectively.

862 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 9, ID 5990.

863 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 10, ID 6230.

864 Independent reports mention that, while it is difficult to predict demand in the specialty (rare) gas markets, there has been significant growth in the past, which is expected to continue in the next few years. For example, […] ID 4760-534: "[…]." This is also confirmed by the Notifying Parties' internal documents. For example, Praxair's internal presentation […] ID 4598-19343. […] Customers responding to the second phase investigation also confirmed expecting an increase in demand. Notably, agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 10, ID 5990: *"[…] expects the demand for neon to greatly increase in the near future, due to the increased demand for many end products in which this gas is used, such as TV screens"*; and non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 7, ID 6233: *"As regards xenon, it stressed that this gas is going to become even more critical in the future due to an increased use of technologies relying on this gas, for example in the fields of etching, 3D lithography, OneWeb satellite project, lighting etc. As a result, its demand is expected to grow."*

competitiveness is perceived in relation to the markets for neon and xenon, which, as explained above, have been subject to shortages and price increases.[865] Although the majority of respondents indicated that, at present, there are a few competitors on the market but in sufficient number to elicit competitive offers, one third of the respondents actually considered that, already pre-Transaction, there is limited competition in the market, which means that the offers they receive are either not very competitive or not competitive at all.[866]

(797) In terms of **parameters of competition**, customers, on average, consider supply security as the most important driving factor in the selection of their suppliers, followed by blend precision and accuracy (for mixtures), timely deliveries, and price.[867]

*8.4.2. Horizontal non-coordinated effects*

(798) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive horizontal non-coordinated effects in the affected markets for noble gases and noble gas mixtures identified in Section 8.4.1.

8.4.2.1. Notifying Parties' view

(799) In the Form CO, the Notifying Parties explain that suppliers of pure noble gases and noble gas mixtures include several companies that are active to varying degrees at some or all levels of the noble gases supply chain, as well as specialised distributors that source purified noble gases for reselling or mixing. In particular, according to the Notifying Parties, the competitive landscape of the markets for the supply of noble gases and noble gas mixtures is populated by four main types of companies: (i) those that are fully vertically integrated (that is to say, active in the generation, purification, distribution and mixing of noble gases), which may supplement their own crude production with purchases from third parties (notably, Praxair, Linde, Air Liquide, Messer); (ii) those that are active in the generation and distribution of noble gases, but are not engaged in the purification stage, for which they rely on third parties via tolling agreements (such as Air Products); (iii) those that are active in the purification and distribution to end-customers, but are not engaged in the upstream generation of crude noble gases (such as Ingas and Cryoin[868]); and (iv) those that act as mere distributors who may either source crude gases from producers and have them purified by third parties or source purified gases directly for reselling (such as Nova Gas, Aerogas and Wonik).[869] Notably, the Notifying Parties argue that suppliers do not need to own a purification facility to supply end users with purified noble gases because tolling agreements are common in the industry and owners of purification facilities have plenty of excess capacity to purify noble gases for other suppliers.[870]

(800) Overall, the Notifying Parties argue that the Transaction would not impede effective competition in the markets for noble gases and mixtures in the EEA.[871] In relation to the markets for pure noble gases (krypton, xenon, and neon) the Notifying Parties

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865 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 31.
866 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 46.
867 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 32.
868 Cryoin purifies xenon and krypton, but not neon (Form CO, Chapter C, Section 6, Table 95; and Notifying Parties' reply to RFI 48, question 33).
869 Form CO, Chapter C, Section 6, paragraph 759 and Notifying Parties' reply to RFI48, question 33.
870 Form CO, Chapter C, Section 6, paragraphs 656 and 669.
871 Form CO, Chapter C, Section 6, paragraph 797.

explain that post-Transaction the market shares of the merged entity would be moderate and that other alternative suppliers will remain active on the market.[872]

(801) The Notifying Parties further argue that their EEA production capacity of crude noble gases is not relevant for the assessment of the Transaction given that products are traded globally and, thus, having internal manufacturing capabilities at local level is not essential to compete.[873]

(802) The Notifying Parties also submit that the markets for the supply of noble gases are characterised by the presence of many spot suppliers and regional / domestic providers who have expanded their reach and/or have recently entered the global competitive landscape, also by adding new capacity. Furthermore, a number of current suppliers have enough capacity to increase production in case of a price increase.[874]

(803) In relation to brominated compound gas mixtures and fluorine noble gas mixtures, the Notifying Parties argue that the increment brought by the Transaction would be very small (in the order of less than [0-5]% at EEA level).[875] In relation to hydrogen chloride noble gas mixtures and inert noble gas mixtures, the Notifying Parties explain that the increment brought by the Transaction would be moderate and that many alternative sources of supply will remain post-Transaction.[876] In addition, blending inert mixtures is relatively easy and inexpensive, therefore barriers to entry are low.[877] As regards closeness of competition, the Notifying Parties argue that they are not each other's closest competitors for noble gas mixtures, since they focus on different sets of customers.[878]

(804) Finally, the Notifying Parties submit that customers have significant buyer power due to their size and the rather moderate total market sizes of the gases concerned.[879] In relation to pure noble gases, switching supplier is relatively easy since the main suppliers are capable of supplying the same quality of gas.[880]

(805) In any event, the Notifying Parties submit that the divestment, as envisaged in the Form CO, would have largely removed the overlap between their activities in the EEA concerning the supply of noble gases and noble gas mixtures.[881] In the Thematic Papers, the Notifying Parties did not bring forward any additional argument as to whether the Transaction would impede effective competition in the markets for the supply of noble gases and noble gas mixtures in the EEA and did not contest the Commission's findings in the Article 6(1)(c) Decision.

(806) In the Reply to the Statement of Objections the Notifying Parties put forward arguments to corroborate the following main points: (i) the market investigation does not fully support the conclusion that there is limited competition in the market, (ii) the Commission's assessment in the Statement of Objections overstates Praxair's market strength, (iii) vertical integration is not necessary to be an effective

872 Form CO, Chapter C, Section 6, paragraphs 798, 802, 806.
873 Form CO, Chapter C, Section 6, paragraphs 799, 803, 807.
874 Form CO, Chapter C, Section 6, paragraphs 766, 771, 781.
875 Form CO, Chapter C, Section 6, paragraphs 809 and 810.
876 Form CO, Chapter C, Section 6, paragraph 813; and Notifying Parties' reply to RFI44, question 1.
877 Form CO, Chapter C, Section 6, paragraph 794.
878 Form CO, Chapter C, Section 6, paragraph 792.
879 Form CO, Chapter C, Section 6, paragraph 800.
880 Form CO, Chapter C, Section 6, paragraph 766.
881 Form CO, Chapter C, Section 6, paragraph 755.

competitor, (iv) Praxair is not an important competitive force or Linde's closest competitor in the market for fluorine noble gas mixtures, (v) a broad portfolio of gases is not required to be an effective competitor on the market, (vi) market entry/expansion and switching are easier than what alleged in the Commission's assessment in the Statement of Objections, and (vii) most customers expressed a positive or neutral opinion on the impact of the Transaction.

8.4.2.2. Results of the market investigation and Commission's assessment

(807) In the following, the Commission analyses the likely horizontal non-coordinated effects of the Transaction in the cylinders markets for the supply of noble gases and noble gas mixtures in the EEA. First, the Commission assesses the competitive constraints exerted by the Notifying Parties on each other and their competitors pre-Transaction, which would be removed by the Transaction (Section 8.4.2.2.a). Second, the Commission assesses the other competitive constraints in the markets for the supply of noble gases and noble gas mixtures in cylinders, which will remain post-Transaction, and their likelihood to off-set the anticompetitive effects which may result from the Transaction (Section 8.4.2.2.b). Finally, the Commission undertakes an overall assessment of likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.4.2.2.c). The Commission's findings are summarised in the conclusion (Section 8.4.2.2.d).

**a. Assessment of the competitive constraint exercised by the Notifying Parties**

(808) As explained in this Section, the Notifying Parties appear to exert important competitive constraints on each other, as well as on the remaining competitors in the markets for the cylinder supply of noble gases and noble gas mixtures in the EEA. This is not only so in light of their market shares and the degree of closeness of competition (between each other and vis-à-vis other competitors – in particular, Air Liquide). This follows also from an analysis of the Notifying Parties' market performance with respect to the main parameters of competition and their high degree of vertical integration and broad gas portfolio. As a result of the Transaction, such important competitive constraints would be eliminated.

i. Market shares

(809) As illustrated in Table 39, in terms of sales in the EEA, the merged entity will have a strong position on the markets for the supply of pure noble gases (being the second largest player for krypton and xenon, and the market leader for neon), which present a significant degree of concentration. The merged entity will also have a very strong position (even dominant in some instances) on the markets for the supply of noble gas mixtures, which are very concentrated. The oligopoly structure of these markets is also recognised by the Notifying Parties' in their internal documents. For example, in a presentation of Linde concerning helium and noble gases, it is mentioned that "[…]."[882]

(810) Even though the increment brought by the Transaction is limited in some affected markets, the Commission notes that the Notifying Parties' market shares may not fully reflect their strength on the market.

(811) First, the market investigation indicated that, while the increment brought by the Transaction is relatively modest in the EEA due to Praxair's moderate market shares, Praxair is actually a very credible supplier, competing in the same league as the other

882 Linde's presentation, […] [ID 4834-38183].

major operators. The majority of EEA customers responding to the market investigation identified Air Liquide, Linde and Praxair as credible suppliers for noble gases and noble gas mixtures in the region. A number of customers also mentioned Messer and, to a lesser extent, Air Products as additional sources of supply.[883] Only a very limited number of customers mentioned other gas companies and pure traders as credible suppliers. Furthermore, no respondents have identified Asian suppliers (for example from China or Korea) as credible sources of supply in the EEA.[884]

(812) Second, the Notifying Parties' market shares in terms of sales do not fully reflect their strength in terms of generation capabilities. In this respect, the Commission considers that although the markets for the supply of noble gases and noble gas mixtures are assessed at EEA level for the purpose of the assessment of the present Transaction (see Section 7.3.2), in light of the global dimension of the supply chain of noble gases, the generation capabilities of the Notifying Parties should be analysed both at EEA and global levels. Based on the data submitted by the Notifying Parties, Linde enjoys worldwide generation capacity shares for krypton, xenon and neon, respectively, of [10-20]%, [10-20]%, and [20-30]%, while Praxair has capacity shares of [10-20]%, [10-20]%, and [10-20]%, which amounts to combined worldwide capacity shares of [30-40]% for krypton, [20-30]% for xenon, and [40-50]% for neon. In the EEA, Linde has capacity shares for krypton, xenon and neon, respectively, of [50-60]%, [50-60]% and [80-90]%, and Praxair of [5-10]%, [5-10]% and [10-20]%. This amounts to combined capacity shares, in the EEA, of [60-70]% for krypton, [50-60]% for xenon, and [90-100]% for neon.[885] [886] Therefore, the

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883 In this respect, in the Reply to the Statement of Objections, the Notifying Parties argued that 50% of the respondents identified Messer as a credible supplier in the EEA since they were mentioned by eight customers, out of sixteen respondents. When analysing the replies to the market investigation, the Notifying Parties considered that […] mentioned Messer as a credible supplier, equally to Linde, Air Liquide and Praxair. In […]'s reply to question 35 of RFI Q26 to customers of noble gases and noble gas mixtures, they stated that *"The three main players are Linde, Air Liquide, Praxair. In addition, there are also some smaller players: Air Products, Chromium (Russland) and Messer."* [ID 4217] The Commission notes that in other parts of their reply to the market investigation, […]clearly explained that for them Air Liquide, Linde and Praxair constitute the viable alternatives present on the market and that the merger would reduce the number of credible competitors from three to two. For example, in their reply to question 47 of RFI Q26 to customers of noble gases and noble gas mixtures, they stated that "*there are currently only three big players in the xenon and krypton gas markets: Air Liquide, Linde and Praxair. Therefore, the merger would constitute a 3-to-2 merger. Indeed, Air Products is a significantly smaller player and it is unclear if they could really become a realistic alternative option in the EEA."* [ID 4217] In this circumstance, […] has not even mentioned Messer as a credible alternative. In light of these elements, the Commission considers that counting Messer as a credible supplier for […], in the same way as Linde, Praxair and Air Liquide, would misrepresent their views of the market. Therefore, the Commission considers that although a number of customers (seven out of sixteen) did mention Messer as a credible supplier in the EEA, these do not represent neither the majority nor half of the respondents.

884 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 35.

885 Annexes 66, 71 and 78 to the Form CO. The Notifying Parties' estimates are based on ASU ownership using publically available data on (i) actual production for krypton and xenon, supplemented with the Notifying Parties' own actual and expected production capacity, and (ii) nameplate production capacity for neon, for 2017. The Commission notes that (i) while the Notifying Parties have attributed to Messer a global production capacity share for neon of about [0-5]% (Annex 71 to Form CO), the second phase investigation revealed that Messer has no generation capabilities for neon at worldwide level (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 8, ID 6240). While this does not materially affect the Notifying Parties' shares in terms of capacity, it indicates that Messer is not a fully vertically integrated player for neon; and (ii) while the Notifying Parties have not attributed any generation capacity to Messer, in terms of facility ownership, in relation to krypton and xenon, the second phase investigation revealed that Messer has some generation capacity for these two

merged entity would possess (i) [a large share] of the generation capacity of noble gases globally, and (ii) the […] majority of the capacity of noble gases in the EEA. Furthermore, the Notifying Parties, together with Air Liquide, are the only Tier 1 players which possess relevant generation capacities for noble gases, which may be sold either in pure form or in mixtures. This shows that the Notifying Parties' strength on the market and thus the effects brought by the Transaction may be more significant than what market shares based on sales would indicate.

(813) Third, the evidence in the Commission's file related to closeness of competition between the Notifying Parties, as it will be explained in Section 8.4.2.2.a.ii below, strongly indicates that Praxair exerts on Linde a much more relevant competitive constraint than what its market shares would suggest.

(814) Therefore, the Commission considers that the high combined sales market shares of the Notifying Parties in conjunction with (i) the significant concentration levels of the affected markets[887] and (ii) the evidence in the Commission's file suggesting that such sales market shares likely underestimate the Notifying Parties' competitive strength on the markets concerned, indicate that a significant increase of market power of the merged entity is likely to occur post-Transaction.

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products in China (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 6, ID 6240). However, Messer's capacities appear to be relatively limited, such that the Notifying Parties' global capacity shares are unlikely to be overestimated to any significant extent. Notably, an independent third party report providing capacity shares on the markets for noble gases (in 2017) shows that Messer's global capacity shares for the generation of krypton and xenon amount to about [0-5]% ([…] [ID 4760-534]). In addition, based on the data submitted by the Notifying Parties, Messer actually has agreements with Chinese steel producers for the sourcing of crude krypton and xenon (Annexe 63 to Form CO).

886 The differences between sales shares and capacity shares appear to be mainly due to the fact that i) the generation capacity for crude noble gases (of the Notifying Parties and their competitors) may not be utilised in full, ii) part of the crude noble gases are used as raw materials to supply noble gas mixtures, rather than being sold in pure form. Therefore, part of the Notifying Parties' capacity for the generation of crude noble gases may not be reflected in their sales shares of purified noble gases. In relation to the EEA, the difference is particularly significant also in view of the fact that a relevant part of noble gases sold in the EEA are actually generated outside the region and are then imported into the EEA either in crude or pure form. Moreover, it appears that the Notifying Parties do not engage in any significant sales of noble gases to their competitors. As Westfalen explained in the context of the second phase investigation: *"it is very difficult to source noble gases directly from Tier 1 players. This is because Tier1 players have no advantage in selling these products to companies like Westfalen when competing in the same geographic area; these types of products are consistently scarce and can be easily sold by Tier 1 players directly to end customers, given their broad market presence. Indeed, Westfalen does not source any noble gas from companies like Praxair and Linde."* (agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 19, ID 6108). This is in line with the Notifying Parties' submission, according to which their activities in the various steps of the noble gases supply chain, including the generation and the purification of crude noble gases, are predominantly captive (Form CO, Section 6, Chapter C, paragraph 711).

887 In particular, in relation to krypton, xenon, brominated compound gas mixtures, fluorine noble gas mixtures, hydrogen chloride noble gas mixtures, and inert noble gas mixtures. In the Reply to the Statement of Objections the Notifying Parties noted that, with regard to the EEA markets for brominated compound gas mixtures and fluorine noble gas mixtures, although the HHI post-Transaction exceeds 2 000, the HHI delta is below 150. In this respect, the Commission notes that Linde has market shares of more than 50% pre-Transaction on the two markets concerned, where concentration levels are well above [3000-3500]in relation to fluorine noble gas mixtures and well above [5000-5500]in relation to brominated compound gas mixtures. Therefore, in this context, even though the HHI delta is modest, the concentration brought about by the Transaction may still significantly reduce the existing competition on the market (see Horizontal Merger Guidelines, paragraph 20 (f)).

ii. Closeness of competition

(815) As regards closeness of competition, the Commission considers that, contrary to their claims, the Notifying Parties are indeed close competitors.

(816) As it will be explained in more detail in this Section (at part iii), Tier 1 players (in particular, the Notifying Parties and Air Liquide) are the top suppliers for noble gases and noble gas mixtures, able to credibly and effectively compete on the markets concerned. This is mainly in light of the fact that (i) they possess, both at global and EEA levels, very significant capacities for the generation of crude noble gases and, to a certain extent, also purification capacities, which allow them to guarantee customers a more secure supply chain and to reduce costs; and (ii) they are able to provide customers with a broad portfolio of gases, both in terms of different types of noble gases and mixtures, and other types of gases (such as ESGs, industrial gases, and helium), at competitive terms. These characteristics of the Notifying Parties make their offers particularly competitive and attractive to customers, which clearly indicates that they closely compete on the markets concerned.

(817) The fact that the Notifying Parties closely compete with each other was confirmed by the market investigation. While customers responding to the market investigation identified Air Liquide, on average, as the closest competitor to Linde in the EEA, they also indicated that Praxair is closely competing with Linde, followed at distance by Messer (and, even more remotely, by Air Products). Importantly, customers identified Linde, on average, as the closest competitor to Praxair, followed by Air Liquide and, at distance, by Messer and Air Products. The vast majority of customers indicated that their answer would not differ depending on the gas concerned, therefore these results can be applied to all noble gases and noble gas mixtures which constitute affected markets.[888] Closeness of competition between Praxair and Linde has also been confirmed by competitors responding to the market investigation.[889]

(818) In relation to fluorine noble gas mixtures, in the Reply to the Statement of Objections, the Notifying Parties argued that Praxair's sales in the EEA are limited and related to the sales of test cylinder to one particular customer. In this respect, the Commission notes that, as explained in Section 8.4.2.2.i, the amount of current sales appears to underestimate Praxair's position in the EEA. In fact, customers of fluorine noble gas mixtures consider Praxair a credible supplier in the region, closing competing with Linde.[890] Although Nova Gas, whose main activities are in the USA and Asia[891], explained that Praxair is currently a relatively minor player, compared to Linde that dominates the EEA market[892], other competitors, such as Air Products, actually stated that, in relation to gases used in the laser industry, *"the manufacturing process is complex, with very few facilities at global level"* and stated that *"competition in the markets for laser mixtures is limited, with Linde and Praxair being the two main suppliers worldwide."*[893]

(819) Therefore, the Commission considers that the Notifying Parties are close competitors to a significant degree so that the Transaction could potentially give rise to

888 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 41 and 42.

889 Responses to RFI Q28 to suppliers of specialty gases, questions 31 and 32.

890 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 35 and 41.

891 Nova Gas's responses to RFI Q28 to suppliers of specialty gases, question 1 [ID 1886].

892 Nova Gas's responses to RFI Q28 to suppliers of specialty gases, question 3 [ID 1886].

893 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 9, ID 6198.

significant price effects by removing the constraint pre-Transaction exerted by the Notifying Parties on each other and on the market. In particular, in light of the degree of closeness of competition between the Notifying Parties and Air Liquide, the Commission notes that the Transaction would reduce the number of main suppliers from three to two in the EEA.

iii. Specific competitive constraint exerted by the Notifying Parties

(820) The Commission considers that the Notifying Parties appear to exert important competitive constraints on each other, as well as on the remaining competitors in the markets for the cylinders supply of noble gases and noble gas mixtures in the EEA. In addition to the above, this also results from their market performance with respect to the main parameters of competition, and their similarity in terms of vertical integration and portfolio offering. As a result of the Transaction, such important competitive constraint would be eliminated.

(821) When looking at the **most important parameters of competition** discussed in Section 8.4.1.2, customers responding to the market investigation identified, on average, Air Liquide, Linde and Praxair as the most competitive suppliers in terms of security of supply, timely deliveries and blend precision and accuracy (for mixtures). In terms of timely deliveries, Linde and Praxair are even perceived as more competitive, on average, than Air Liquide.[894] In addition, Linde, Air Liquide and Praxair are also rated as the most aggressive companies present on the market in terms of pricing.[895] Since the vast majority of customers indicated that their answers would not differ depending on the gas concerned, these results can be applied to all noble gases and noble gas mixtures that constitute affected markets.[896]

(822) The Commission further notes that the Notifying Parties have certain characteristics that allow them to credibly compete on the market and to exert important competitive pressure on each other and on other market participants, where present.

(823) First, as regards **vertical integration**, the Commission notes that the Notifying Parties are among the very few industrial gas suppliers (globally and in the EEA) which are active throughout most of the supply chain of noble gases and noble gas mixtures. At global level, both Praxair and Linde are active in all stages of the supply chain, notably the generation, purification, transfilling and blending of noble gases and noble gas mixtures. In the EEA, while Linde is fully vertically integrated,[897] Praxair […].[898] In relation to the generation stage, in particular, the large production capacities of the Notifying Parties (as also explained in Section 8.4.2.2.a.i) mostly derive from the fact that noble gases are produced as by-products of very large ASUs, which both of them operate in connection with their activities in the markets for the supply of industrial gases.

(824) The Commission does not claim that vertical integration is necessary to be an effective competitor for noble gases and noble gas mixtures. However, contrary to the Notifying Parties' claims, their vertical integration at the level of crude gas

894 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 37.

895 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 36.

896 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 36 and 37.

897 In the EEA, Linde […] (Form CO, Chapter C, Section 6, footnote 418).

898 The Notifying Parties submit that Praxair has the capacity to produce neon in an ASU located in […]. When Praxair used to produce neon in […], this was purified at Praxair's facilities in […]. The Notifying Parties further submit that Praxair, should market conditions allow such a choice, could easily […] in a very short time frame and at very low costs (Form CO, Chapter C, Section 6, paragraph 670).

generation represents a very important competitive advantage. This advantage clearly distinguishes Praxair and Linde as major players on the markets concerned. This was confirmed by customers responding to the market investigation, that have indicated three vertically integrated companies, that is to say Praxair, Linde and Air Liquide, as the main credible suppliers active on the market.[899] In particular, possessing internal manufacturing capabilities allows companies to reduce costs and to guarantee to customers a more secure and reliable supply chain, having control of crude sources.[900] This is particularly relevant also in light of customers' indications that security of supply is the most important parameter of competition that they consider when selecting a supplier.[901] One customer explained this as follows in the context of the second phase investigation:

> *"In light of Praxair's and Linde's internal manufacturing capabilities,* […] *believes that being a customer of these companies is very advantageous in terms of security of supply, especially in view of potential shortages occurring on the market due to external factors. These capabilities clearly distinguish Praxair and Linde as key suppliers on the market, differently from other players which are mainly active as traders."*[902]

(825) This is also confirmed by the Notifying Parties' competitors in the context of the second phase investigation. For example, Messer explained that "*[i]n order to be able to successfully compete on the market it is paramount to have in-house production capabilities, which is only possible in connection with the operation of very large ASUs."*[903] [904]

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899 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 35.

900 For example, in the context of the second phase investigation, Westfalen explained that *"there are only a few Air Separation Units ("ASUs") that are large enough to produce noble gases (neon, krypton, xenon). Naturally, possessing this kind of ASUs represents a strong competitive advantage for market players, since companies owning these facilities do not have to pay a mark-up for the sourcing of crude gases."* (agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 18, ID 6108).

901 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 32.

902 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 8, ID 6233.

903 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 11, ID 6230.

904 In their Reply to the Statement of Objections, the Notifying Parties note that while Messer does not produce nor purify neon in-house (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 8, ID 6230), it is mentioned as a credible supplier by customers, with the same level of credibility of Praxair. In this respect, the Commission notes that, as explained in footnote 883, Praxair was mentioned as a credible supplier by nine respondents, while Messer was mentioned by seven respondents (out of a total of sixteen respondents that provided non-confidential replies to question 35 of RFI Q26 to customers of noble gases and noble gas mixtures). In addition, when looking at the most important parameters of competition, as discussed in Section 8.4.1.2, customers rated Praxair at higher levels than Messer, indicating that for them the former represents a more credible supplier (responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 37). Finally, as indicated in recital (825), Messer itself stated that having internal production capabilities for noble gases is of paramount importance to be able to successfully compete on the market. The Notifying Parties also note that Nova Gas was mentioned in the context of the market investigation as a credible supplier of noble gas mixtures by one competitor (Messer) and one customer ([…]), despite having only blending capabilities. In this respect, the Commission notes that this is not in contradiction with its reasoning: while having internal generation capabilities may not be strictly necessary to enjoy some sales on the market, it clearly represents an important competitive advantage, in view of all the arguments explained in Section 8.4.2.2.iii.

(826) The Notifying Parties' position is also particularly advantageous since a relevant part of the sources that produce crude noble gases are either located in regions which have been characterised by geopolitical risks in recent years (notably, Ukraine and Russia)[905] and are thus perceived as more risky by customers[906] or strongly depend on other products, whose production may fluctuate over time (notably, steel in China). This is confirmed by the Notifying Parties' internal documents. For example, in a presentation discussing noble gas markets, Praxair explicitly mentions as a strength of its "[…]" the fact of "[…]"[907] In addition, in light of the volatility of demand in the markets concerned, having in-house production capabilities allow suppliers to better react to shortages, being less exposed to dramatic increases of wholesale prices for crude gases.[908]

(827) In addition to this, while the market investigation confirmed the Notifying Parties' views that the production of noble gases occurs on a worldwide basis, and thus having local production capabilities is not strictly necessary to compete on the market[909] local presence still appears to constitute a further competitive advantage. For example, Westfalen, operating on the market as a trader, explained that *"Linde and Praxair have a number of ASUs in Europe able to produce noble gases, which give them a very strong competitive advantage on the market."*[910]As mentioned in Section 8.4.2.2.a.i, in the EEA, Praxair and Linde hold [a majority] of the production capacity for noble gases.

(828) The considerations expressed above do not imply that in order to successfully compete on the market, suppliers need to be able to source 100% of their demand for crude noble gases internally.[911] In fact, according to the information submitted by the Notifying Parties (and confirmed in the context of the second phase investigation), Praxair, Linde and Air Liquide do purchase a portion of their demand for crude gases from third parties.[912] However, based on the evidence provided in this Section, it

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905 According to the data submitted by the Notifying Parties', crude noble gas producers located in Russia and Ukraine (excluding one facility of Air Liquide located in Russia) hold about [20-30]% of the global production capacity for krypton, about [20-30]% for xenon, and about [30-40]% for neon (Annexes 63, 66, 69 and 71 to Form CO).

906 For example, agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 8, ID 6233: *"In […]'s perception Praxair and Linde are the two suppliers active on the markets for noble gases with the largest in-house capacities, while other competing suppliers (…) have to purchase materials from third parties and/or are heavily dependent on the volumes coming from Russia and Ukraine (…), where external factors such as political crises do play a role (and did so in the past)."*

907 Praxair's internal presentation […] [ID 4600-72661].

908 For example, Praxair, in an internal presentation, mentions that rare gas markets are "[…]." […] [ID 4600-72661].

909 For example, agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 32, ID 6402*: "the supply chain cost compare to the value of the noble gas is negligible"*; and agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 8, ID 6230: *"Messer produces and purifies krypton and xenon in-house in China, and then ships them partly to Europe."*

910 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 18, ID 6108.

911 As submitted by the Notifying Parties, the markets for noble gases and noble gas mixtures are highly volatile. Therefore, exclusive in-house sourcing would limit suppliers' ability to react to market changes (Form CO, Chapter C, Section 8, paragraph 834).

912 In particular, the Notifying Parties purchase some quantities of crude noble gases from third party suppliers (Form CO, Chapter C, Section 6, paragraphs 658 and 663 and Annex 66 to Form CO). Based on the data submitted by the Notifying Parties, competitors do the same. Thus, for example, Air Liquide purchases crude noble gases (krypton and xenon) from a third party producer. The existence of a long-

appears that being able to produce crude noble gases in-house represents a strong competitive advantage.

(829) Furthermore, while the second phase investigation partly confirmed the Notifying Parties' views that having internal purification capabilities is not strictly necessary to compete on the market,[913] it also showed that being vertically integrated also at the level of purification can represent an important competitive advantage. In fact, as it is the case for generation capacity, possessing internal purification capabilities for noble gases allows suppliers to reduce costs and to guarantee a more secure supply chain to customers, having control of such capacity. For example, Messer explained that while *"having in-house purification capabilities"* is *"not necessarily required"*, it *"may constitute a competitive advantage."* In fact, *"Messer has invested in own purification capacities in China."*[914] The same hold trues for Air Liquide that, besides having internal purification capacity for krypton and xenon, has recently invested in purification capacity for neon in China.[915] [916]

(830) In addition, while it appears that, in line with the submissions by the Notifying Parties, there is sufficient capacity in the market to meet purification demand of crude gases,[917] much of this capacity is located in Ukraine and Russia, where, as explained above, geopolitical risks may play a negative role (and did so in the past).[918] As explained by Westfalen, *"if a supplier has both internal production capacity for crude gases and internal purification capabilities, it can even eliminate the potential supply risks stemming from external factors, such as political crises in certain geographic areas."*[919]

(831) Therefore, the Notifying Parties enjoy a particularly strong competitive advantage in the markets for the supply of noble gases and noble gas mixtures, in view of their high degree of vertical integration and local presence, notably in terms of production and, to some extent as well, of purification of crude gases. The importance of such

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term agreement with a third party was confirmed by Air Liquide in the context of the second phase investigation (agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 30, ID 6402).

913 Notably, agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 30, ID 6402: *"(...) what is making the noble gas capacities is the crude production capacity and not the purification capacity"*; and agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraphs 11 and 12, ID 6230: *"(...) the bottleneck in the noble gas markets (...) is the crude gas production. In order to be able to successfully compete on the market it is paramount to have in-house production capabilities. (...) Conversely, Messer considers that having in-house noble gas purification capabilities may constitute a competitive advantage but is not necessarily required, as it is possible to outsource purification to third parties."*

914 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 12, ID 6230.

915 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 31, ID 6402: *"Air Liquide owns and operates since 2017 a crude neon purification facility in China."*

916 This is also confirmed in the Notifying Parties' internal documents. For example, in a document related to a project to […] [4834-82263], it is stated that *"*[…]*."*

917 Notably, agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 12, ID 6230: *"Messer believes that the purification capacity for noble gases present on the market is sufficient to satisfy the demand."*

918 According to the data submitted by the Notifying Parties, players located in Russia and Ukraine hold about [70-80]% of the global capacity for the separation/purification of xenon and krypton (Annexes 64 and 67 to Form CO) and about [50-60]% of the global capacity for the purification of neon (Annexes 70 and 72 to Form CO). These players are typically active only in the purification of crude gases and do not produce them.

919 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 18, ID 6108.

vertical integration is also recognised in the Notifying Parties' internal documents. For example, Praxair mentions, in a presentation related to the supply dynamics of the markets for noble gases, that the markets are driven by […] given that, among other things, it is "[…]."[920] On the other hand, Linde also considers that […][…] in the rare gas markets.[921]

(832) Second, besides vertical integration, the Commission notes that both Notifying Parties are able to exert an important competitive constraint on the markets concerned in view of their **broad products portfolio**. In fact, the vast majority of customers responding to the second phase market investigation explained that for them it is either crucial or important that their suppliers of noble gases and noble gas mixtures are able to provide them with a wide range of noble gases and mixtures.[922] The majority of respondents have also indicated that for them is either crucial or important that their suppliers of noble gases are able to provide them with industrial gases[923], while a significant number has expressed the same opinion in relation to helium (about 45% of the respondents)[924] and electronic specialty gases (about one third of the respondents).[925] [926] [927] The Notifying Parties' strong positions on the markets for the supply of these other types of gases in the EEA, as discussed in Sections 8.9, 8.2 and 8.5, thus reinforces their role as competitive forces active on the market for the supply of noble gases and mixtures.

(833) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Praxair and/or Linde is likely to deteriorate.

iv. Conclusion

(834) On the basis of the above considerations, the Commission considers that the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, which would be removed by the Transaction, in the markets for the cylinders supply of (i) krypton, (ii) xenon, (iii) neon, (iv) brominated

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920 Praxair's internal presentation, […]" [ID 4600-72661].

921 Linde's internal presentation, […] [ID 4834-75501].

922 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 12. This is broadly in line with the data submitted by the Notifying Parties. While the percentage of customers purchasing more than one product within the category of noble gases and noble gas mixtures represents a relatively […] of their total number of customers, such customers represent about […]% of the Notifying Parties' sales in the EEA (Notifying Parties' reply to RFI57, question 27).

923 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 14.

924 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 13.

925 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 15.

926 While in the Reply to the Statement of Objections the Notifying Parties note that customers indicated that for them it is either crucial or important that their supplier(s) of noble gases and noble gas mixtures are able to supply them with helium or ESGs do not represent the majority of the respondents, the Commission notes that they do represent a significant proportion of them (about 45% and 30% respectively).

927 This is broadly in line with the data submitted by the Notifying Parties, according to which a relevant proportion of their cylinder sales of noble gases and noble gas mixtures in the EEA were supplied together with other types of gases (that is to say, were supplied to the same customer irrespective of whether the gases were part of the same contract and/or were sold at the same moment in time). Notably, […] (Notifying Parties' reply to RFI57, question 26). In the Reply to the Statement of Objections the Notifying Parties argued that their reply to question 26 of RFI57 does not support the fact that a broad product portfolio gives them a competitive advantage in view of the large scope of the question. In this respect, the Commission notes that the fact that customers purchases gas from the same supplier, irrespective of whether they buy them under the same contract or at the same moment in time, is a useful indication of the relevance of portfolio effects in relation to the gas business.

compound gas mixtures, (v) fluorine noble gas mixtures, (vi) hydrogen chloride noble gas mixtures, and (vi) inert noble gas mixtures, in the EEA.

**b. Assessment of the other competitive constraints in the markets**

(835) As explained in this Section, the competitive constraints in the markets for the cylinders supply of noble gases and noble gas mixtures in the EEA, which will remain post-Transaction, are unlikely to counteract the anticompetitive effects resulting from the Transaction.

i. Other players

(836) As explained in Section 8.4.1.1, as regards the markets for the cylinders supply of krypton, xenon and neon in the EEA, post-Transaction **Air Liquide** will remain the market leader for krypton and xenon (with a market share in value and volume of about [40-50]%) and will be the second largest player for neon, following the merged entity (with a market share in value of about [20-30]%).[928] While the merged entity will have a very strong or even dominant position on the markets for the supply of noble gas mixtures, Air Liquide market shares will remain between [10-20]% and [20-30]%, depending on the mixtures concerned.

(837) In terms of production capacity for noble gases, based on the data submitted by the Notifying Parties, Air Liquide's shares will be lower than those of the merged entity. In fact, at global level, Air Liquide has a production capacity share of about [10-20]% for krypton and xenon, and of [0-5]% for neon (compared to about [30-40]% and [40-50]% of the merged entity for krypton/xenon and neon, respectively).[929] At EEA level, Air Liquide has a production capacity share of about [30-40]% for krypton and xenon and less than [10-20]% for neon (compared to about [60-70]% and [90-100]% of the merged entity for krypton/xenon and neon, respectively).[930] In particular, while having in-house production capabilities, Air Liquide seems to rely on structural purchases of noble gases from third party suppliers, at least for crude krypton and xenon, to a greater extent than the Notifying Parties.[931]

(838) On the one hand, Air Liquide will be able to keep exerting competitive pressure on the merged entity post-Transaction in light of the fact that it is considered by customers as a credible source of supply for noble gases and noble gas mixtures, closely competing with the Notifying Parties (as discussed in Sections 8.4.1.1 and 8.4.2.2.a.ii). However, on the other hand, the Notifying Parties will have much larger shares in terms of production capacity, thus enjoying an important competitive advantage vis-à-vis Air Liquide. As one customer explained in the context of the second phase investigation: *"In* […]*'s perception Praxair and Linde are the two suppliers active on the markets for noble gases with the largest in-house capacities, while other competing suppliers (such as Air Liquide … ) have to purchase materials from third parties."*[932]

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928 See Annex I.

929 Annexes 66 and 71 to Form CO.

930 Annex 78 to Form CO.

931 Annexes 66 and 68 to Form CO. While Air Liquide's capacity shares in terms of receipt of supply (that is to say, considering both its own production facilities and others' facilities, whose production is structurally allocated to it based on contractual relationships) are much higher than its shares based on pure facility ownership, this is not the case for the Notifying Parties'.

932 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 8, ID 6233.

(839) Customers in the EEA consider Air Liquide, Praxair and Linde as the main credible sources of supply. Although **Messer** and, to lesser extent, **Air Products** are mentioned as potential suppliers by a number of customers,[933] they enjoy low market shares (in the EEA, only Messer has a market share above [5-10]%, in relation to neon)[934] and compete less closely with the Notifying Parties.[935] In any event both Messer and Air Products have limited production capabilities in relation to the generation of crude noble gases[936], and thus have a strong competitive disadvantage vis-à-vis the Notifying Parties (and Air Liquide). Therefore, these players are not fully able to counteract the loss of competitive pressure derived from the Transaction.

(840) As regards **non-integrated suppliers**, contrary to the Notifying Parties' claims and as discussed in Section 8.4.2.2.a.iii, both customers and competitors recognised that having internal capabilities for the production of crude gases (and, to a certain extent, also for the purification of such crude gases) is an important competitive strength. Therefore, **refiners** such as Cryoin[937] and Ingas (who do not possess internal crude production capabilities) and **traders** such as Aerogas and Nova Gas (who possess neither production nor purification capabilities[938]), which may have market shares of more than [5-10]% in relation to the markets concerned, are not able to counteract the loss of competitive pressure derived from the Transaction. As Messer explicitly stated in relation to pure traders: *"mere resellers of noble gases are not credible competitors on the market."*[939]

(841) **Producers of crude noble gases,** such as Asian steel mills, may have internal purification capabilities, but either lack distribution assets to sell products directly to customers (for example, Handan Iron and Steel Group)[940] or are generally active at local level, and in any event outside the EEA, where they do not enjoy sales (for example, in case of Wuhan Iron and Steel, Bao Steel Group, and Capital Steel & Wire).[941] Furthermore, since they are not gas companies, they are not able to offer the broad range of different gases that customers purchasing noble gases and noble gas mixtures need for their operations. Therefore, these producers are not able to counteract the loss of competitive pressure derived from the Transaction.

(842) This is also corroborated by the Notifying Parties' internal documents. For example, when describing the *"rare gas markets"*, Praxair refers to a *"*[…]*"*[942] This clearly shows that while non-integrated players may enjoy some sales on the market, they are not able to exert the same relevant competitive pressure of vertically integrated companies, notably at the level of gas production, such as the Notifying Parties.

(843) The lack of ability of other players to counteract the loss of competitive pressure derived from the Transaction is particularly relevant in the markets concerned since,

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933 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 35.

934 See Annex I.

935 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 41 and 42.

936 Annexes 66 and 71 to Form CO and, in relation to Messer, footnote 885.

937 In relation to krypton and xenon.

938 While Aerogas is a pure reseller, Nova Gas possesses internal transfilling and mixing capabilities, outside the EEA (Notifying Parties' reply to RFI 48, question 33).

939 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 11, ID 6230.

940 Notifying Parties' reply to RFI 48, question 32.

941 See Annex I.

942 Praxair's internal presentation […] [ID 4600-72661].

as explained in Section 8.4.1.2, the markets are subject to shortages and demand is expected to increase in the near future (in particular, as regards xenon and neon).

ii. Barriers to entry and expansion

(844) The Commission considers that market entry and expansion do not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. Unless otherwise specified, the findings in this Section apply to all affected markets for noble gases and noble gas mixtures in the EEA. In this respect the Commission notes the following.

(845) On the one hand, while the Notifying Parties' argue that some suppliers could easily activate their **spare capacity** for the production of noble gases in response to a potential price increase, this appears to be unlikely. First, as explained in Section 8.4.1.2, the demand for noble gases (in particular, for xenon and neon) is expected to increase in the near future while the current supply situation is rather balanced or tight.[943] Therefore, it is doubtful that suppliers would still have spare capacity to counteract a price increase in a situation of increased demand. Second, the activation of spare capacity strongly depends on the production of other products, notably oxygen and nitrogen,[944] which means that the activation of such spare capacity will not likely be justified for the sole purpose of producing noble gases.[945] Third, while the industry apparently operates with significant average levels of spare capacities, major players still purchase part of their crude production needs from third parties instead of increasing internal production, which shows that the activation of spare capacity, where present, may not be an easy solution.[946] Fourth, a relevant part of the

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943 In their Reply to the Statement of Objections, the Notifying Parties argued that the neon shortage of 2015 was caused by a unique series of events and that current neon production exceeds worldwide demand, with an overcapacity of around […]% as indicated by the […] [ID 4760-534]. In this respect, the Commission notes that while this report mentions that new neon capacity has been recently added in Europe, US and China, it also explains that "[…]" ([…] [ID 4760-534]). In fact, as explained in recital (845), the activation of spare capacity strongly depends on the production of other products; therefore nameplate capacity levels do not fully reflect the operational capacity available on the market. Furthermore, projections for the market of neon at worldwide level provided by the […] Report actually show that supply and demand will be rather balanced in the upcoming years. In fact, demand and supply between 2018 and 2021 are expected to be in the range of […] million litres. This is in line with the results of the second phase investigation, as explained in Section 8.4.1.2.

944 For further details, see Section 8.4.1.2. As explained by the Notifying Parties, the production rate of noble gases depends on the utilisation of the ASU's oxygen (and nitrogen) production capacity. Thus, the demand for oxygen (and nitrogen) determines the quantity of the noble gases produced (Form CO, Chapter C, Section 8, paragraph 834).

945 While the Notifying Parties argue that, in response to the neon shortage in 2015, some players recommenced production or adjusted plants to produce more noble gases (Notifying Parties' reply to RFI48, question 40), this appears to be an exceptional circumstance where capacity was activated in response to a severe shortage which led to "skyrocketing prices" both at wholesale and retail level (see Section 8.4.1.2). The Notifying Parties' internal documents clearly indicate that […]. For example, in Praxair's presentation […] [ID 4599-59620], it is explained that […]. It is thus doubtful that the similar activation of production would occur in the event of a small but significant price increase.

946 The Notifying Parties submit that the industry operates with an average spare capacity of about [40-50]% for the production of krypton/neon and of about [50-60]% for the production of neon – 2016 data, at global level (Notifying Parties' reply to RFI36, question 13). However, the Commission notes (i) the high demand for the products concerned, and the shortages occurred in 2014-2016, and (ii) the fact that no major player active on the market solely relies on its own production capabilities, but rather purchases crude gases, to some extent, from third parties (therefore, opting for some external sourcing rather than for increasing internal sourcing). The fact that the operational capacity is currently tight is further confirmed in the Notifying Parties' internal documents. For example, in Praxair's internal presentation, […] [ID 4599-59620], it is mentioned that regarding the overall market for neon: "[…]"

production capacity currently present on the market is controlled by non-integrated players located in "[…]"[947] and may actually be deactivated rather than activated in the near future. As explained by an independent consulting company in a presentation on rare gases:

"[…]"[948]

(846) On the other hand, **barriers to expansion of capacity are high**. First, ASUs need to be equipped with separate columns to produce krypton and xenon, and to produce neon. As explained by competitors in the context of the second phase investigation, an ASU needs to be equipped with such columns at the time of being constructed. These columns cannot typically be added later in a practical and economic way. As explained by Messer *"it is, in theory, possible to retrofit a large ASU which has not been initially designed for the production of noble gases, to start such production, but this is a complex process, which is practically not a viable option*."[949] Air Products also stated that *"the production of noble gases is usually the result of a predetermined choice, in that a plant is designed for producing noble gases from the very beginning of its construction. The upgrade of a large ASU that has not originally been designed for the production of noble gases is possible but very costly and complicated."*[950] Second, adding capacity to existing ASUs (already constructed for producing noble gases) is also costly and takes time.[951] This is in line with the submissions by the Notifying Parties, according to which expansion of capacity in relation to the production of noble gases is overall costly and lengthy.[952]

(847) While the Notifying Parties provided examples of facilities beginning or expanding noble gas production in the next three years, this additional capacity would increase the nameplate capacity for the generation of noble gases by a relatively limited extent.[953] Moreover, the additional capacity brought by the Notifying Parties themselves would constitute between about [40-50]% and [50-60]% of the additional planned capacity for krypton and xenon and about [20-30]% of the additional planned capacity for neon. In addition, based on these data, the Notifying Parties are the only gas companies active in Europe […], while other companies are either non-

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(p.16), and for krypton: "[…]" (p.16). This suggests that while the industry may technically have some spare capacity to produce noble gases, the operational capacity, which could be effectively used and brought to the market, is already saturated.

947 Praxair's internal presentation […] [ID 4600-72661].

948 […] [ID 4834-11478].

949 This is confirmed by independent reports. According to a presentation of a consulting company, […] [ID 4834-11478]: "[…]."

950 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 8, ID 6198.

951 According to Praxair's presentation, […] [ID 4600-72661], the rare gas supply chain requires "[…]." And there is "[…]."

952 The Notifying Parties submitted that expansion of production capacity for noble gases costs between EUR […] and […]million per ASU and would take between […] and […] years (Annex 81 to Form CO). Although the Notifying Parties provided in the Reply to the Statement of Objections a few examples of recently added capacity (paragraph 105), this does not contradict the fact that the process is costly and lengthy.

953 In the Reply to the Statement of Objections the Notifying Parties reiterated that Asian suppliers have recently installed new crude capacity for neon. They mentioned the new plant of Wuhan Steel (in China), with a nameplate capacity of […] per year (which was already indicated in Annex 65 to the Form CO) and the new plant of Daesung (South Korea), with a nameplate capacity of […] per year (which was not indicated in Annex 65 to the Form CO). In this respect, the Commission notes that the additional capacity brought by these two facilities would increase the global current nameplate capacity for the generation of neon by less than [10-20]%.

vertically integrated players (that is to say, mere crude producers) or Asian suppliers mostly focused on local markets.[954] Although there are some indications that generation capacity may be added in the future, as also explained by the Notifying Parties in their Reply to the Statement of Objections, new capacity is likely to be installed in particular in China, where demand has been increasing[955], and thus is likely to be used for the local market. Moreover, while new capacity may be added, capacity currently present in Eastern European countries is likely to decrease.[956]

(848) Finally, **barriers to entry are high**. Based on the data submitted by the Notifying Parties, the costs associated to each stage of the noble gases supply chain appear to be significant.[957]As regards the installation of production capacity, it should be noted that besides the very high costs of building a large ASU able to produce noble gases, the economics of the project are strongly linked to the returns generated by the main products produced with the ASU, notably oxygen and nitrogen, rather than to noble gases only. Therefore, as explained by Linde in an internal presentation on rare gases, "[…]."[958]

(849) The market investigation corroborated the finding that entry constitutes a lengthy and costly process.[959] In addition, if barriers to entry for gas companies not active in these specific segments are high, barriers to entry for non-gas companies are even higher, especially given the links between noble gas markets and other gas markets. For example, […], only active in the production of crude krypton and xenon, explained that it *"does not supply xenon and krypton to end customers and does not intend to do so in the future. This would require, notably, the acquisition of (i) specialised knowledge, (ii) purification, blending, and transfilling capabilities, as well as (iii) a distribution network. Moreover, (…) it would not be in a position to*

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954 Annex 65 to Form CO and the Reply to the Statement of Objections, paragraph 87. In their Reply to the Statement of Objections the Notifying Parties submitted that Deasung Industrial Gas has recently built a neon production facility in South Korea and that, while the company has supplied neon locally until now, with this new facility, sales will be expanded also overseas. In this respect, the Commission notes that (i) the primary focus of Deasung activities on the neon market will still be at local level, where demand is expected to increase, (ii) Deasung does not have industrial gas activities operations (including transfilling and distribution activities) in Europe, and that (iii) the additional nameplate capacity brought by this new facility constitutes an increment of only about [0-5]% of the current generation capacity. Finally, in the context of the second phase investigation Messer mentioned that it intends to expand its production capacity for krypton/xenon in China, but did not provide any indication that such additional capacity would bring a significant change in the market (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 11, ID 6230).

955 Reply to the Statement of Objections, paragraph 86.

956 See footnote 943. See also, […] [ID 4760-534], "[…]." This was also mentioned in the Reply to the Statement of Objections, footnote 87.

957 Annex 81 to the Form CO, Section 8, Chapter C. The time and costs associated with the entry into the markets for noble gas and noble gas mixtures relate to the investments required for the various stages of the supply chain. A particularly high cost is associated with the installation of a large ASU, equipped with the specific columns needed for the separation of noble gases, and the construction of a purification facility (in the order of several EUR millions). A minimum investment of EUR […] would be required to be active in the mere distribution of krypton/xenon and related mixtures, while an investment of EUR […]would be needed to be active in the mere distribution of neon and related mixtures. Overall, the Notifying Parties estimate that entry would require between […] and […] years. Although the Notifying Parties provided in the Reply to the Statement of Objections an example of recent entry into neon crude generation, that is to say in relation to Daesung (paragraph 105), this does not contradict the fact that the entry process is costly and lengthy. Moreover, as explained in Section 6.1, the generation of noble gases occurs in connection with the operation of large and costly ASUs which are built for the primary purpose of producing industrial gases rather than rare gases.

958 Linde's internal presentation, […] [ID 4834-38183].

959 Responses to RFI Q28 to suppliers of specialty gases, question 3.

*supply most customers of noble gases since these generally source a wide range of gases (e.g. industrial gases, other specialty gases, or helium) together with noble gases."*[960]

(850) Furthermore, with specific reference to noble gas mixtures, the second phase investigation revealed that specific competences and expertise are needed to be able to supply such mixtures, in particular those containing reactive components, which are used in very specific applications. This is also confirmed in the Notifying Parties' internal documents, in which Linde, for example, explains that *"*[…]*."*[961] In addition, having secure and economic access to noble gases (which, as discussed above and in Sections 8.4.1.2 and 8.4.2.2.a.iii, may prove difficult) is very important to be able to competitively provide noble gas mixtures. For example, Messer explained that *"in the markets for laser mixtures, barriers to entry are high. First, neon is not always available on the market and subject to shortages; therefore securing a reliable source of supply may prove to be difficult. Second, blending the various reactive components of laser mixtures is a very complex process; only few suppliers worldwide have the required knowledge and capabilities."*[962] [963]

(851) Customers and competitors responding to the market investigation actually indicated that no entry and no expansion of suppliers' activities in the markets for noble gases and noble gas mixtures are expected in the next two years in the EEA.[964] On the contrary, customers expect competitors to raise prices in response to a price increase for noble gas and noble gas mixtures by the merged entity,[965] rather than counteracting such strategy via expanding existing or building new capacity. For example, one customer explained that *"Given that Linde and Praxair are the biggest players and that there are only very few alternative suppliers, there is certainly a risk that a price increase by the merged entity would lead to a general increase in the price level on the market because the remaining players would be able to follow this trend."*[966] In relation to krypton and xenon specifically, it also added that "*the merged entity will therefore not only have the incentive, but certainly also the market power necessary to profitably increase prices. In* […]*'s view, it is very likely that the respective remaining provider of each of the above gases* [Air Liquide, in relation to krypton and xenon] *would follow such a price increase."*[967]

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960 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 7, ID 6082.

961 Linde's internal presentation, […] [ID 4834-75501].

962 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 14, ID 6230.

963 In the Reply to the Statement of Objections, with particular reference to fluorine noble gas mixtures, mostly used in the laser industry, the Notifying Parties explained that two companies entered the market outside the EEA, that is to say of Wonik and Daesung. In this respect, the Commission notes that, based on the provided information, entry recently occurred only in these two instances and relates to companies active outside the EEA, notably in Asia. Furthermore, no useful information was provided as to whether these companies have entered the market successfully and have been able to deliver good quality products to customers at adequate prices. In any event, given the companies' focus on Asia, it is unlikely they will be able to supply the EEA market, at least to any relevant extent. This was confirmed by market respondents, which do not expect any entry in the next two years, as explained in recital (851).

964 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 39 and 40, and responses to RFI Q28 to suppliers of specialty gases, questions 29 and 30.

965 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 50.

966 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 50, ID 4217.

967 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 53, ID 4217.

iii. Countervailing buyer power

(852) The Commission considers that buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. Unless otherwise specified, the findings in this Section apply to all affected markets for noble gases and noble gas mixtures in the EEA. In this respect the Commission notes the following.

(853) First, the vast majority of customers sourcing noble gases and noble gas mixtures explained, in the context of the second phase market investigation, that such products represent **critical inputs** for their operations, which may affect the quality of the final goods produced.[968]

(854) Second, **switching is difficult** in light of both (i) the few alternative sources of supply present on the market, and (ii) the substantial switching costs. On the one hand, as explained in Section 8.4.2.2.a.i, customers consider that the number of alternative suppliers is already limited and is going to be even more reduced as a result of the Transaction. This is particularly critical in view of the fact that a very significant number of customers purchasing noble gases and noble gas mixtures engage in multi-sourcing strategies, that is to say, purchase the same type of gas / mixture from multiple suppliers, notably for security of supply reasons.[969] This is broadly in line with the submissions by the Notifying Parties.[970] This means that, post-Transaction, customers' choices for alternative suppliers will be either very limited or non-existent. In particular, in the EEA, where most customers consider Praxair, Linde and Air Liquide as strong credible suppliers for noble gases and noble gas mixtures (as discussed in Section 8.4.2.2.a.i), a multi-sourcing strategy will become impossible on the markets concerned.

(855) On the other hand, the market investigation revealed that switching is difficult in light of the costs and time it entails and, in fact, does not occur often. The majority of customers responding to the market investigation rated the process of switching as "difficult" (long and expensive) or "very difficult" (very long and very expensive).[971] This appears to be particularly the case for more complex gases, such as mixtures, that require specific expertise and extensive testing.[972] A significant number of customers explained that a qualification of the new supplier and/or the supplied gas may be required, for example in case relevant changes to the supply chain occur (for instance, as regards the location where the gas/mixture is produced, purified, transfilled or blended).[973] When such qualification is required, it would typically take

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968 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 1.

969 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 20.

970 The Notifying Parties submit that customers, notably for pure noble gases, rarely apply a single sourcing policy, but rather engage into multi-sourcing strategies (Form CO, Chapter C, Section 6, paragraph 777). They further explain that customers of specialty gases, in general, often pursue multi-sourcing policies (Form CO, Chapter C, Section 8, paragraph 904).

971 In the Reply to the Statement of Objections the Notifying Parties argued that the fact that some customers did not switch supplier recently is due to the fact that they have satisfactory relationships with their current suppliers. In any event, the Commission notes that, as explained in recital (855), the majority of customers rated switching as difficult or very difficult. Therefore, should they decide to do so, they would encounter difficulties in terms of time and costs entailed in such strategy. While the anecdotal evidence provided by the Notifying Parties on the switching behaviour of certain (seven) customers confirms that switching is possible and may occur to some extent, it does not contradict the fact that switching may be difficult and thus does not occurs regularly.

972 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 43 and 44.

973 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 21. For example, […] explained that *"Test quantities of gas need to be provided to us for qualification in production.*

several months. This is in line with the submissions by the Notifying Parties, which explained that for customers requiring special qualification processes, these would cost more than EUR […] per qualification and would take between […]and months to be performed.[974]

(856) Third, the markets for the supply of noble gases and noble gas mixtures, as explained in Section 8.4.1.2, are subject to **shortages**, which limits customers' power in the negotiation process. In fact, the majority of customers responding to the market investigation have experienced a shortage of noble gases and noble mixtures in the past five years, which in many cases resulted in sharp price increases that they were not able to counteract.[975] For example, in the context of the second phase investigation, a large customer of noble gases, […], explained that:

> *"(it) do(es) not enjoy any substantial bargaining power vis-à-vis suppliers. Following the Ukrainian neon crisis, in 2015/2016, there was no negotiation possible as regards neon prices; suppliers simply informed* […] *of what the purchase price for the gas was. In order to try to reduce its consumption of neon,* […] *is building up a recycling system in its semiconductors plants. However, this initiative cannot reduce the consumption of neon in an appreciable manner and only constitutes a back-up solution. In addition,* […] *has attempted to find alternative sources of supply for neon on the Chinese market, but found that local providers were neither competitive in terms of technology used nor able to offer a product of adequate quality."*

(857) In line with the above, a significant number of customers responding to the market investigation explained that already pre-Transaction they do not believe to enjoy bargaining power *vis-à-vis* their suppliers in the negotiation process.[976]Many customers believe this situation will not change post-Transaction and some even believe that their bargaining position will decrease after the Transaction.[977]

iv. Conclusion

(858) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the relevant markets are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely effects of the Transaction**

(859) On the basis of the considerations expressed in Sections 8.4.1 to 8.4.2.2.b.iv, the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario.

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*Total testing may take as long as 6 months, depending on availability of test equipment and test quantities."* ([…]'s responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 21, ID 5792 ). […] also stated that *"Life test on the lamps would have to be repeated plus re-qualification by automotive customers. Process would take app. (approximately) 12 months."* ([…]'s responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 21, ID 5599).

974 Form CO, Section 8, Chapter C, paragraph 917.

975 Responses to RFI Q54 to customers of noble gases and noble gas mixtures, question 11.

976 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 45. For example, […] explained that *"Although* […] *is appreciated by its suppliers due to the high purchase volume and the stability of demand, its bargaining position is limited since these are sellers markets and the level of competition is low."* (ID 4217).

977 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 48.

(860) This view is shared by the participants in the market investigation.

(861) A significant number of customers responding to the market investigation (about one third of the respondents), including many that enjoy relatively large purchases of different types of noble gases and noble gas mixtures, fear that post-Transaction there will not be sufficient alternative suppliers in the EEA.[978] For example, the following large customers expressed negative views in this respect:

> […]: *"there are currently only three big players in the xenon and krypton gas markets: Air Liquide, Linde and Praxair. Therefore, the merger would constitute a 3-to-2 merger. Indeed, Air Products is a significantly smaller player and it is unclear if they could really become a realistic alternative option in the EEA. As the supply of xenon is stretched worldwide, the merged entity would be in the position to profitably increase prices."*[979] […]: *"(there will be) less competition in a market with a small numbers of players."*[980]
>
> […]: *"For certain mixtures Praxair and Linde own and operate significant production capacities. If both companies merge th(ese) activities, they will gain a significant if not dominant position in the market regarding capacities and negotiation power towards the customers. As such mixtures are materials with increasing demand driven by leading edge manufacturing technologies, we expect a negative impact on competition resp. [especially] prices."*[981]
>
> […]: *"if Linde and Praxair were to merge, the markets for the supply of gases would be dominated by two companies worldwide, i.e. the merged entity and Air Liquide. They would de facto split the market between themselves and leave no room for any competition on the market."* [982]

(862) Overall, half of the respondents believe that the Transaction will have a negative impact on the markets concerned in the EEA. Customers that are particularly concerned by the effects of the Transaction are the ones that have relatively large purchases of noble gases and noble gas mixtures.[983] For example, […] explained that

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978 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 47. In the Reply to the Statement of Objections the Notifying Parties argued that while about one third of the respondents indicated that there will not be a sufficient number of alternative suppliers post-Transaction, half of them actually indicated there will be. In this respect, the Commission notes that the number of customers concerned about a decrease in the number of available supplier is in any event significant and includes many customers purchasing large quantities of noble gases and mixtures. Instead, among customers which are not concerned about this aspect there are also companies which purchase relatively low quantities (in terms of volume and/or value) of noble gases and mixtures, and which may thus be less concerned on the impact of the Transaction.

979 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 47, ID 4217.

980 […]' responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 47, ID 3672.

981 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 47, ID 5094.

982 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 20, ID 5990.

983 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 52. In the reply to the Statement of Objections the Notifying Parties argue that the majority of the respondents consider the impact of the Transaction to be neutral. In this respect, the Commission notes that the majority of respondents expressed a neutral opinion in relation to the impact of the Transaction on their company (responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 53) but not in relation to the impact on the overall markets for the supply of noble gases and mixtures in the EEA (responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 52), to which reference is made in recital (862). In fact, as explained in recital (862), half of the respondents actually believe that the Transaction will have a negative impact on the markets concerned. The responses to the two questions of the market investigations (questions 52 and 53 of RFI Q26) are not in contradiction.

post-Transaction *"A key player would (be) miss(ing) in a market which is already divided between a handful of suppliers today."*[984] Therefore, *"price increase (are) likely."*[985]Another customer, […], mentioned that the Notifying Parties *"will even more ride the monopoly."*[986]

(863) In general, respondents to the market investigation explained that their answers would not differ depending on the type of gas or mixture considered.[987] Therefore, the considerations expressed in this Section apply to all noble gases and noble gas mixtures which are affected by the Transaction in the EEA.

(864) As discussed in Sections 8.4.2.2.b.ii and 8.4.2.2.b.iii, the Commission considers that countervailing factors such as market entry and expansion, and buyer power are unlikely to off-set the anticompetitive effects arising from the Transaction.

**d. Conclusion**

(865) For the reasons set out in recitals (798)-(864), the Commission's assessment is that the Transaction would significantly impede effective competition in the EEA markets for the cylinder supply of (i) krypton, (ii) xenon, (iii) neon, (iv) brominated compound gas mixtures, (v) fluorine noble gas mixtures, (vi) hydrogen chloride noble gas mixtures, and (vii) inert noble gas mixtures, as result of horizontal non-coordinated effects.

(866) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in (i) the creation or strengthening of a dominant position on the EEA markets for the cylinder supply of brominated compound gas mixtures, fluorine noble gas mixtures, and hydrogen chloride noble gas mixtures; and, at least (ii) the removal of a significant competitive constraint on the EEA markets for the cylinder supply of krypton, xenon, neon, and inert noble gas mixtures.

*8.4.3. Horizontal coordinated effects*

(867) In the Article 6(1)(c) Decision, the Commission did not reach a conclusion as to whether the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects with respect to the markets for the cylinder supply of noble gases and noble gas mixtures. Such effects would have resulted from coordination between the remaining Tier 1 players aiming at market repartition.

(868) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives on the merged entity and its remaining Tier 1 competitors to coordinate their market conduct post-Transaction. Thus, the Commission considers that the Transaction would not significantly impede effective competition in the EEA markets for the cylinder supply of noble gases and noble gases mixtures as a result of horizontal coordinated effects. The Commission also

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Some customers responding to the market investigation purchase relatively low quantities of noble gases and/or noble gas mixtures; therefore, the impact of the Transaction on their companies will be relatively neutral. However, this is not the case for the market in general, where the Transaction is deemed to be likely to lead to a negative impact in terms of, for example, higher prices or reduced choice.

984 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 52, ID 2231.

985 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 53, ID 2231.

986 […]'s responses to RFI Q26 to customers of noble gases and noble gas mixtures, question 53, ID 1381.

987 Responses to RFI Q26 to customers of noble gases and noble gas mixtures, questions 47 and 52.

notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

## 8.5. ESGs

### *8.5.1. Market structure and competitive parameters*

#### 8.5.1.1. Market shares and concentration levels

(869) Tables 40 and 41 show the Notifying Parties' 2016 market shares based on sales, as well as the concentration levels, in each of the **horizontally affected** markets for ESGs identified in Section 8.1.1 in terms of value and volume in the EEA. There is only one horizontally affected market for the supply in bulk, i.e. nitrogen trifluoride. As regards ESGs supplied in cylinders, there are a number of horizontally affected markets as identified below.

(870) Further detailed market share data, based on sales in value and volume, including information on the Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms integral part of this Decision.

**Table 40: Market shares for bulk supply of Nitrogen trifluoride (2016)**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitrogen trifluoride | EEA | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [500-600] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Nitrogen trifluoride | EEA | [20-30]% | [10-20]% | [30-40]% | [2500-3000] | [3000-3500] | [400-500] |

*Source: Commission's compilation based on Annex Q28.1 to RFI 48*

**Table 41: Market shares for cylinder supply of ESGs (2016)[988]**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Ammonia | EEA | [40-50]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |

988 In relation to the HHI reported in the Table, it should be noted that in some markets the Notifying Parties have attributed non-negligible market shares to a general category "Others" on an aggregated basis. Such category "Others" has been excluded for the purpose of calculating the HHI reported in the Table. Therefore, the reported HHI levels pre-and post-Transaction constitute the lowest HHI levels that one could compute. Where the Notifying Parties have attributed to the category "Others" market shares above [20-30]%, and thus the HHI levels could be substantially higher than those reported in the Table, this is marked with an asterisk (*).

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Boron trichloride | EEA | [10-20]% | [30-40]% | [40-50]% | [2500-3000] | [3500-4000] | [900-1000] |
| Chlorine | EEA | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| Deuterium* | EEA | [60-70]% | [5-10]% | [70-80]% | [4000-4500] | [5000-5500] | [800-900] |
| Diborane and mixtures | EEA | [0-5]% | [30-40]% | [30-40]% | [4000-4500] | [4000-4500] | [200-300] |
| Dichlorosilane* | EEA | [0-5]% | [30-40]% | [30-40]% | [2000-2500] | [2500-3000] | [200-300] |
| Germane and mixtures | EEA | [0-5]% | [20-30]% | [30-40]% | [4000-4500] | [4500-5000] | [200-300] |
| Halocarbon 116 | EEA | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| Halocarbon 218* | EEA | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| Halocarbon 23 | EEA | [10-20]% | [5-10]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| Halocarbon318 | EEA | [40-50]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [300-400] |
| Halocarbon 41 | EEA | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [100-200] |
| High Purity Nitrous oxide | EEA | [10-20]% | [10-20]% | [30-40]% | [3500-4000] | [4000-4500] | [500-600] |
| Hydrogen bromide | EEA | [30-40]% | [30-40]% | [70-80]% | [2500-3000] | [5500-6000] | [2500-3000] |
| Hydrogen chloride | EEA | [40-50]% | [30-40]% | [70-80]% | [3000-3500] | [6000-6500] | [2500-3000] |
| Hydrogen fluoride | EEA | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| Nitrogen trifluoride | EEA | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| Phosphine and mixtures | EEA | [30-40]% | [30-40]% | [70-80]% | [3000-3500] | [6000-6500] | [3000-3500] |
| Silane and mixtures | EEA | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1500-2000] |
| Silicon tetrachloride* | EEA | [20-30]% | [5-10]% | [20-30]% | [800-900] | [1000-1500] | [200-300] |
| Silicon tetrafluoride | EEA | [30-40]% | [20-30]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| Subatmospheric implantation gases | EEA | [0-5]% | [20-30]% | [20-30]% | [5500-6000] | [5500-6000] | [0-100] |
| Sulphur hexafluoride | EEA | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3000-3500] | [1000-1500] |
| Tetrafluoromethane | EEA | [5-10]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [300-400] |
| Trichlorosilane | EEA | [70-80]% | [5-10]% | [80-90]% | [6000-6500] | [7000-7500] | [700-800] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Ammonia | EEA | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| Boron trichloride | EEA | [10-20]% | [30-40]% | [40-50]% | [2500-3000] | [3500-4000] | [1000-1500] |
| Chlorine | EEA | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [4000-4500] | [1000-1500] |
| Deuterium* | EEA | [60-70]% | [5-10]% | [70-80]% | [4000-4500] | [5000-5500] | [800-900] |
| Diborane and mixtures | EEA | [0-5]% | [30-40]% | [30-40]% | [4000-4500] | [4000-4500] | [0-100] |
| Dichlorosilane* | EEA | [0-5]% | [30-40]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| Germane and mixtures | EEA | [0-5]% | [20-30]% | [30-40]% | [4000-4500] | [4500-5000] | [200-300] |
| Halocarbon 116 | EEA | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| Halocarbon 218* | EEA | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| Halocarbon 23 | EEA | [10-20]% | [5-10]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| Halocarbon 318 | EEA | [40-50]% | [5-10]% | [50-60]% | [2000-2500] | [3000-3500] | [700-800] |
| Halocarbon 41 | EEA | [20-30]% | [0-5]% | [20-30]% | [3500-4000] | [3500-4000] | [0-100] |
| High Purity Nitrous oxide | EEA | [10-20]% | [10-20]% | [30-40]% | [3500-4000] | [4000-4500] | [600-700] |
| Hydrogen bromide | EEA | [30-40]% | [30-40]% | [70-80]% | [2500-3000] | [5500-6000] | [2500-3000] |
| Hydrogen chloride | EEA | [40-50]% | [30-40]% | [80-90]% | [3500-4000] | [6500-7000] | [3000-3500] |
| Hydrogen fluoride | EEA | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| Nitrogen trifluoride | EEA | [10-20]% | [20-30]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| Phosphine and mixtures | EEA | [30-40]% | [30-40]% | [70-80]% | [3000-3500] | [6000-6500] | [3000-3500] |
| Silane and mixtures | EEA | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1500-2000] |
| Silicon tetrachloride* | EEA | [20-30]% | [5-10]% | [20-30]% | [800-900] | [1000-1500] | [200-300] |
| Silicon tetrafluoride | EEA | [30-40]% | [20-30]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| Subatmospheric implantation gases | EEA | [0-5]% | [20-30]% | [20-30]% | [5500-6000] | [5500-6000] | [0-100] |
| Sulphur hexafluoride | EEA | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3000-3500] | [1000-1500] |
| Tetrafluoromethane | EEA | [5-10]% | [20-30]% | [20-30]% | [2000-2500] | [2500-3000] | [200-300] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Product** | **Geography** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Trichlorosilane | EEA | [70-80]% | [0-5]% | [80-90]% | [6000-6500] | [6500-7000] | [400-500] |

*Source: Commission's compilation based on Annex Q28.1 to RFI 48*

(871) According to the Horizontal Merger Guidelines, market shares are useful first indications of the market structure and the competitive importance of the market players.[989] Likewise, the overall concentration level in a market also provides useful first information about the competitive situation in that market.[990]

(872) The Transaction gives rise to horizontally affected markets in relation to the supply of nitrogen trifluoride in **bulk** and the supply of 25 distinct ESGs in **cylinders** in the EEA. The market for the supply of ESGs in bulk is rather small (total market size of about EUR […] million; […] tons in 2016) compared to the size of the markets for the supply of ESGs in cylinders (total market size of about EUR […]million; […]tons in 2016).

(873) Overall, post-Transaction the combined market shares of the merged entity in relation to the supply of nitrogen trifluoride in **bulk** in the EEA will be [30-40]% in value and [30-40]% in volume. Based on the data submitted by the Notifying Parties, there are only two companies operating on this market aside from Praxair and Linde: Air Products/Versum, with a market share in value and volume of [30-40]% and Air Liquide, with a market share in value and volume of [30-40]%.[991] The merger will therefore reduce from four to three the number of operators in the market, and consequently increase the concentration level in this market to a significant extent.

(874) With respect to the supply of ESGs in **cylinders**, post-Transaction the combined market shares in value of the merged entity would be above [20-30]% in 23 markets,[992] and above [50-60]% in ten of them.[993] In all but two of the affected markets, concentration levels are high (HHI above 2 000)[994] and the increment in most of the affected markets is significant (it exceeds [10-20]% in 12 of these

989 Horizontal Merger Guidelines, paragraph 14.

990 Horizontal Merger Guidelines, paragraph 16.

991 In the Notifying Parties' response to RFI42 of 30 January 2018, questions 4 and 5, the Notifying Parties explained that Air Product's entire ESGs business has been spun off to Versum. The Notifying Parties have included the sales of ESGs of Versum in the market shares of Air Products.

992 Ammonia, boron trichloride, chlorine, deuterium, diborane and mixtures, dichlorosilane, germane and mixtures, halocarbon 116, halocarbon 23, halocarbon 318, halocarbon 41, high purity nitrous oxide, hydrogen bromide, hydrogen chloride, hydrogen fluoride, nitrogen trifluoride, phosphine and mixtures, silane and mixtures, silicon tetrachloride, silicon tetrafluoride, sulphur hexafluoride, tetrafluoromethane, and trichlorosilane.

993 Chlorine, deuterium, hydrogen bromide, hydrogen chloride, hydrogen fluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, sulphur hexafluoride, and trichlorosilane.

994 In the markets for the cylinder supply of halocarbon 218 and silicon tetrachloride, the HHI levels reported in Table 41 are below 2 000. However, they are likely to be significantly higher given that, in these two markets, the Notifying Parties have attributed significant market shares to a general category "Others" (on an aggregated basis) accounting for [50-60]% of the market for the cylinder supply of silicon tetrachloride and [20-30]% of the market for the cylinder supply of halocarbon 218. As previously explained, such category "Others" has been excluded for the purpose of calculating the HHI reported in Table 41.

markets).[995] In general, post-Transaction the HHI levels will be equal or above [3000-3500] in 18 markets.[996] Post-Transaction, in relation to the cylinder supply of ESGs (in general), the merged entity will have the largest market share ([30-40]% both in value and volume) and will face a limited number of meaningful competitors, namely: Air Liquide (with a value market share of [30-40]%), Air Products/Versum (with a value market share of [10-20]%) and Entegris (with a value market share of [5-10]%).

(875) The vast majority of the respondents to the market investigation confirmed that post-Transaction, besides the merged entity, only two large ESGs suppliers will remain active on the market: Air Liquide and Air Products/Versum.[997] As will be further explained in this Section, a substantial difference nonetheless exists between the competitive constraints exerted by these two players on the Notifying Parties.

8.5.1.2. General market conditions and competitive parameters

(876) With respect to the **general market conditions** in the markets for the **bulk** supply of ESGs, the Commission observes that a quarter of the respondents to the market investigation rated the level of competitiveness of this market at 2 on a scale of 5 (where 1 indicates that the market is not very competitive and 5 indicates that the market is very competitive). Half of the respondents rated the level of competitiveness of this market at 3 on a scale of 5. The same proportion of respondents clarified that the level of competitiveness depends on the gas.[998] A customer for instance explained that "*some gases which can be supplied from more suppliers, some are only offered by a few suppliers.*"[999]

(877) In the markets for the supply of ESGs in **cylinders**, the market investigation revealed a low level of competitiveness, in particular in relation to the supply of ESGs used in the semiconductor industry,[1000] which accounts for [90-100]% of the overall EEA demand. Half of customers across all industries consider that there is limited competition in the market, which means that the offers that they receive are, either, not very competitive, or not competitive at all.[1001] By commenting on the possible effects of the Transaction, a customer described the situation in these markets as follows: "*There are already today very few suppliers. Post-merger, the situation will*

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995 Boron trichloride, chlorine, halocarbon 116, high purity nitrous oxide, hydrogen bromide, hydrogen chloride, hydrogen fluoride, nitrogen trifluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, and sulphur hexafluoride.

996 Ammonia, boron trichloride, chlorine, deuterium, diborane and mixtures, germane and mixtures, halocarbon 116, halocarbon 41, high purity nitrous oxide, hydrogen bromide, hydrogen chloride, hydrogen fluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, subatmospheric implantation gases, sulphur hexafluoride, and trichlorosilane.

997 Responses to RFI Q23 to customers of electronic specialty gases, questions 7.2 and 31.2. Also, agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 13 ID5990; agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 13 ID6233. Since Air Products has only recently spun off its ESGs division to Versum, some respondents to the market investigation referred to Air Products, while others referred to Versum. Responses have been aggregated and allocated to the same entity. Therefore, for the purpose of this Decision, reference will be made to Air Products/Versum, even though the ESG business of Air Products has been transferred to Versum.

998 Responses to RFI Q23 to customers of electronic specialty gases, question 7.1.

999 […]'s response to RFI Q23 to customers of electronic specialty gases, question 7.2, ID1837.

1000 Responses to RFI Q23 to customers of electronic specialty gases, question 31.

1001 Responses to RFI Q23 to customers of electronic specialty gases, question 46.

*be even worse, especially with respect to phosphine which* […] *is currently sourcing from both of the merging entities.*"[1002]

(878) In terms of **parameters of competition**, customers of ESGs in both bulk and cylinders, on average, consider security of supply as the most important driving factor in the selection of suppliers, followed by purity of product (for certain ESGs), timely deliveries, overall service level and price aggressiveness.[1003]

*8.5.2. Horizontal non-coordinated effects*

(879) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive horizontal non-coordinated effects in the affected markets for ESGs identified in Section 8.5.1.1. Since the findings set out in this Section, and in particular the results of the market investigation, do not materially differ depending on the gas and on the mode of supply, the Commission's assessment and the results of the market investigation will be presented by making reference to ESGs collectively, unless otherwise specified.

8.5.2.1. Notifying Parties' view

(880) The Notifying Parties stated that the question as to whether or not competition concerns arise with regard to the overlaps in the markets for the supply of ESGs that are broader than national, can remain open. The reason for this is that the proposed divestment would largely remove the overlaps between the Notifying Parties' activities.[1004]

(881) The Notifying Parties did not bring forward any additional argument as to whether the Transaction would impede effective competition in the markets for the bulk and cylinder supply of ESGs at the EEA level, nor did they contest the Commission's findings in the Article 6(1)(c) Decision and in the Reply to the SO.

(882) In the Reply to the Statement of Objections the Parties merely argued that: (i) switching among different ESGs suppliers is not as difficult as claimed by the Commission; (ii) the Commission's finding that switching is difficult rests on a particular technology – the UpTime technology – which is only used to supply a small segment of the ESGs market; (iii) suppliers' ability to provide a wide range of ESGs is irrelevant.[1005]

8.5.2.2. Results of the market investigation and Commission's assessment

(883) In the following recitals the Commission analyses the likely horizontal non-coordinated effects of the Transaction in the ESGs markets in the EEA. First, it assesses the competitive constraints that, pre-Transaction, the Notifying Parties exert on each other and on their competitors and that would be removed by the Transaction (Section 8.5.2.2.a). Second, the Commission assesses the competitive constraints that post-Transaction will remain in the ESGs markets and their likelihood to off-set the anticompetitive effects which may result from the Transaction (Section 8.5.2.2.b). Third, based on the evidence presented in the previous Sections, the Commission undertakes an overall assessment of the likely effects of the Transaction (Section 8.5.2.2.c). Fourth, the Commission's findings are summarised in the conclusion (Section 8.5.2.2.d).

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1002 […]'s response to RFI Q23 to customers of electronic specialty gases, question 47.2, ID4220.

1003 Responses to RFI Q23 to customers of electronic specialty gases, questions 8 and 32.

1004 Form CO, Section 6, Chapter C, paragraphs 751-752.

1005 Reply to the Statement of Objections, Section 4.2, pages 26-28.

**a. Assessment of the competitive constraints exercised by the Notifying Parties**

i. Market shares

(884) As illustrated in recitals (873)-(874) and in Tables 40 and 41, in terms of sales, the Transaction leads to large or very large combined market shares in a number of affected markets.[1006] Although market shares are only a useful first indication of the market structure and of the respective positions of the Notifying Parties, the Commission considers that these high market shares, combined with very significant concentration levels of the affected markets indeed reveal a significant increase of market power of the merged entity post-Transaction.

(885) The combined market shares of the Notifying Parties in ten out of the 25 affected markets for the supply of ESGs in cylinders will exceed [50-60]% (in value).[1007] The respondents to the market investigation confirmed the existence of a high level of concentration in these markets.[1008] A customer declared that with respect to certain gases, the market shares of the Notifying Parties will be so high that "*the merger will create a monopoly*" given that "*currently only Praxair and Linde sell certain types of ESGs.*" This would "*especially* [occur with respect to] *Hydrogen Chloride (HCl) and Trichlorosilane (TCS).*"[1009]

ii. Closeness of competition

(886) With respect to closeness of competition, the market investigation provided indications that the Notifying Parties are close competitors in the markets for the **bulk** and **cylinder** supply of ESGs.

(887) Customers responding to the market investigation confirmed that the four main suppliers currently operating on the EEA market for ESGs - Air Liquide, Linde, Praxair and Air Products/Versum - closely compete with each other.[1010] However, while Air Liquide, Linde and Praxair are able to provide customers with a wide range of ESGs, which customers highly value, Air Products/Versum has a more limited product portfolio.[1011] Hence, post-Transaction, the number of main suppliers in the

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1006 The Commission notes that, in relation to the markets for the cylinder supply of (i) halocarbon 218 and (ii) subatmospheric implantation gases, the Notifying Parties' combined market shares and (for halocarbon 218 only) the concentration levels in the markets concerned are relatively low. The Commission considers that the Transaction would not lead to a significant impediment of effective competition in these markets. In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in the markets for the cylinder supply of ESGs would also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects in those markets. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in relation to the bulk and cylinder supply of ESGs in the EEA.

1007 Chlorine, deuterium, hydrogen bromide, hydrogen chloride, hydrogen fluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, sulphur hexafluoride, and trichlorosilane. In addition, the combined market shares of the Notifying Parties will also be above [50-60]% with respect to halocarbon 318 when computed in volume.

1008 Notably, responses to RFI Q23 to customers of electronic specialty gases, question 46.

1009 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 25, ID6233. Post-Transaction, the combined market shares of the Notifying Parties will be [70-80]% (in value) with respect to hydrogen chloride and [80-90]% (in value) with respect to trichlorosilane.

1010 Responses to RFI Q23 to customers of electronic specialty gases, questions 16, 17, 41 and 42.

1011 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 25, ID6402.

EEA will be reduced from four to three and in relation to some ESGs - such as hydrogen chloride and trichlorosilane - from three to two.[1012]

(888) The reduction in the number of ESG suppliers would impede the ability of customers to implement multi-sourcing strategies,[1013] which are important to maintain a certain level of competitiveness on the ESG markets. Indeed, as explained by one customer, "[multi-sourcing] *is the only way to keep the supplier competitively priced; single sourcing typically allows the supplier to creep the price upward over time because they know we won't switch suppliers until the price difference is significant enough to warrant the qualification costs*."[1014]

(889) Moreover, Praxair and Linde are among the few operators with a very strong market position in gas markets other than ESGs, such as the markets for the supply of industrial gases, noble gases, and helium. They are therefore able to offer customers a broad product portfolio. As recognised by the Notifying Parties in their Thematic papers and confirmed by the market investigation, customers typically purchase ESGs together with other ESGs and/or other gases from the same supplier.[1015] For instance, as observed by a customer, Air Liquide, Linde and Praxair hold a strong competitive advantage vis-à-vis other suppliers, namely their ability to supply customers with both ESGs and noble gases, "*The three large global suppliers (Air Liquide, Linde and Praxair) supply both ESGs and noble gases, […].This is not the case for Versum, since the company is not active in the supply of noble gases."*[1016]

(890) Based on the results of the market investigation, customers seem to have a strong preference for sourcing other gases, especially helium, together with ESGs from the same or a limited number of supplier/s. Several respondents to the market investigation expressed a clear preference for one-stop-shop suppliers. While, for instance, a customer declared that the "[o]*ne-stop shop solution* [is] *preferred*"[1017], another one explained the reasons why, and the extent to which, such a solution is good: "*One stop shop is good when competition keeps the desired products reasonably priced. There are certain gases being offered by a select few suppliers where patent protection keep*[s] *others from offering those products. Even suppliers with full line card offerings are not awarded the market share because cost components (raw material source, process technology, packaging, logistics, etc.) make them less attractive. Our consumption requires robust fleet sizes and product capacity across a wide line of different ESGs.*"[1018] Another customer went further and explicitly voiced "*some concerns on the planned merge*[r] *of these two "one stop shop" gases suppliers.*"[1019] Competitors are well aware of the competitive advantage

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1012 Taiyo Nippon Sanso was mentioned as one of the main ESGs suppliers, along with Praxair, Linde, Air Products and Air Liquide but only at global level (agreed non-confidential minutes of the conference call with SOL of 16 March 2018, paragraph 9, ID6226).

1013 The Reply to the Statement of Objections expressly acknowledges the implementation of multi-sourcing strategies "*for key ESGs*" (paragraph 120). This is also corroborated by […], which indicated that "*multiple suppliers are qualified for the important ESGs like phosphine, arsine and ammonia*"([…]'s response to RFI Q53 to customers of electronic specialty gases, question 21.3, ID5687).

1014 […]'s response to RFI Q53 to customers of electronic specialty gases, question 21.1, ID5644.

1015 Notifying Parties, "Paper on Absence of material supply links between the EEA Divestment Business and Praxair", 9 March 2018.

1016 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 13, ID6233.

1017 […]'s response to RFI Q53 to customers of electronic specialty gases, question 13.1, ID5687.

1018 […]'s response to RFI Q23 to customers of electronic specialty gases, question 32.8.2, ID3771.

1019 […]'s response to RFI Q53 to customers of electronic specialty gases, question 25, ID5373.

that comes to them from being able to offer a broad portfolio of products, "[f]*or a supplier, the capability to be a one stop shop for customers represents a very important competitive advantage.*"[1020]

(891) As explained by a customer, it is important to source more than one type of gas from the same supplier for reasons of, "*business synergy and cost efficiency, i.e. convenience of order fulfillment, one stop shop, consolidation of suppliers.*"[1021] According to a further customer, this possibility "*is important due to advantages of bundling (purchase of a bundle is usually more profitable), to enhance competition and maintain a multi sourcing strategy.*"[1022]A distinct customer emphasised the importance for customers, and advantage for suppliers, that the latter are able to offer a wide product portfolio containing both high-runner products and low-runner ones, "*We have more than 130 different gases and gas mixtures in use. Handling a supplier chain with different suppliers for every molecule is impossible: negotiations, contracts etc...Among the products we use there are high runners but a lot of low runners too... We already see a trend that suppliers would like to pick the high runners only. With supplier with wide product portfolio it is easier to maintain a Portfolio with contains also low runners.*"[1023] [1024] Therefore, the fact that Praxair and Linde are among the few companies capable of offering customers a broad product portfolio is evidence of the level of rivalry between the two and of the fact that they are close competitors.

(892) Further evidence to that effect is the fact that in the EEA Praxair and Linde are both active at different levels of the ESGs supply chain. Although the Notifying Parties do not generally produce ESGs, i.e. they are not active in the generation stage,[1025] they are both active in the purification (of certain ESGs), transfilling, and blending. As illustrated in recital (906), this represents a significant competitive advantage vis-à-vis other operators which are not active at all these levels, since a supplier that wants to be considered credible by customers and wants to be able to compete effectively in the ESGs markets must have, among other assets, transfilling capabilities within the EEA.

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1020 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 28, ID6402.

1021 […]'s response to RFI Q53 to customers of electronic specialty gases, question 18.1 ID 5643.

1022 […]'s response to RFI Q53 to customers of electronic specialty gases, question 18.1, ID 5752.

1023 […]'s response to RFI Q53 to customers of electronic specialty gases question 13.1, ID5819.

1024 In the Reply to the Statement of Objections, the Notifying Parties argued that the circumstance that a supplier is able to offer a wide product range is irrelevant for ESGs. In support of their claim the Notifying Parties noted that Entegris, despite not having a wide product portfolio nonetheless has a high market share in the market for the supply of sub-atmospheric implantation gases. They also put forward that "*Out of 11 customers that provided accessible responses…only five customers (45%) stated that it is either important or crucial that ESGs suppliers are able to provide them with a wide range of ESGs.*" In this respect the Commission first observes that the number of customers that provided accessible information is 12 and that six of them stated that they considered either crucial or important that a supplier of ESGs is also able to supply them with a wide range of this type of gases (hence 50% of the total number of accessible answers, rather than 45%). Second, during the market investigation the Commission gathered a consistent body of evidence, summarised in recital (30) of this Decision, showing that customers generally prefer, and consider it more convenient, to purchase their requirements from either a supplier or a limited number of suppliers which are able to offer a variety of gases. This applies also to ESGs.

1025 In the EEA only Linde is active in the generation stage. However, it only […].

iii. Specific competitive constraints exerted by the Notifying Parties

(893) The market investigation revealed that the Notifying Parties exert **important competitive constraints** on each other as well as on the remaining competitors in the markets for the bulk and cylinder supply of ESGs in the EEA. Evidence of this are not only the Notifying Parties' large market shares, but also their market performance.

(894) Most respondents to the market investigation identified Linde, Praxair, Air Liquide, and Air Products/Versum as credible suppliers.[1026] These four operators obtained comparable scores in many of the parameters of competition which are considered by customers to be very important when selecting a supplier, that is, first and foremost, security of supply, then purity of the product (for certain ESGs), timely deliveries, overall service level and price aggressiveness.

(895) In terms of security of supply, which is of utmost importance for all customers, Praxair and Linde achieved the highest scores, along with Air Liquide and Air Products/Versum.[1027] Concerning purity of the product, Linde and Air Liquide compete head-to-head, immediately followed by Praxair and Air Products. As for timely deliveries, in the bulk supply market Linde is considered very competitive, followed by Praxair and Air Products/Versum, while in the cylinder supply market Air Liquide is rated as the most competitive, followed by Praxair, Linde and Air Products/Versum. With respect to overall service level (excluding deliveries), the respondents to the market investigation considered Linde, Praxair and Air Products/Versum as the most competitive players on the ESGs markets.[1028] Finally, as regards price aggressiveness, Linde appears to be the most competitive, followed by Air Liquide, Air Products, and Praxair.[1029]

(896) Therefore, the Notifying Parties appear to exert important competitive constraints on each other, as well as on the remaining competitors in the markets for the supply of ESGs. The merger would remove these constraints from, and reduce competitive pressure in, all the affected ESGs markets. Based on the market investigation, the Commission considers that the Notifying Parties' competitors are unlikely to counteract a price increase implemented by the merged entity. Already pre-Transaction the level of prices in these markets is not considered to be very competitive.[1030] Post-Transaction, a higher degree of market concentration is likely to pave the way for even less competitive pricing.

iv. Conclusion

(897) On the basis of the above considerations, the Commission considers that the Notifying Parties exert, on each other, as well as on the remaining competitors, important competitive constraints which would be removed by the Transaction in the markets for the supply of ESGs in bulk and cylinders in the EEA.

**b. Assessment of other competitive constraints in the market**

(898) As explained in this Section, the competitive constraints in the markets for the bulk and cylinders supply of ESGs in the EEA, which will remain post-Transaction, are unlikely to counteract the anticompetitive effects deriving from the Transaction.

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1026 Responses to RFI Q23 to customers of electronic specialty gases, question 35.
1027 Responses to RFI Q23 to customers of electronic specialty gases, questions 12.7 and 37.8.
1028 Responses to RFI Q23 to customers of electronic specialty gases, questions 12 and 37.
1029 Responses to RFI Q23 to customers of electronic specialty gases, questions 11 and 36.
1030 Responses to RFI Q23 to customers of electronic specialty gases, questions 11 and 36.

i. Other players

(899) As referred to in recitals (873-874), post-Transaction the main competitors of the merged entity in the **bulk** supply of nitrogen trifluoride will be Air Products/Versum, with a market share in value of around [30-40]%, and Air Liquide with a market share in value of around [30-40]%. As regards to the **cylinder** supply of ESGs in general, post-Transaction the main competitors of the merged entity will be Air Liquide (value market share about [30-40]%), and Air Products/Versum (value market share about [10-20]%).

(900) Therefore, post-Transaction, Air Liquide and Air Products/Versum will be the only players in the ESGs markets that will be able to exert a competitive constraint on the merged entity. However, the market investigation revealed that the only supplier with which the Notifying Parties compete head-to-head is Air Liquide.

(901) Almost all the respondents to the market investigation confirmed that Air Liquide is one of the main players in the ESGs markets, along with Praxair and Linde.[1031] At the same time, as explained in detail under recital (887), there is general consensus among customers that Air Products/Versum is only capable of offering a more limited product portfolio, and is less competitive, than the largest suppliers.[1032] As a result, post-Transaction, the number of main players in the ESGs markets will be reduced from three to two. Air Liquide will be the only gas supplier that will be able to exert significant competitive pressure on the merged entity.

(902) In highly concentrated markets such as the affected ESGs markets under consideration, the presence of a single strong alternative operator cannot be considered a sufficient competitive constraint. Post-Transaction, Air Liquide will likely not have an incentive to counter a possible price increase by the merged entity. Instead, it may find it profitable to follow such price increase, and further reduce the level of competitiveness existing in such markets, to the detriment of customers, and ultimately consumers.[1033]

(903) On the basis of the above considerations, the Commission considers that, post-Transaction, the competitive constraints exerted by the Notifying Parties' competitors in the relevant markets are unlikely to off-set the likely anticompetitive effects of the Transaction.

ii. Barriers to entry and expansion

(904) Based on the market investigation the Commission considers that the ESGs markets (both for bulk and cylinder supplies) are characterised by high barriers to entry and expansion. As a result, following the Transaction it would be unlikely that either entry or expansion would occur and that they would be sufficiently swift and of such a magnitude as to defeat the significant non-coordinated effects that would result from the Transaction.

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1031 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, paragraph 9, ID6226; agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 13, ID6233; agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 8 ID6082; agreed non-confidential minutes of the conference call with SIAD of 21 March 2018, paragraph 8, ID6257; agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 13, ID5990.

1032 Notably, agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 13, ID6233; agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 13, ID5990.

1033 Horizontal Merger Guidelines, paragraph 24.

(905) The respondents to the market investigation estimated that neither entry nor expansion in the markets for ESGs are expected in the next two years.[1034] A few customers mentioned that Versum has entered the market recently, after acquiring Air Product's ESGs business.[1035] However, the Commission notes that Versum cannot be considered to be a new entrant since it is the result of the spin-off of the electronics material division of one of the existing major players, Air Products. Consequently, the fact that Versum became independent from Air Products did not increase the number of competitors and degree of competitiveness on the market. In addition, as pointed out under recital (887), Versum is not considered, by both suppliers and customers, as an operator capable of exercising the same competitive constraint as Air Liquide, Linde, and Praxair.

(906) With respect to **barriers to entry**, the Commission first observes that based on the data submitted by the Notifying Parties, which were confirmed by the respondents to the market investigation, entry may take up to […] years and cost up to EUR […] million.[1036] The ESGs business, while being a business with a high added value, and higher prices and margins than other gas businesses, is characterised by high fixed costs, which makes it necessary to reach a critical mass in order to operate profitably.[1037] The ESGs business indeed requires significant capital investments since "*a high level of sophistication is required in the various stages of the production process.*"[1038] In terms of time necessary to be able to start supplying specialty gases, the respondents to the market investigation estimated that this would require several months.[1039]

(907) Second, suppliers active within the EEA and suppliers importing the relevant molecules from outside the EEA need to have local transfilling centres within the EEA. This has been confirmed by several suppliers and customers of ESGs in the context of the second phase market investigation.[1040] A company, which produces some ESGs molecules which are then sold to large industrial gas companies like Praxair and Linde and which at the same time has limited sales of boron trifluoride in bulk to end-customers, for instance admitted that it "*does not have transfilling capability … required to supply ESGs to end-customers.*"[1041]

(908) The market investigation confirmed that the need for suppliers to have some kind of presence at the EEA level is an important entry barrier. Two thirds of the respondents

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1034 Responses to RFI Q23 to customers of electronic specialty gases, questions 39 and 40; responses to RFI Q28 to suppliers of specialty gases, questions 29 and 30.

1035 Responses to RFI Q23 to customers of electronic specialty gases, question 38.

1036 Annex 81 to the Form CO, Section 8, Chapter C. The time and costs associated to the entry into the markets for ESGs relate to the investments required for the various stages of the supply chain.

1037 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 23, ID6108; agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 23, ID6402.

1038 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 21 ID6108.

1039 Responses to RFI Q28 to suppliers of specialty gases, question 3.1.

1040 Notably, agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 23 ID6402; agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 8, ID6082.

1041 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 8, ID6082.

to the second phase market investigation claimed that suppliers' presence in the EEA is of utmost importance.[1042]

(909) Customers mentioned that it is either highly desirable or necessary for suppliers to have a local distribution network. For the bulk supply of ESGs the requirements of some of the customers are even more stringent. A customer of both cylinders and bulk ESGs explained that, "[i]*n case of cylinder gases at least a distribution network is highly desirable, in case of bulk gases production assets are essential.*"[1043] Another customer, which at the same time is a producer of a given specialty gas, indirectly confirmed that a distribution network is a key asset by acknowledging that itself it would not be able to serve end-customers as it *"does not have* [among other things] *the distribution network required to supply ESGs to end-customers.*"[1044] Warehousing facilities are also considered to be important. In this respect, a customer offered the following explanation, *"Distribution Center or local storage* [is necessary] *to be able to serve our demands at short notice* [since] [f]*or some gases we are not allowed to do any stock keeping at all*."[1045]Furthermore, respondents to the market investigation considered it important for suppliers to be able to offer customers a certain level of service, in order for instance to deal with, and timely resolve, any quality issue that might arise with respect to the ESGs supplied.[1046] For another customer a credible supplier at the EEA level must have, among other assets, "*a Quality Management Team, who can support* [customers] *on-site in case of a quality issue … especially for toxic gases.*"[1047]

(910) The Commission finally observes that the majority of the few customers that formally declared that a presence in the EEA is not necessary, nonetheless expressed their preference for suppliers which have a presence in the EEA and are able to support them where needed.[1048] For example, one customer said that "[p]*resence is not required*" but further stated that *"The key is that supplier must have the infrastructure necessary to support* […] *operations in EEA*"[1049]; another one explained that "[a presence is] *Not necessar*[y]*, but preferabl*[e]*. For* […] *it's important that a supplier can guarantee daily supply to our sites. For that reason, most suppliers have a distribution network in Europe.*"[1050] Only one player was of the opinion that suppliers do not need to have local capability to supply ESGs in certain countries.[1051]

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1042 Responses to RFI Q53 to customers of electronic specialty gases, questions 10, 10.1 and 10.2. Also, agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 8, ID6082.

1043 […]'s response to RFI Q53 to customers of electronic specialty gases, question 10, ID5734.

1044 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 8, ID6082.

1045 […]'s response to RFI Q53 to customers of electronic specialty gases, question 10.1, ID5373.

1046 Responses to RFI Q23 to customers of electronic specialty gases, questions 8.6 and 32.6. Responses to RFI Q53 to customers of electronic specialty gases, question 10.

1047 […]'s responses to RFI Q53 to customers of electronic specialty gases, question 10.1, ID5819.

1048 Responses to RFI Q53 to customers of electronic specialty gases, question 10.2.

1049 […]'s response to RFI Q53 to customers of electronic specialty gases, question 10.2, ID5825.

1050 […]'s response to RFI Q53 to customers of electronic specialty gases, question 10.2, ID5730.

1051 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, paragraph 8 ID6226. SOL explained that "*suppliers of ESGs do not necessarily need to have local capability to supply customers in certain countries as they can partner up with local distributors*."

(911) Third, other costs are incurred because of the need for suppliers to be able to ensure compliance with the REACH Regulation.[1052] In this respect, […] explained that "*should* [it] *take over import, it would cause* [the company] *a heavy cost increase via transportation … and also via REACH.*"[1053]

(912) Fourth, as explained in detail from recitals (923) to (929), customers of ESGs need to qualify their suppliers and any change in the supply chance may trigger a re-qualification process, which can take up to […] months and involve cost varying depending on the gas. In the Form CO, the Notifying Parties acknowledged that the qualification process for ESGs, in particular for those used in the semiconductor industry, usually takes up to […] months.[1054] However, as pointed out under recital (929), customers are generally unwilling to engage in a re-qualification process and prefer to maintain their supply chain unaltered even when they are offered better economic conditions elsewhere. Thus, customers expect suppliers to share in those costs via discounts, which in turn represent a significant cost that any new supplier would have to incur to enter these markets.

(913) With respect to **barriers to expansion**, the market investigation highlighted that, in general, installing additional purification, transfilling, and blending capacity to an existing specialty gas plant would require *"relatively small investments*".[1055] However, to increase the offer of ESGs, a current supplier would need to build new transfilling lines as ESGs require dedicated transfilling lines. A line used for a specific product cannot be used for another product, given the risk of contamination.[1056] Even in the event that these costs were considered moderate,[1057] compared to the costs of entering the ESGs market, "*the main issue would…remain customers' re-qualification.*"[1058]

(914) Lastly, the Commission observes that as explained throughout this Section as well as in Section 6.1, the need to have a wide product portfolio to be a credible and competitive gas supplier represents a further significant barrier to entry and/or expansion. This is all the more true since any new or existing operator would have to match what Linde claims to have, that is, "[…]".[1059] Post-Transaction, it will therefore be extremely difficult, if not impossible, for other suppliers to either enter the market or expand their offers so as to be able to compete with, an exert a constraint on, the merged entity.

(915) On the basis of the above considerations, the Commission considers that, post-Transaction, entry of new operators and/or expansion of existing ones, are unlikely to off-set the likely anticompetitive effects of the Transaction.

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1052 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 25, ID6402; agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 14, ID6233.

1053 […]'s response to RFI Q53 to customers of electronic specialty gases, question 12.1, ID5819.

1054 Form CO, Section 8, Chapter C, paragraph 943.

1055 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 23, ID6108.

1056 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 22, ID6108.

1057 Annex 81 of the Form CO. The Notifying Parties estimate that the cost of expanding the offer of ESGs is about [hundreds of thousands of euro] per dedicated filling booth and that the relevant time needed to expand would be of approximately **[…]** months.

1058 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 23, ID6108.

1059 Linde's internal e-mail of […] [ID4762-39079].

iii. Countervailing buyer power

(916) Half of the respondents to the market investigation consider that the markets for the ESGs are concentrated.[1060] A player pointed to the fact that, from the demand side, a few large customers operate globally, mainly in the semiconductor industry.[1061]

(917) Based on the market investigation, the Commission considers that the bargaining power of customers purchasing ESGs is limited. Many customers declared that they do not enjoy bargaining power vis-à-vis their suppliers.[1062] Bearing in mind that some differences among gases exist, the following reasons explain the existence of low bargaining power across the ESGs markets (bulk and cylinders supply) in the EEA.

(918) First, several customers participating in the market investigation explained that their bargaining power is limited by the fact that they do not implement multi-sourcing strategies for all ESGs[1063]thus depend, to a certain extent, on their qualified supplier for certain ESG.

(919) Second, there are only a few suppliers able to offer customers with a wide variety of gases (in fact only three, including the Notifying Parties). In this respect a customer noted that, "*in general both Air Liquide and Linde try, and are able, to offer a wide variety of ESGs, which is very important for customers like* […] *(that purchase a great number of different gases for their operations).*"[1064] Given customers' preference for suppliers being able to offer them a wide product portfolio and the issues linked to re-qualification, these customers may not credibly threaten suppliers to switch, within a reasonable timeframe, to alternative sources of supply should prices increase. Given that the Transaction reduces the number of suppliers capable of offering a wide variety of gases in the EEA from three to two, customers fear that post-Transaction their already low bargaining position would further decrease.[1065]

(920) A third reason put forward by customers to explain why they do not enjoy bargaining power is the circumstance that suppliers are in turn bound by their molecule suppliers, "*Suppliers are very strongly bound by the price they have to pay to their supplier* […]*, accordingly, there is very little margin for negotiations for us.*"[1066]

iv. Limited ability to switch

(921) The second phase market investigation confirmed that switching supplier is difficult and does not occur often. The majority of customers that replied to the market investigation explained that they have not switched supplier recently.[1067] They also

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1060 Responses to RFI Q23 to customers of electronic specialty gases, questions 22 and 46.

1061 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, paragraph 9, ID6226.

1062 Responses to RFI Q23 to customers of electronic specialty gases, questions 44 and 45.

1063 Notably, […]' response to RFI Q23 to customers of electronic specialty gases, question 45.2 (ID3403) ("*Some molecules are single-sourced*") and […]'s response to RFI Q23 to customers of electronic specialty gases, question 45.2 (ID2109) ("*Some gases are sole supplier based*"). […] also indicated that "*multiple suppliers are qualified for the important ESGs like phosphine, arsine and ammonia*"([…]'s response to RFI Q53 to customers of electronic specialty gases, question 21.3, (ID5687)). This is also corroborated by the Reply to the Statement of Objections which acknowledges the implementation of multi-sourcing strategies only "*for key ESGs*" (paragraph 120).

1064 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 15, ID5990.

1065 Responses to RFI Q23 to customers of electronic specialty gases, question 48.

1066 […]'s response to RFI Q23 to customers of electronic specialty gases, question 45.2, ID4220.

1067 Responses to RFI Q23 to customers of electronic specialty gases, question 43.

pointed out that, regardless of the ESG, switching is difficult (it is a long and expensive process) or very difficult (it is a very long and very expensive process, which rarely occurs).[1068]

(922) First, as confirmed by the second phase market investigation, ESGs are a critical input for companies that purchase them and that are mainly active in the semiconductor industry.[1069] Both suppliers and customers confirmed that in this sector plants often have 24/7 operations. As a result, any disruption in the supply chain may have a critical impact on such operations and cause losses of several EUR millions.[1070] It follows that the quality of the products and the reliability of suppliers is of utmost importance for customers.[1071] This holds true, both, in the bulk and cylinder supply of ESGs. By way of example, a customer confirmed that "*The supply of all ESGs is very important and we need a stable supply chain.*"[1072] This explains why, for the majority of the respondents to the market investigation, it is crucial to have suppliers that can ensure security of supply and timely deliveries. In general, on time deliveries are considered of utmost importance[1073] and as having "*highest priority*".[1074]

(923) Second, the Notifying Parties explain that customers of ESGs generally perform qualification activities whose cost, depending on the ESG considered, may vary between [tens of thousands of euro] and [hundreds of thousands of euro] per qualification. They also explain that, in general, a qualification process may take between […] and […] months.[1075]

(924) The market investigation confirmed that this process is costly and lengthy and that customers are generally unwilling to make changes to their supply chain.[1076]

(925) The need for re-qualification depends on the extent of the change occurring in the supply chain and on the characteristics of the gases being sourced. A competitor confirmed that re-qualification costs depend on the type of gas and on whether the

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1068 Responses to RFI Q23 to customers of electronic specialty gases, question 44.

1069 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 22, ID6402. Responses to RFI Q53 to customers of electronic specialty gases, question 1.

1070 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraphs 22 and 26, ID6402.

1071 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 28, ID6402.

1072 […]'s response to RFI Q23 to customers of electronic specialty gases, question 8.6.2, ID1837.

1073 Responses to RFI Q23 to customers of electronic specialty gases, question 8.5.

1074 […]'s response to RFI Q23 to customers of electronic specialty gases, questions 8.5.2, ID1837.

1075 Form CO, Section 8, Chapter C, paragraph 917.

1076 Responses to RFI Q23 to customers of electronic specialty gases, question 44. In the Reply to the Statement of Objections the Notifying Parties claimed – at para. 119 – that the answers provided by customers to question 44 of the RFI Q23 to customers of electronic specialty gases according to which switching is difficult should be nuanced. Namely, by singling out the answer provided by […] – which stated that "*in case of more or less commodities which are typical for the semiconductor industry,* [to qualify new suppliers] *is rather less difficult*" the Notifying Parties claimed that switching is easier for more commoditised ESGs. The Commission acknowledges this but notes that also the answer given by one of the customers that qualified switching as "*relatively easy*" – […] – should be nuanced. Indeed, that customer pointed out that the relative ease of switching "*depend*[s] *on application and impact*." ([…]'s response to RFI Q23 to costumers of specialty gases, question 44.1, ID2109). Also, agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 16 ID5990. Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 26, ID6402.

latter is of critical importance for the production process.[1077] Only if the ESG sourced is not critical, which is rarely the case, and/or the product characteristics are more standard, a paper-requalification requiring a shorter time frame may be possible.[1078]

(926) However, there is general consensus among customers that for most ESGs re-qualification would generally be necessary, given the critical nature of this type of gases as production inputs and the high-level purity required.[1079] Any relevant change in the supply chain, "*including for example in case the location of purification and/or transfilling activities is modified*", would trigger re-qualification.[1080] This is because, "[w]*hen customers source ESGs they qualify the entire supply chain of their provider(s)*".[1081] The large majority of the respondents to the market investigation for instance declared that if there were a change in the location where the gas or gas mixture that they procure is processed, or a change in the identity of their raw material supplier, they would have to re-qualify the product/s concerned.[1082]

(927) As far as the costs of re-qualification are concerned, ESGs customers emphasised that they *"typically expect suppliers to pay for the incurred cost on their side in the form of additional discounts*".[1083]

(928) With respect to the length of such a process, the market investigation confirmed that, depending on the gas, re-qualification may range between several months up to 18 months.[1084] A customer offered an example of what would happen if the merger led to changes in the supply chain of the merged entity, *"for products that are currently supplied to* […] *by Praxair and Linde …* […] *will have to re-qualify a large number of products. About 130 molecules purchased by* […] *would be affected by the Transaction*".[1085] Another customer of both ESGs in bulk and cylinders explained the technical difficulty in switching bulk supplier, "*Also, from a technical point of view, switching is difficult due to the complexity involved. Indeed, each station has its own insides. The BSGS (bulk supply gas station) is provided by the gas provider and only rented by* […]. *Each station only fits for one supplier, changing the station requires some effort*".[1086]

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1077 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 26, ID 6402.

1078 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 17, ID6233.

1079 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 16, ID6233.

1080 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 16, ID5990.

1081 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 23, ID6108.

1082 Responses to RFI Q53 to customers of electronic specialty gases, question 22.

1083 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, paragraph 23, ID6108.

1084 Agreed non-confidential minutes of […] of 22 March 2018, paragraph 16, ID5990. If there were a change in the raw material supplier, […] stated that "*Our quality management team requires mandatory re-qualification actions, such as [type of action] and process approvals. This can take [5-20] months*" ([…]'s response to RFI Q53 to customers of electronic specialty gases, question 22.1, ID 5752). In addition, […] made reference to a re-qualification's duration of "*app. 6 months*" ([…]'s response to RFI Q53 to customers of electronic specialty gases, question 23.1, ID 5687).

1085 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 25, ID6233.

1086 […]'s response to RFI Q23 to customers of electronic specialty gases, question 19.2, ID4220.

(929) Re-qualification is therefore a burdensome process, which discourages customers from switching to alternative sources of supply. This was confirmed by a competitor reporting, in the context of the market investigation, that customers are reluctant to switch even when more competitive prices are offered, "*Given that customers typically purchase a wide variety of different ESGs, re-qualify all the products sourced would represent a high burden for customers both in terms of costs and time needed to complete the process. Therefore, they are generally unwilling to make changes to their supply chain. If there need to be changes, they would qualify only one-two product/s per year. Evidence of this reluctance to change is the fact that […]customers are generally unwilling to engage into a requalification process due to the costs and time inherent in that process, even when more competitive prices are offered*".[1087]

(930) In the Reply to the Statement of Objections, the Notifying Parties explained that, for key ESGs, customers typically implement sourcing strategies, with three-four sources, and that, in such cases, "*switching among already qualified suppliers is relatively easy given that it does not entail requalifying a new supplier/source.*"[1088] In this respect, the Commission notes that, even though switching between already qualified suppliers may be relatively easy, the ability of ESG customers to implement multi-sourcing strategies would be undermined by the reduction in the number of ESG suppliers resulting from the Transaction (see recital (888)).

(931) In addition to the above, the market investigation revealed that, if post-Transaction the Notifying Parties decided to increase prices, ESGs customers would not be able to counter such decision by starting to source gases from non-EEA suppliers, in particular Asian suppliers. This is so for a number of reasons. First, considering the time necessary to ship gases from Asia to the EEA, suppliers from that region might not be able to meet customers' required short lead times. Second, Asian suppliers do not have transfilling capability in the EEA, which – as shown at recital (906) – is essential to serve customers that buy ESGs in small quantities, usually contained in cylinders. Third, Asian suppliers do not have the infrastructure and/or personnel needed to ensure compliance with all the requirements which are provided for in the applicable EU regulations, among which the REACH regulation, and which are necessary to serve the EU market.

(932) In this respect, a competitor acknowledged that, although Asian suppliers, "*could potentially compete on the European market in relation to the supply of ESGs in larger quantities (ISO trailers), they do not represent a competitive constraint on the bulk and cylinder markets*".[1089]

(933) After pointing out that, "*ESGs are generally shipped in larger containers (rather than in cylinders) due to transportation costs, while customers source them in smaller quantities*"[1090], the same competitor explained the reasons why, in general "*foreign suppliers with no local presence in Europe are not considered to be credible suppliers*", "[f]*irst, it takes a long time to ship ESGs from other continents (e.g. Asia) to Europe; therefore, foreign suppliers are not in a position to meet customers'*

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1087 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 26, ID6402.

1088 Reply to the Statement of Objections, paragraph 120.

1089 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 24, ID6402.

1090 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 24, ID6402.

*demand, namely due to the required lead time. Second, suppliers with no transfill capabilities in Europe would not be able to supply cylinders, which represent a relevant part of the demand. Third, products to be sold in Europe must comply with strict regulations including the REACH regulation, which provides for costly and long approval procedures.* […] *currently ESGs produced by certain foreign suppliers* […] *do not fully comply with such regulation. As mentioned above, having transfill centres in Europe for ESGs is very important for a supplier to be able to serve the European market.*"[1091]

(934) This view is supported by the customers responding to the market investigation. A customer in particular reported that, although it considered sourcing ESGs from Asian suppliers, it was not able to find an alternative supplier from that region which had the necessary assets in the EEA to actually meet its demand. This customer namely stated that it, "*couldn't find Chinese suppliers for direct delivery of ESGs for its European operations. Logistics represents an important barrier to delivering products to Europe from outside the region. The main market entry barriers are the registration requirements (products need to comply with REACH Regulation), which discourage Chinese suppliers from entering the European market. In addition, sourcing products from China (and, more generally, from outside Europe) would be more costly and risky: … foreign suppliers would need to set up brand new direct sales channels (while this is not the case for suppliers whose supply chain is already established).*"[1092]

(935) Finally, customers responding to the market investigation highlighted a specific switching issue that post-Transaction will arise with respect to subatmospheric implantation gases that have to be stored and utilised safely given the toxic or corrosive nature of the molecules that they contain. These hazardous substances, utilised in the context of implantation activities, need to be handled through cylinder containers specifically designed for that purpose.[1093] In particular, the market investigation revealed that (i) there are only two alternative technologies available on the market, namely Praxair's "Uptime" technology and Entegris's "SDS" technology,[1094] and that (ii) switching between these two technologies may be difficult and entails re-qualification process.[1095] For instance, […] explained that switching from the Uptime technology to Entegris technology require "*some re-tooling of […] production equipment and some small investments.*"[1096] Even though, these additional switching costs only apply to the subatmospheric gas market,[1097] the Commission notes that they are likely to affect other ESG markets given that some

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1091 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 25, ID 6402.

1092 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 14, ID6233.

1093 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 19, ID6233.

1094 Versum is also currently developing an alternative technology, which is not yet available on the market (agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 18, ID6233).

1095 Notably, agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 18-21, ID6233.

1096 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, paragraph 20, ID6233.

1097 Reply to the Statement of Objections, Section 4.2.2, paragraph 125.

customers prefer to source all their ESGs from the same supplier (one-stop-shop supplier).[1098]

(936) In their Reply to the Statement of Objections, the Notifying Parties disputed the Commission's finding on the difficulty to switch ESG supplier notably on the grounds that most of the customers responding to the market test, that did not switch ESGs' supplier, explained that their decision was based on considerations other than the limited number of alternatives.[1099] In this respect, the Commission observes that its finding on the difficulty of switching is not exclusively based on the limited number of alternatives but also on several other elements such as the fact that (i) ESGs are critical inputs which require a stable supply chain; (ii) the re-qualification process required in case of change in the supply chain is difficult and costly; (iii) customers favour suppliers with a wide product portfolio; and (iv) suppliers needs to have specific assets in order to be credible (which explains why Asian suppliers, which do not have such assets, are not regarded as capable of constraining the Notifying Parties' behavior post-Transaction).

(937) The Notifying Parties also argued that competition is driven by prices, service level, and the ability to comply with the customers' technical specifications, which is illustrated by the fact that Linde and Praxair have recently lost or gained customers from competitors, and which shows that "*switching occurs and is possible.*"[1100] The Commission first reiterates that, based on the results of the market investigation, the key parameters of competition in the markets for the supply of ESGs are, in order of importance: security of supply; purity of product; timely deliveries; overall service level; and prices. Second, the Commission does not deny that switching is possible and does occur, but found that a number of elements make switching difficult and unable to be as timely and swift as would be necessary to counter the Notifying Parties' increased market power post-Transaction (see Section 8.5.2.2.b.iv).

iv. Conclusion

(938) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the relevant markets are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely effects of the Transaction**

(939) On the basis of the considerations expressed in Sections 8.5.2.2.a. and 8.5.2.2.b, the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties in a pre-Transaction scenario and there are no sufficient competitive constraints on the merged entity to counteract such price increases.

(940) The majority of the respondents to the market investigation, when asked to express their view on the likely impact of the Transaction, expressed concerns regarding the merger of these two suppliers.

(941) A company – which is a producer of certain ESGs' molecules which are sold to large industrial gas companies such as Praxair and Linde – pointed out that "*the number of*

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1098 Notably, […]'s response to RFI Q53 to customers of electronic specialty gases, question 13.1, ID5687.

1099 Reply to the Statement of Objections, Section 4.2.1, paragraphs 116-118.

1100 Reply to the Statement of Objections, Section 4.2.1, paragraph 121.

*wholesale customers sourcing specialty gases from* [this company] … *is already very limited*".[1101]

(942) A customer explained that, in view of the high level of concentration in the ESGs markets in the EEA, the Transaction is expected to have a negative impact in the EEA, "*Competitors in these other regions may be better positioned to compete and replace Linde/Praxair ESGs, i.e. our market shares are more concentrated with them in EEA but not as much in other regions. The EEA will be the most negatively impacted region by this transaction*".[1102] The same customer emphasized that "*It is very critical to ensure* [that post-Transaction] *the supply competitors are equitably capable in product portfolio, technology, size/scope, financial viability, market presence and business acumen*".[1103] Overall, according to this company the Transaction will have a negative impact for all the reasons listed in the preceding recitals; essentially, because it will: "*1. Reduce available and qualified sources of ESGs creating less competition 2. Change manufacturing, transfill operations, warehouse and distribution elements in the supply chain which negatively affect competitive prices and efficient order fulfillment processes 3. Reduce sales competition in the market causing increased price for most ESGs*".[1104]

(943) Less detailed comments regarding the effects of the Transaction were made by other customers. Nonetheless these customers overall shared the view that the Transaction will be detrimental for competition in the ESGs markets in the EEA, which are already not very competitive. One of the customers clearly expressed its fear, "*that the competitive conditions would (further) worsen as a consequence of the merger*"[1105], while another commented on the lessening of competition that will be triggered by the Transaction by stating: "*Less suppliers, less competition*".[1106]

**d. Overall conclusion**

(944) For the reasons set out in recitals (879)-(943), the Commission's assessment is that the Transaction would significantly impede effective competition in the EEA markets for: (a) the bulk supply of nitrogen trifluoride; and (b) the cylinder supply of the following ESGs: (i) ammonia, (ii) boron trichloride, (iii) chlorine, (iv) deuterium, (v) diborane and mixtures, (vi) dichlorosilane, (vii) germane and mixtures, (viii) halocarbon 116, (ix) halocarbon 23, (x) halocarbon 318, (xi) halocarbon 41, (xii) high purity nitrous oxide, (xiii) hydrogen bromide, (xiv) hydrogen chloride, (xv) hydrogen fluoride, (xvi) nitrogen trifluoride, (xvii) phosphine and mixtures, (xviii) silane and mixtures, (xix) silicon tetrachloride, (xx) silicon tetrafluoride, (xxi) sulphur hexafluoride, (xxii) tetrafluoromethane, (xxiii) trichlorosilane.

(945) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in i) the creation or strengthening of a dominant position on the markets for the cylinder supply of chlorine, deuterium, hydrogen bromide, hydrogen chloride, hydrogen fluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, sulphur hexafluoride, and trichlorosilane, and at least ii) the removal of a significant

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1101 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 4, ID6082.

1102 […]'s response to RFI Q23 to customers of electronic specialty gases, question 53.1, ID3771.

1103 […]'s response to RFI Q53 to customers of electronic specialty gases, question 25, ID5643.

1104 […]'s response to RFI Q23 to customers of electronic specialty gases, question 54, ID3771.

1105 […]'s response to RFI Q23 to customers of electronic specialty gases, question 53.1, ID4220.

1106 […]'s response to RFI Q23 to customers of electronic specialty gases, question 53.1, ID3870.

competitive constraint on the markets for the cylinder supply of: ammonia, boron trichloride, diborane and mixtures, dichlorosilane, germane and mixtures, halocarbon 116, halocarbon 23, halocarbon 318, halocarbon 41, high purity nitrous oxide, nitrogen trifluoride, silicon tetrachloride, tetrafluoromethane.

8.5.3. *Horizontal coordinated effects*

(946) In the Article 6(1)(c) Decision the Commission did not reach a conclusion as to whether the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects with respect to the markets for the bulk and cylinder supply of ESGs. Such effects would have resulted from coordination between the remaining Tier 1 players aiming at market repartition.

(947) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change of the incentives of the merged entity and its remaining Tier 1 competitors to coordinate their market conduct post-Transaction. Thus, the Commission considers that the Transaction would not significantly impede effective competition in the markets for the bulk or the cylinder supply of ESGs as a result of horizontal coordinated effects. The Commission also notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in those markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

## 8.6. Chemical gases

*8.6.1. Market structure and competitive parameters*

8.6.1.1. Market shares and concentration levels

(948) Table 42 shows the Notifying Parties' 2016 market shares based on **sales in value and volume**, as well as the concentration levels, in each of the horizontally affected markets[1107] for chemical gases (in cylinders) identified in Section 8.1.1 in the relevant EEA countries.

(949) Further detailed market share data, based on sales in value and volume, including information on the Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

[1107] Affected markets are identified on the basis of the sale market shares by either value or volume.

**Table 42: Market shares for cylinder supply of chemical gases (2016)[1108]**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography**[1109] | **Product**[1110] | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Austria | Ethylene | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [300-400] |
| | Methane | [10-20]% | [0-5]% | [10-20]% | [2500-3000] | [2500-3000] | [0-100] |
| | Sulphur dioxide* | [10-20]% | [20-30]% | [40-50]% | [1000-1500] | [2000-2500] | [700-800] |
| Czech Republic | Chlorine | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Ethane | [50-60]% | [0-5]% | [50-60]% | [3000-3500] | [3000-3500] | [300-400] |
| | Ethylene | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [900-1000] |
| | Hydrogen sulphide* | [30-40]% | [0-5]% | [30-40]% | [1500-2000] | [1500-2000] | [200-300] |
| | Nitric oxide | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [300-400] |
| | Sulphur dioxide | [20-30]% | [40-50]% | [70-80]% | [3000-3500] | [5000-5500] | [2000-2500] |
| | Sulphur hexafluoride | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [200-300] |
| Denmark | Ammonia* | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Butene[1111] | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Methane | [40-50]% | [5-10]% | [50-60]% | [3000-3500] | [3500-4000] | [400-500] |
| | Nitric oxide | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |
| France | Ethylene* | [10-20]% | [5-10]% | [10-20]% | [200-300] | [300-400] | [100-200] |
| Germany | Butane | [20-30]% | [5-10]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | Ethylene | [30-40]% | [0-5]% | [30-40]% | [3500-4000] | [3500-4000] | [100-200] |

1108 In relation to the HHI reported in the Table, it should be noted that in some markets the Notifying Parties have attributed non-negligible market shares to a general category "Others" on an aggregated basis. Such category "Others" has been excluded for the purpose of calculating the HHI reported in the Table. Therefore, the reported HHI levels pre- and post- Transaction constitute the lowest HHI levels one could compute. Where the Notifying Parties have attributed to the category "Others" market shares above [20-30]%, and thus the HHI levels could be substantially higher than those reported in the Table, this is marked with an asterisk (*).

1109 As regards Hungary, in relation to which the Commission did not conclude in the Article 6(1)(c) Decision on whether the Transaction would raise serious doubts as to its compatibility with the internal market, the Notifying Parties have submitted that no affected market would arise on gas-by-gas basis in the period 2014-2016 (Notifying Parties' reply to RFI57, question 36).

1110 Carbon monoxide refers to products with a purity level of 3.0 or more.

1111 Includes all gases part of the butene group.

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography**[1109] | **Product**[1110] | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Carbon monoxide | [20-30]% | [5-10]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | Methane | [20-30]% | [5-10]% | [30-40]% | [3000-3500] | [3500-4000] | [300-400] |
| | Nitric oxide | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [4000-4500] | [1500-2000] |
| | Propane | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Propylene | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| Italy | Ethylene oxide[1112] | [0-5]% | [90-100]% | [90-100]% | [9500-10000] | [9500-10000] | [0-100] |
| | Hydrogen chloride | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Hydrogen fluoride* | [20-30]% | [0-5]% | [20-30]% | [400-500] | [500-600] | [0-100] |
| | Hydrogen sulphide* | [0-5]% | [20-30]% | [20-30]% | [1000-1500] | [1000-1500] | [0-100] |
| | Iso-Butane* | [5-10]% | [20-30]% | [20-30]% | [500-600] | [800-900] | [200-300] |
| Netherlands | Ammonia | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Butane | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [2000-2500] | [500-600] |
| | Ethane* | [20-30]% | [0-5]% | [20-30]% | [1000-1500] | [1000-1500] | [0-100] |
| | Ethylene* | [20-30]% | [0-5]% | [20-30]% | [1000-1500] | [1500-2000] | [100-200] |
| | Carbon monoxide* | [20-30]% | [5-10]% | [20-30]% | [1500-2000] | [1500-2000] | [300-400] |
| | Hydrogen sulphide* | [20-30]% | [0-5]% | [20-30]% | [600-700] | [600-700] | [0-100] |
| | Methane | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [900-1000] |
| | Propane | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [1500-2000] | [400-500] |
| | Sulphur dioxide* | [20-30]% | [0-5]% | [20-30]% | [700-800] | [700-800] | [0-100] |
| Norway | Ammonia | [10-20]% | [80-90]% | [90-100]% | [7500-8000] | [9500-10000] | [2000-2500] |
| | Butane* | [20-30]% | [20-30]% | [40-50]% | [1000-1500] | [2000-2500] | [1000-1500] |
| | Ethane* | [20-30]% | [20-30]% | [50-60]% | [1000-1500] | [2500-3000] | [1000-1500] |

[1112] Also including mixtures based on ethylene oxide as a feed gas.

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography**[1109] | **Product**[1110] | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Ethylene* | [20-30]% | [0-5]% | [20-30]% | [600-700] | [700-800] | [100-200] |
| | Methane | [70-80]% | [10-20]% | [80-90]% | [5000-5500] | [6500-7000] | [1500-2000] |
| | Propane* | [0-5]% | [20-30]% | [20-30]% | [600-700] | [600-700] | [0-100] |
| | Sulphur hexafluoride* | [20-30]% | [0-5]% | [20-30]% | [400-500] | [500-600] | [100-200] |
| Portugal | Methane | [20-30]% | [5-10]% | [30-40]% | [3000-3500] | [3500-4000] | [400-500] |
| Romania | Ethylene | [0-5]% | [70-80]% | [80-90]% | [6000-6500] | [6500-7000] | [300-400] |
| | Methane* | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Propane* | [50-60]% | [0-5]% | [50-60]% | [2500-3000] | [3000-3500] | [100-200] |
| | Sulphur hexafluoride* | [20-30]% | [0-5]% | [20-30]% | [800-900] | [900-1000] | [0-100] |
| Slovakia | Methane* | [30-40]% | [10-20]% | [50-60]% | [1500-2000] | [2500-3000] | [900-1000] |
| Slovenia[1113] | Ammonia | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Methane* | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Sulphur dioxide | [40-50]% | [20-30]% | [60-70]% | [3000-3500] | [5000-5500] | [2000-2500] |
| | Sulphur hexafluoride | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [100-200] |
| Spain | Methane | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| Sweden | Ammonia* | [20-30]% | [0-5]% | [20-30]% | [500-600] | [500-600] | [0-100] |
| | Methane* | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5000-5500] | [0-100] |
| | Sulphur dioxide* | [20-30]% | [0-5]% | [20-30]% | [600-700] | [700-800] | [0-100] |

[1113] In relation to Slovenia, the Notifying Parties submitted that their activities overlap in this country, giving rise to affected markets on different types of specialty gases (Form CO, Chapter C, Section 6, paragraphs 730-731). However, in other parts of the Form CO, the Notifying Parties indicated that in […] Linde sold its subsidiary in Slovenia, as result of which it will no longer sell industrial gases and helium directly to end-customers in the country (Form CO, Chapter A, Section 6, footnote 44, and Chapter D, Section 6, footnote 519). Since the Notifying Parties have not explicitly indicated that Linde has divested its specialty gas business in Slovenia, the Commission considers that affected markets would arise in relation to the cylinder supply of chemical gases in this country.

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography**[1109] | **Product**[1110] | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| United Kingdom | Methane | [10-20]% | [0-5]% | [20-30]% | [4500-5000] | [4500-5000] | [100-200] |
| | Propane | [10-20]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Austria | Ethylene | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [100-200] |
| | Methane | [10-20]% | [0-5]% | [20-30]% | [2500-3000] | [2500-3000] | [0-100] |
| | Sulphur dioxide* | [10-20]% | [20-30]% | [40-50]% | [1000-1500] | [2000-2500] | [700-800] |
| Czech Republic | Chlorine | [50-60]% | [20-30]% | [70-80]% | [3500-4000] | [5500-6000] | [2000-2500] |
| | Ethane | [50-60]% | [0-5]% | [50-60]% | [3000-3500] | [3000-3500] | [200-300] |
| | Ethylene | [40-50]% | [5-10]% | [50-60]% | [2500-3000] | [3000-3500] | [600-700] |
| | Hydrogen sulphide* | [30-40]% | [0-5]% | [30-40]% | [1500-2000] | [1500-2000] | [200-300] |
| | Nitric oxide* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2000-2500] | [0-100] |
| | Sulphur dioxide | [20-30]% | [40-50]% | [70-80]% | [3000-3500] | [5000-5500] | [2000-2500] |
| | Sulphur hexafluoride | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [300-400] |
| Denmark | Ammonia* | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | Butene[1114] | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Methane | [40-50]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [400-500] |
| | Nitric oxide | [60-70]% | [0-5]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |
| France | Ethylene* | [10-20]% | [10-20]% | [20-30]% | [200-300] | [500-600] | [200-300] |

[1114] Includes all gases part of the butene group.

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Germany | Butane | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [100-200] |
| | Ethylene | [20-30]% | [0-5]% | [30-40]% | [3000-3500] | [3000-3500] | [0-100] |
| | Carbon monoxide | [20-30]% | [5-10]% | [30-40]% | [2000-2500] | [2000-2500] | [300-400] |
| | Methane | [20-30]% | [5-10]% | [30-40]% | [3000-3500] | [3500-4000] | [400-500] |
| | Nitric oxide | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [4000-4500] | [1500-2000] |
| | Propane | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Propylene* | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| Italy | Ethylene oxide[1115] | [0-5]% | [90-100]% | [90-100]% | [9500-10000] | [9500-10000] | [0-100] |
| | Hydrogen chloride | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Hydrogen fluoride* | [20-30]% | [0-5]% | [20-30]% | [400-500] | [400-500] | [0-100] |
| | Hydrogen sulphide* | [0-5]% | [20-30]% | [20-30]% | [1000-1500] | [1000-1500] | [0-100] |
| | Iso-Butane* | [0-5]% | [20-30]% | [20-30]% | [500-600] | [500-600] | [0-100] |
| Netherlands | Ammonia | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | Butane* | [20-30]% | [10-20]% | [30-40]% | [1000-1500] | [1500-2000] | [500-600] |
| | Ethane* | [20-30]% | [0-5]% | [20-30]% | [1000-1500] | [1000-1500] | [0-100] |
| | Ethylene* | [20-30]% | [0-5]% | [20-30]% | [1000-1500] | [1500-2000] | [0-100] |
| | Carbon monoxide* | [20-30]% | [5-10]% | [20-30]% | [1500-2000] | [1500-2000] | [300-400] |
| | Hydrogen sulphide* | [20-30]% | [0-5]% | [20-30]% | [600-700] | [600-700] | [0-100] |
| | Methane | [40-50]% | [10-20]% | [50-60]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Propane | [20-30]% | [10-20]% | [30-40]% | [1500-2000] | [1500-2000] | [400-500] |
| | Sulphur dioxide* | [20-30]% | [0-5]% | [20-30]% | [700-800] | [700-800] | [0-100] |

[1115] Also including mixtures based on ethylene oxide as a feed gas.

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Norway | Ammonia | [10-20]% | [90-100]% | [90-100]% | [8000-8500] | [9500-10000] | [1500-2000] |
| | Butane* | [20-30]% | [20-30]% | [40-50]% | [900-1000] | [1500-2000] | [900-1000] |
| | Ethane* | [20-30]% | [20-30]% | [50-60]% | [1000-1500] | [2500-3000] | [1000-1500] |
| | Ethylene* | [20-30]% | [0-5]% | [20-30]% | [400-500] | [400-500] | [0-100] |
| | Methane | [60-70]% | [10-20]% | [80-90]% | [4500-5000] | [6000-6500] | [1500-2000] |
| | Propane* | [0-5]% | [20-30]% | [20-30]% | [600-700] | [600-700] | [0-100] |
| | Sulphur hexafluoride* | [20-30]% | [5-10]% | [20-30]% | [400-500] | [700-800] | [200-300] |
| Portugal | Methane | [20-30]% | [5-10]% | [30-40]% | [2500-3000] | [3000-3500] | [400-500] |
| Romania | Ethylene | [0-5]% | [70-80]% | [80-90]% | [6000-6500] | [6000-6500] | [100-200] |
| | Methane* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2000-2500] | [0-100] |
| | Propane* | [50-60]% | [0-5]% | [50-60]% | [2500-3000] | [2500-3000] | [0-100] |
| | Sulphur hexafluoride* | [20-30]% | [0-5]% | [20-30]% | [800-900] | [900-1000] | [0-100] |
| Slovakia | Methane* | [30-40]% | [10-20]% | [50-60]% | [1500-2000] | [2500-3000] | [1000-1500] |
| Slovenia[1116] | Ammonia | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Methane* | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Sulphur dioxide | [40-50]% | [20-30]% | [60-70]% | [3000-3500] | [5000-5500] | [2000-2500] |
| | Sulphur hexafluoride | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [100-200] |
| Spain | Methane | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [600-700] |
| Sweden | Ammonia* | [20-30]% | [0-5]% | [20-30]% | [500-600] | [500-600] | [0-100] |
| | Methane* | [70-80]% | [0-5]% | [70-80]% | [5000-5500] | [5500-6000] | [100-200] |
| | Sulphur dioxide* | [20-30]% | [0-5]% | [20-30]% | [600-700] | [700-800] | [0-100] |

[1116] See footnote 1113.

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| United Kingdom | Methane | [10-20]% | [5-10]% | [20-30]% | [4000-4500] | [4500-5000] | [200-300] |
| | Propane | [10-20]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [400-500] |

*Source: Commission's compilation based on Annex Q28.1 to RFI 48*

8.6.1.2. Competitive parameters and general market conditions

(950) As regards the **general market conditions** in the markets for the supply of chemical gases, the Commission preliminarily notes that these markets are strongly linked to the markets for the supply of other types of gases, in particular industrial gases.

(951) In terms of **supply chain**, industrial gas companies do not generally produce (synthesise) chemical gases themselves, but they rather purchase them in large quantities (bulk) from international chemical companies (such as BASF, Bayer or Solvay). The sourced molecules are then purified (when they need to be upgraded), transfilled into the required containers, blended with other components according to customers' requirements, and delivered to customers. Suppliers of chemical gases may be active at different levels of the supply chain. Chemical companies are not competing with industrial gas companies in the supply of chemical gases to end customers, in particular in cylinders, as they lack the necessary infrastructure, notably in terms of transfilling and distribution.[1117] Indeed, the same chemical company (for example, […] or […]) can be a supplier to the industrial gas companies for bulk chemical gases and, at the same time, their customer for purified and blended chemical gases in cylinders.

(952) While specialty gases (including chemical gases) are processed with the use of dedicated equipment (notably, dedicated transfill centres), their distribution is linked with other types of gases, in particular industrial gases. As explained by the Notifying Parties, all major gas companies have their own distribution infrastructure and, in general, they use their distribution channels as much as possible for their product portfolio in order to reduce costs where practically feasible.[1118] Therefore, the same personnel and trucks are generally used to distribute industrial and specialty gases, including chemical gases.[1119] This is particularly important in view of the fact that chemical gases, as other types of specialty gases, are generally sold to customers in low volumes (compared to industrial gases), which means that reaching a critical mass of sales also via other types of gases is important for suppliers to maintain a competitive cost structure. As explained by Air Liquide *"as the customers(') density is low, synergies with a national / transnational industrial cylinders supply chain is*

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1117 Notably, BASF explained that *"BASF is active in the synthesis / generation of certain gases (...). In most cases, these molecules are sold by BASF ex works to industrial gas companies, which then purify and distribute them to end-customers. However, in relation to four specific chemical molecules (butane, ethylene, ethylene oxide and propylene), BASF purifies and sells them directly to end-customers, which source them in relatively large quantities (in bulk). However, BASF considers that its activities in this business do not genuinely overlap with the Parties' activities, giving that Praxair and Linde are mostly engaged in the sale of chemical gases in cylinders (rather than in bulk)."* (agreed non-confidential minutes of the conference call with BASF of 20 March 2018, paragraph 12, ID 6082.

1118 Form CO, Chapter C, Section 8, paragraph 890.

1119 Form CO, Chapter C, Section 8, paragraph 903.

*critical to be competitive."*[1120] Moreover, certain chemical gases, notably carbon monoxide, basically consist of industrial gases with higher levels of purification.

(953) In terms of **demand**, the Commission notes the following. First, customers, especially of large size, tend to purchase multiple types of chemical gases for their operations and typically source their requirements together and/or from the same supplier(s). For example, in the context of the second phase investigation, [a competitor] explained that *"customers generally have a strong preference for suppliers that are able to offer a wide range of chemical gases."*[1121] This was recognised by the Notifying Parties in the Form CO, which explained that offering the full range of products can be a compelling selling point with respect to chemical gases since large chemical companies tender out the full cylinder gas business and want the supplying gas company to offer the full package in order to avoid having to work with different suppliers for a few cylinders per year.[1122] This is also in line with the data submitted by the Notifying Parties, according to which […] of their customers, in terms of sales value, purchase more than one type of chemical gas.[1123]

(954) Second, customers of chemical gases may purchase a wide variety of other types of gases. Notably, large chemical companies source not only chemical gases, but also industrial gases, helium and calibration gas mixtures for their operations and laboratories.[1124] Customers often purchase the range of gases they need from the same supplier(s), also by bundling volumes together when selecting a provider.[1125] In this respect, Messer explained that "*chemical gases (…) are often purchased together with other gases; customers for chemical gases typically prefer to have only one supplier to provide all the gases they need."*[1126] [A competitor] further stated that *"most of the times these products* [referring to chemical gases] *are "complementary" to other gases, in particular to industrial gases. Customers that purchase industrial and chemical gases generally require suppliers to provide both types of gases, as part of the same supply contract"*.[1127] This is also in line with the data submitted by the Notifying Parties, according to which […] of their sales of chemical gases is supplied together with other types of gases, […].[1128]

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1120 Air Liquide's responses to RFI Q28 to suppliers of specialty gases, question 4, ID 5164.

1121 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 17, ID 6302.

1122 Form CO, Chapter C, Section 8, paragraph 914.

1123 Notifying Parties' reply to RFI57, question 27. According to data submitted by the Notifying Parties, while Linde's customers purchasing more than one type of chemical gas amount to about […]% in number, such customers account for more than […]% of Linde's sales of chemicals (in value). The same holds true in relation to Praxair, for which customers purchasing more than one type of chemicals amount to about […]% in number, but are worth about […]% of its sales (in value).

1124 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 38, ID 6402.

1125 For example, a large chemical company, […], explained in the context of the second phase investigation that *"generally, contracts with suppliers are stipulated for the whole range of gases (i.e. not limited to chemical gases) that* […] *needs to purchase for its operations."* Agreed non-confidential minutes of the conference call with […] of 7 April 2018, paragraph 7, ID 6084.

1126 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 24, ID 6230.

1127 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 17, ID 6302.

1128 Notifying Parties' reply to RFI57, question 26, where they submitted data on the proportion of their sales of specialty gases supplied with other types of gases, that is to say that are supplied to the same customer, irrespective of whether these gases are part of the same contract and/or are sold to the customer at the same moment in time. In relation to both Praxair and Linde, in 2016, about […]%,

(955) Due to these links with other gases, notably with industrial gases, the **competitive landscape** of the markets for the supply of chemical gases is strongly influenced by that of these other markets. That being said, the relative strength of suppliers in the markets for industrial gases in certain countries is always (fully) reflected by a similar strong position on the markets for chemical gases. In order to transfill specific chemical gases, dedicated equipment, which requires additional investments, is needed.[1129] Therefore, gas companies may decide not to invest in the supply of certain specific chemical gases if their customers do not require them and/or the volumes sourced are too low to justify the investment. This means that integration with the industrial gas business provides an important advantage for suppliers, but additional investments are required to be competitive on the markets for chemical gases.

(956) Overall, the competitive landscape of chemical gas markets is populated by industrial gas suppliers, generally active in a number of EEA countries, and local players, with a more limited geographic presence. While industrial gas companies typically perform some steps of the chemical gases supply chain in-house (such as purification, transfilling, blending and distribution), local players mainly operate on the markets concerned as traders (only distribution).

(957) In line with what has been discussed above, most respondents to the market investigation identified as **credible sources of supply** the main Tier 1 players active across national markets in the EEA, notably Linde, Air Liquide and Praxair. A few customers also mentioned Air Products and Messer as credible providers, while very few customers indicated regional suppliers/distributors such as Westfalen, Gerling Holz, and Strandmollen.[1130]

(958) Customers responding to the market investigation rated, on average, the **level of competitiveness** of the markets for the cylinders supply of chemical gases at about 3 on a scale of 5 points.[1131] In particular, customers explained that across the EEA there are few large players active, which typically do not offer the same exact portfolio of gases. In particular, for more complex molecules, there may be very few sources of supply.[1132] A significant number of customers, including large customers of chemical gases, consider that there is limited competition in the market, which means that the offers they receive are either not very competitive or not competitive at all.[1133]

(959) In terms of **parameters of competition**, customers, on average, consider supply security and timely deliveries as the most important driving factors in the selection of their suppliers, followed by purity of product and price.[1134]

(960) While some respondents recognised that suppliers' geographic footprint in the EEA countries may differ to some extent and that not all main suppliers offer the same

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[…]% and […]% of their chemical gases, in terms of sales value, were supplied to the same customers together with industrial gases, helium and calibration and other gas mixtures, respectively.

1129 Form CO, Chapter C, Section 6, paragraph 696.

1130 Responses to RFI Q24 to customers of chemicals, question 36.

1131 Responses to RFI Q24 to customers of chemicals, question 32.

1132 Notably, […]' responses to RFI Q24 to customers of chemicals, question 32, ID 3412; and […]'s responses to RFI Q24 to customers of chemicals, question 32, ID 3879.

1133 Responses to RFI Q24 to customers of chemicals, question 47.

1134 Responses to RFI Q24 to customers of chemicals, question 33.

exact portfolio of gases, most customers indicated that the overall competitive situation does not significantly differ depending on the gas or country concerned.[1135]

*8.6.2. Horizontal non-coordinated effects*

(961) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive horizontal non-coordinated effects in the affected markets for chemical gases identified in Section 8.6.1.1. Unless otherwise specified, the findings set out this Section, and in particular the results of the market investigation, do not materially differ depending on the gas type.[1136] As regards possible differences depending on the EEA country, although national specificities indeed exist, the main characteristics of supply and demand in the markets for the cylinder supply of chemical gases do not appear to vary significantly across countries. Therefore, unless otherwise specified, the findings of this Section do not materially differ depending on the geography at stake.[1137]

8.6.2.1. Notifying Parties' view

(962) In the Form CO, the Notifying Parties acknowledged that, given their significant market shares and/or the non-negligible market share increment, the Transaction may prima facie raise serious doubts as to its compatibility with the single market within the meaning of Article 6(1)(c) of the Merger Regulation in a number of affected markets (so defined "Category 2").[1138] In relation to the near entirety of all other markets (so called "Category 1" markets),[1139] the Notifying Parties have not expressed a view as to the effects of the Transaction, as, according to them, the divestment envisaged in the Form CO removes the full overlap between the Notifying Parties' activities for both "Category 1" and "Category 2" markets.[1140] In the “Category 1” markets where the divestment as envisaged in the Form CO would not have fully eliminated the overlap between the Notifying Parties' activities (that is to say, the Category 1 markets for chemical gases in Italy and France),[1141] the Notifying Parties submitted that the Transaction would not impede effective competition.[1142]

(963) In particular, the Notifying Parties considered the overall category of chemical gases and argued that, in Italy, the combined market share of the merged entity will be relatively low and that the increment resulting from the Transaction would be very small ([0-5]%). The Notifying Parties explained that post-Transaction numerous competitors will remain on the market (in particular, Air Liquide, Air Products, SOL, Sapio and Tazzetti) and that switching suppliers for chemical gases is not

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1135 Responses to RFI Q24 to customers of chemicals, questions 32, 33 and 47.

1136 Notably, responses to RFI Q24 to customers of chemical gases, questions 32, 33, 37, 38, 42, 43, 45, 46, 48, 49 and 53.

1137 The Commission notes that a significant number of respondents to the market investigation, especially large customers, do purchase chemical gases in multiple EEA countries (responses to RFI Q24 to customers of chemicals, question 3).

1138 "Category 2" markets are those where the Notifying Parties have a combined market share in excess of [50-60]% with an increment of at least [0-5]%, or a combined market share in excess of [40-50]% with an increment of at least [5-10]%, as identified in Form CO, Chapter C, Section 6, Tables 89 and 90. It should be noted that the Notifying Parties identified Category 2 markets on the basis of the overall category of chemical gases, rather than on a gas-by-gas basis.

1139 “Category 1” markets are all other affected markets that do not fall under the “Category 2”.

1140 Form CO, Chapter C, Section 6, paragraphs 729-731.

1141 Form CO, Chapter C, Section 6, paragraph 732.

1142 Form CO, Chapter C, Section 6, paragraphs 733 and 748.

burdensome, given that supply contracts are generally short-term and no significant technical barriers exist.

(964) In relation to France, the Notifying Parties argued that they will have combined market shares on the overall market for chemical gases of [0-5]%. The only affected market would be the market for the cylinder supply of ethylene, where they will enjoy market shares in value of about [10-20]% in value and [20-30]% in volume. Besides the modest combined market shares, according to the Notifying Parties, customers in France will continue to have a variety of sources of supply since a number of competitors, including major players such as Air Liquide, Air Products, and Messer, will remain on the market.

(965) Overall, in the Thematic Papers, the Notifying Parties did not bring forward any additional argument as to whether the Transaction would impede effective competition in the markets for the supply of chemical gases. The Notifying Parties did not contest the Commission's findings in the Article 6(1)(c) Decision, with the exception of potential competitive concerns (left open in the Article 6(1)(c) Decision) in relation to the cylinder supply of chemical gases in Italy. In particular, the Notifying Parties argued that with the envisaged divestment of SIAD's shares, the merged entity's market shares (including Rivoira) would be substantially reduced, to less than [10-20]% (on the overall category of chemical gases). Furthermore, they explained that, besides the competitors mentioned in the Form CO, the merged entity would be constrained post-Transaction by SIAD as a standalone player.[1143] The Notifying Parties did not comment on the Commission's objections in relation to chemical gases in their Reply to the Statement of Objections.

8.6.2.2. Results of the market investigation and Commission's assessment

(966) In the following, the Commission analyses the likely horizontal non-coordinated effects of the Transaction in the cylinders markets for the supply of chemical gases at national level in the EEA. First, the Commission assesses the competitive constraints exerted by the Notifying Parties on each other and their competitors pre-Transaction, which would be removed by the Transaction (Section 8.6.2.2.a). Second, the Commission assesses the other competitive constraints in the markets for the supply of chemical gases in cylinders, which will remain post-Transaction, and their likelihood to off-set the anticompetitive effects which may result from the Transaction (Section 8.6.2.2.b). Finally, the Commission undertakes an overall assessment of likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.6.2.2.c). The Commission's findings are summarised in the conclusion (Section 8.6.2.2.d).

(967) The Commission concludes that the Transaction would significantly impede effective competition in a number of the horizontally affected national markets for chemical gases identified in Section 8.6.1.1. This is the case for the markets where the Notifying Parties' market shares are particularly high and/or the market is very concentrated (as explained in Section 8.6.2.2.a.i) and where the market characteristics are such that the removal of the competitive constraint as a result of the Transaction is unlikely to be offset by other factors (as explained in Sections 8.6.2.2.a.ii to 8.6.2.2.b.iv).

[1143] Thematic Paper "The EEA Divestment Business Does Not Need to Include Praxair's Shareholding in Rivoira S.p.A.", 15 March 2018, paragraphs 14 and 15.

**a. Assessment of the competitive constraint exercised by the Notifying Parties**

i. Market shares

(968) As illustrated by in Table 42 and Annex I, in terms of sales, the Transaction leads to large or very large combined market shares in a number of affected markets. Although market shares are only a useful first indication of the market structure and of the respective positions of the Notifying Parties, the Commission considers that these high market shares, combined with the significant concentration levels of the affected markets, are likely to be evidence of a significant increase of market power of the merged entity post-Transaction.

(969) In relation to the markets for the **cylinder** supply of **chemical gases**, the Transaction leads to large or very large combined market shares in both value and volume on a number of gas markets in several EEA countries.[1144] More specifically:

(a) In Austria: post-Transaction the merged entity would become the market leader on the markets for ethylene and sulphur dioxide, with market shares (in value and volume) between [40-50]% and [50-60]%, followed by Messer (with market shares between [10-20]% and [20-30]%) and Air Liquide (between [5-10]% and [10-20]%). Air Products has no activities on this market. The concentration levels on the markets concerned will be well above 2 000, with an HHI delta above 250 at least in terms of sales value.

(b) In the Czech Republic: post-Transaction the merged entity would become the market leader on a number of gas markets, having market shares (in value and volume) between about [40-50]% and [70-80]% in most cases. In particular, the Notifying Parties will enjoy market shares between [40-50]% and [50-60]% in relation to nitric oxide and sulphur hexafluoride; while they will enjoy market shares well above [50-60]% in relation to chlorine, ethane, ethylene, and sulphur dioxide. In relation to hydrogen sulphide, the Notifying Parties' market shares will stay below [40-50]%, but will reach about [30-40]% (in value and volume). On the markets concerned, Messer and Air Products will follow with market shares generally around [10-20]%. Air Liquide has limited activities on these markets. The oligopolistic nature of the markets concerned is confirmed by the very high HHI levels post-Transaction (which range between about [2000-2500] and above [5000-5500]) and the significant HHI deltas brought about by the Transaction.[1145]

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1144 The Commission notes that, in relation to the markets for the cylinder supply of chemical gases which are not specified in this recital (969), that is to say (i) Austria, in relation to methane, (ii) France, in relation to ethylene, (iii) Germany, in relation to butane, propane and propylene, (iv) Italy, in relation to hydrogen chloride, hydrogen fluoride and hydrogen sulphide, (v) the Netherlands, in relation to ammonia, ethane, ethylene, hydrogen sulphide and sulphur dioxide, (vi) Norway, in relation to ethylene, propane and sulphur hexafluoride, (vii) Romania, in relation to sulphur hexafluoride, (viii) Slovenia, in relation to ammonia and methane, and (ix) Sweden, in relation to ammonia and sulphur dioxide, the Notifying Parties' combined market shares and/or the concentration levels in the markets concerned are relatively low. Thus, the Commission considers that the Transaction would not significantly impede effective competition in these markets. In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy horizontal non-coordinated effects of the Transaction in the markets listed in recital (969) would also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects in the markets listed as (i) to (ix) n the first sentence of this footnote. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in the markets for the cylinder supply of chemical gases in the EEA.

1145 The HHI levels in relation to hydrogen sulphide are slightly below 2 000, but (as explained in footnote 1108) they are likely to be significantly underestimated.

(c) In Denmark: the Transaction will bring a relevant increment on the markets for butene (and its chemical group) and methane, leading to combined market shares (in value and volume) of about [50-60]% or more. While the increment brought by the Transaction will be modest on the markets for ammonia and nitric oxide, the Notifying Parties will enjoy market shares of above [40-50]% and [60-70]% on the two markets, respectively. All the markets concerned are very concentrated markets, with HHI levels well above [2500-3000]. In fact, the main competitor active on these markets is Air Liquide, with market shares of about [30-40]%. Air Products and Messer have no activities in these markets.

(d) In Germany: the merged entity will have market shares of about [30-40]% in relation to ethylene, methane (in value and volume) and carbon monoxide (only volume), with an increment brought by the Transaction of at least [5-10]% in relation to the latter two markets. Although the increment on the market for ethylene is more modest, the concentration level of this market is very high, with an HHI post-Transaction of well above [3000-3500]. The merged entity will become the second strongest player on the markets concerned, behind Air Liquide (with market shares between [30-40]% and [50-60]% depending on the gas). Westfalen also has some activities on these markets, reaching a share of [5-10]% in relation to methane. Furthermore, the Notifying Parties will become the market leader on the market for nitric oxide, enjoying market shares of about [60-70]%, followed by Air Liquide with shares of about [20-30]% and Gerling Holz with shares about [10-20]%.

(e) In Italy: the Transaction will further strengthen Praxair's dominant position on the market for ethylene oxide. Although the increment brought by Linde is small, with these additional activities, the merged entity will have market shares (in value and volume) of above [90-100]%. The Transaction will also bring about a relevant increment of Praxair's position on the market for iso-butane, where the merged entity will have market shares of about [30-40]% (in value).[1146] No other Tier 1 player is active on the two markets concerned.

(f) In the Netherlands: the merged entity will have market shares (in value and volume) between about [30-40]% and [50-60]% in relation to butane, carbon monoxide, methane and propane, with significant increments brought by the Transaction. The markets concerned are concentrated.[1147] In particular, in relation to butane, carbon monoxide and propane, Air Liquide and Air Products enjoy market shares of about [30-40]% and [10-20]%, respectively, while Messer and Westfalen have market shares of [5-10]%. On the market for methane, where the merged entity will be the market leader (market shares around [50-60]%), Air Liquide and Air Products will both enjoy market shares of [20-30]%, followed by Messer with [5-10]%. Westfalen has no activities in this market.

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1146 Market shares in volume are about [20-30]%. The Notifying Parties did not submit an explanation for the difference between market shares in value and volume in this specific instance. However, they did mention that, in general, market shares in value are more reliable (footnote 279 of Form CO).

1147 In relation to carbon monoxide, the Notifying Parties' market shares will stay slightly below [30-40]%, reaching [20-30]% both in value and volume, with an increment of [5-10]% brought by the Transaction. Even though the HHI levels are slightly below 2 000, these are likely to be significantly underestimated, as explained in footnote 1108.

(g) In Norway: post-Transaction the merged entity will have a dominant or at least very strong position on the markets for ammonia (market shares in value and volume of [90-100]%), butane (about [40-50]%), ethane (about [50-60]%), and methane (about [80-90]%). The increment brought by the Transaction is very significant in all the markets concerned and is reflected in HHI deltas well above 250. The merged entity will become the market leader and the only Tier 1 player active on the markets concerned.

(h) In Portugal: post-Transaction the merged entity will become the second strongest player on the market for methane, with market shares (in value and volume) of about [30-40]%, behind Air Liquide, with market shares of about [40-50]%. Post-Transaction the market will be highly concentrated, with HHI levels well above [3000-3500]; the increment brought by the Transaction is significant and is reflected in an HHI delta of more than [400-500].

(i) In Romania: the merged entity will enjoy market shares between about [40-50]% and [80-90]% (in value and volume) on the markets for ethylene, methane and propane. While the increment brought by the Transaction is modest, the HHI levels post-Transaction will be high, reaching more than [6000-6500] in the case of ethylene. The merged entity will be the market leader, followed by Air Liquide and Messer, each with market shares around [5-10]% in relation to ethylene and propane, and about [10-20]% in relation to methane. Air Products has no activities in this market.

(j) In Slovakia: post-Transaction the merged entity will enjoy market shares of more than [50-60]% (in value and volume) in relation to the supply of methane, with a significant increment brought by the Transaction (in the order of [10-20]%). Neither other Tier 1 players nor Messer have activities on this market.

(k) In Slovenia[1148]: the merged entity will enjoy market shares of about [70-80]% (in value and volume), with a relevant increment of about [20-30]%, in relation to sulphur dioxide. The merged entity will also have high market shares, above [40-50]% (in value and volume) in relation to sulphur hexafluoride. Although the increment brought by the Transaction is modest, the HHI levels are well above 2 000, indicating a concentrated market. The merged entity will become the market leader on both markets, followed by Messer, with market shares around [10-20]% and [20-30]%, and Air Products, with markets shares of about [5-10]% and [10-20]%, on the markets for sulphur dioxide and sulphur hexafluoride, respectively.[1149] Air Liquide is not present in these markets.

(l) In Spain: the merged entity will enjoy market shares of about [30-40]% (in value and volume) on the market for methane, with a relevant increment (about [10-20]%) brought by the Transaction. The market will be highly concentrated post-Transaction, with an HHI level well above [2500-3000]and an HHI delta well above [500-600]. The main competitors that will remain on the market are

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1148 In relation to the Notifying Parties' activities in this country, see footnote 1113.

1149 While the Notifying Parties submitted that SOL is also present on the two markets concerned, with shares between [5-10]% and [10-20]%, the second phase market investigation revealed that SOL is actually not active in the supply of chemical gases (agreed non-confidential minutes of the conference call with SOL of 16 March 2018, paragraph 18, ID 6226: *"Chemicals are specific products which SOL does not trade*"). Therefore, the Notifying Parties' market shares are likely to be underestimated in the two markets concerned.

Air Liquide (with a market share of about [30-40]%) and Air Products (about [20-30]%). Messer has a limited presence.

(m) In Sweden: the merged entity will have market shares of about [70-80]% in value and volume) on the market for methane. Although the increment brought by the Transaction is modest, the HHI levels (which are underestimated) are well above [5000-5500]. Neither other Tier 1 players nor Messer have activities on this market.

(n) In the United Kingdom: the merged entity will have market shares well above [30-40]% (in value and volume), with a relevant increment brought by the Transaction (above [10-20]%) in relation to propane. The main other players remaining on the market will be Tier 1 players, Air Liquide and Air Products, with market shares between [5-10]% and [10-20]%, together with local players Calor (market share of about [20-30]%), Flogas (about [10-20]%) and Avanti Gas (about [10-20]%). Moreover, post-Transaction the Notifying Parties will enjoy market shares of about [20-30]% in value and [20-30]% in volume in relation to methane. Although these market shares are not particularly high, the market is very concentrated with HHI levels close to [5000-5500] and only two remaining players, Air Liquide (with market shares of about [60-70]%) and Air Products (about [10-20]%).

(970) Therefore, the Commission considers that the Notifying Parties have large or very large combined market shares as regards a number of markets for the supply of chemical gases in Austria, the Czech Republic, Denmark, Germany, Italy, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and UK, which, combined with the high concentration levels and HHI deltas, are likely to lead to a significant increase of market power of the merged entity post-Transaction.

ii. Closeness of competition

(971) As regards closeness of competition, the Commission considers that the Notifying Parties are indeed close competitors.

(972) As it will be explained in more details below, Tier 1 players (in particular, the Notifying Parties and Air Liquide) are the only players that credibly and effectively compete on the markets for chemical gases across a large numbers of EEA countries, being able to serve customers in various geographies and to supply them with the whole range of the gases they need at competitive terms. This is particularly the case in light of their competitive cost structures, deriving from strong links with their industrial gas business, their degree of vertical integration and the broad portfolio of products they offer. As explained in Section 8.6.2.2.b.i, among Tier 1 players, Air Products operates in a more limited number of countries compared to the Notifying Parties and Air Liquide, and is overall perceived as less competitive than these players. While the Commission notes that, in the countries in which they are active, also Tier 2 players (notably, Messer) appear to be able to compete on the market (which is reflected in a relatively important market presence in some countries), their footprint is more limited and they are generally not considered as competitive as the main Tier 1 players.[1150] This means that the Transaction will reduce the number of Tier 1 players, that is to say of top suppliers active on the market, from four to three and the number of close competitors in several national markets (especially where Air Products and Messer have limited presence) from three to two.

[1150] See Section 8.6.2.2.b.i.

(973) As regards **vertical integration**, the Commission notes that the Notifying Parties are active throughout various steps of the supply chain of chemical gases. While the Notifying Parties are generally not active in the generation of chemical gases, which they mostly source from third parties (similarly to the other main industrial gas companies active on the market),[1151] they do perform transfilling and blending activities in-house.[1152] While both Air Liquide and Air Products also appear to transfill and blend gases in-house, Messer indicated, in the context of the second phase investigation, that it is a mere reseller of chemical gases, with no in-house processing capabilities. In particular, Messer relies on third parties for the transfilling of chemical gases.[1153] While being vertically integrated at level of transfilling and blending may not be strictly necessary to operate on the market,[1154] it allows providers to reduce costs and to have better control of the supply chain. Given the importance that customers attribute to security of supply, having some degree of vertical integration appears to constitute an important competitive advantage for suppliers.

(974) As regards **portfolio offering**, the Notifying Parties are able to offer a wide range of chemical gases, as well as a wide range of other gases, besides chemical gases, notably other types of specialty gases, industrial gases and helium. As discussed in Sections 8.2, 8.4, 8.5, 8.7 and 8.9, the Notifying Parties are able to offer such broad range of gases at competitive terms in several EEA countries, which makes their offers more attractive to customers. This is confirmed by the fact that both Notifying Parties are rated as credible suppliers by most of the customers responding to the market investigation.[1155] For example, […] explained in the context of the second phase investigation that *"Linde, Praxair and Air Liquide are the main credible suppliers active on the market. This is mainly due to their broad presence in Europe (which allows for shorter lead times) and the wide portfolio of gases (chemical gases but also industrial gases) that they are able to offer."*[1156] In fact, […] considers *"the ability to supply a broad range of gases as of paramount importance for providers."*[1157] The fact that being able to supply a wide range of gases is a very important competitive advantage for providers has also been confirmed by competitors. For example, Air Liquide stated that *"being able to provide a full range of different gases represents a critical competitive advantage for suppliers to serve customers purchasing a wide variety of products, which constitute a relevant part of the market."*[1158] This is also in line with the data submitted by the Notifying Parties, which, as discussed in Section 8.6.1.2, shows that a relevant proportion of their sales of chemical gases is made to customers that purchase multiple types of chemical

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1151 With the exception of […], and […] (Form CO, Chapter C, Section 8, paragraphs 858 and 877). While the Notifying Parties indicated in the Form CO that […] (Form CO, Chapter C, Section 8, paragraph 858), they corrected this information in their reply to Commission's RFI48, post-notification, specifying that […] (Notifying Parties' reply to RFI48, question 32).

1152 While Praxair performs purification activities in-house, Linde is not engaged in these activities in the EEA (Form CO, Chapter C, Section 6, Table 85).

1153 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 21, ID 6230.

1154 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 22, ID 6230.

1155 Responses to RFI Q24 to customers of chemicals, question 36.

1156 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 6, ID6084.

1157 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 8, ID6084.

1158 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 37, ID 6402.

gases as well as other types of gases, notably industrial gases, helium and calibration and other specialty gas mixtures.

(975) The characteristics of the Notifying Parties explained above make their offers particularly competitive and attractive to customers, which clearly indicates that they closely compete on the markets concerned.

(976) The fact that the Notifying Parties closely compete with each other was also confirmed by the market investigation. While customers identified Air Liquide, on average, as the closest competitor to Linde, they also indicated that Praxair is closely competing with Linde, followed at distance by Air Products and Messer.[1159] Importantly, customers identified Linde, on average, as the closest competitor to Praxair, followed by Air Liquide and, at distance, by Air Products and Messer.[1160] Only a very limited number of customers mentioned other players as closely competing with either Linde or Praxair.[1161] Closeness of competition between Praxair and Linde has also been confirmed, overall, by competitors responding to the market investigation.[1162]

(977) Therefore, the Commission considers that the Notifying Parties are close competitors to a significant degree so that the Transaction could potentially give rise to significant price effects by removing the constraint pre-Transaction exerted by the Notifying Parties on each other and on the market.

iii. Specific competitive constraint exerted by the Notifying Parties

(978) The Commission considers that the Notifying Parties appear to exert important competitive constraints on each other, as well as on the remaining competitors in the relevant national markets for the cylinders supply of chemical gases. This mainly results from their comparable characteristics in terms of geographic footprint, vertical integration and portfolio offering (as explained above in Section 8.6.2.2.a.ii), but also from their similarity in terms of market performance. As a result of the Transaction, such important competitive constraint would be eliminated.

(979) When looking at the **most important parameters of competition** discussed in Section 8.6.1.2, customers responding to the market investigation rated, on average, Linde and Praxair at comparable levels in relation to security of supply, timely delivery and purify of the product. In particular, customers, on average, believe that Linde and Praxair are the best suppliers in terms of supply security, which is among the top two factors they do consider when selecting their supplier.[1163] Importantly, Praxair is rated as the most aggressive player in terms of pricing, following Messer, which is however only mentioned as a credible source of supply by relatively few respondents.[1164] Where regional players / distributors are mentioned, their level of price aggressiveness is rated, on average, at lower levels compared to Tier 1 players such as Praxair, Linde and Air Liquide.

(980) In this respect, the Commission notes that Tier 1 gas companies such as the Notifying Parties have more competitive cost structures, which allow them to better compete on the market. This is not only so in view of their degree of vertical

1159 Responses to RFI Q24 to customers of chemicals, question 42.
1160 Responses to RFI Q24 to customers of chemicals, question 43.
1161 Responses to RFI Q24 to customers of chemicals, questions 42 and 43.
1162 Responses to RFI Q28 to suppliers of specialty gases, questions 31 and 32.
1163 Responses to RFI Q24 to customers of chemicals, question 38.
1164 Responses to RFI Q24 to customers of chemicals, questions 36 and 37.

integration, as discussed in Section 8.6.2.2.a.ii above, but also in view of their large size. First, Tier 1 gas companies such as Praxair and Linde make large purchases of chemical gases from molecule producers, for further processing. As recognised by the Notifying Parties in the Form CO, large purchase volumes give Tier 1 companies opportunities for price reduction, which allows them to reduce their producing costs. Second, in relation to specialty gases in general, Tier 1 companies generally have larger filling stations, which means that filling cylinders becomes less costly due to economies of scale. The same holds true in relation to distribution costs.[1165] In this vein, for example, [a competitor] explained that *"In terms of competitive landscape, (...) the market is characterised by the presence of large companies that can leverage their scale and presence in other gas markets. These companies generally have more efficient cost structures and broader distribution networks, which allow them to better serve customers."*[1166] [1167]

(981) No evidence in the Commission's file suggests that, absent the Transaction, the competitive constraint exerted by Praxair and/or Linde is likely to deteriorate.

iv. Conclusion

(982) On the basis of the above considerations, the Commission considers that the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, which would be removed by the Transaction, in the markets for the cylinders supply of chemical gases in the following EEA countries: (i) Austria, in relation to ethylene and sulphur dioxide; (ii) the Czech Republic, in relation to chlorine, ethane, ethylene, hydrogen sulphide, nitric oxide, sulphur dioxide, and sulphur hexafluoride; (iii) Denmark, in relation to ammonia, butene, methane, and nitric oxide; (iv) Germany, in relation to ethylene, carbon monoxide, methane and nitric oxide; (v) Italy, in relation to ethylene oxide and iso-butane, (vi) the Netherlands, in relation to butane, carbon monoxide, methane and propane, (vii) Norway, in relation to ammonia, butane, ethane and methane; (viii) Portugal, in relation to methane, (ix) Romania, in relation to ethylene, methane and propane, (x) Slovakia, in relation to methane, (xi) Slovenia, in relation to sulphur dioxide and sulphur hexafluoride, (xii) Spain, in relation to methane; (xiii) Sweden, in relation to methane, and (xiv) the United Kingdom, in relation to methane and propane.

**b. Assessment of the other competitive constraints in the markets**

(983) As explained in this Section, the competitive constraints in the markets for the cylinders supply of chemical gases, which will remain post-Transaction, in the various affected EEA countries, are unlikely to counteract the anticompetitive effects that would result from the Transaction.

i. Other players

(984) As explained in Section 8.6.2.2.a.i, while the competitive landscape may vary to a certain extent depending on the country and gas considered, the overall market

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1165 Form CO, Chapter C, Section 8, paragraph 949.

1166 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 18, ID 6302.

1167 The Commission considers that while post-Transaction, the merged entity will have larger purchases of chemical gases (compared to the Notifying Parties individually) and may potentially enjoy better sourcing costs, it is unlikely that it will pass onto customers such cost reductions in the form of lower prices (rather than exploiting the lower sourcing costs to increase its margins) given its high degree of market power on the downstream markets for the cylinder supply of chemical gases, as discussed in Section 8.6.2.2.a.i.

structure appears to be quite homogenous. In particular, there are three main categories of suppliers: (i) Tier 1 players which perform transfilling and blending activities for chemical gases in-house, are active across different EEA countries, and are able to offer a wide portfolio of products, notably the Notifying Parties and Air Liquide; (ii) other Tier 1 (Air Products) and Tier 2 players (notably, Messer) which are either active as pure traders and/or have a more limited geographic presence; (iii) other Tier 2 or Tier 3 players, active in a very limited number of countries, mostly as pure traders.

(985) In relation to **Air Liquide**, as explained in Sections 8.6.1.2 and 8.6.2.2.a.ii, most customers responding to the market investigation believe that it is a credible supplier for chemical gases, closely competing with Praxair and Linde.[1168] Customers also rated Air Liquide as a top supplier in term of the purity of products offered and timely deliveries, but slightly behind the Notifying Parties as regards security of supply, which is considered among the top two parameters of competition that customers consider when selecting their supplier.[1169] Overall, Air Liquide enjoys relevant market shares in a number of countries, having a rather broad geographical presence, but has limited or no activities in certain Eastern European countries (notably, the Czech Republic, Slovakia and Slovenia) and Scandinavian countries (notably, Norway and Sweden), at least in relation to the gas markets concerned, as identified in Section 8.6.2.2.a.iv.

(986) Both **Air Products** and **Messer** have a more limited geographic footprint on the markets identified in Section 8.6.2.2.a.iv, compared to the Notifying Parties and Air Liquide. In particular, Air Products has relevant market shares in the Czech Republic, Germany, the Netherlands, Portugal, Slovenia, Spain and the United Kingdom in relation to some of the product markets concerned, but has limited or no activities in many other countries were affected markets arise (Austria, Denmark, Italy, Norway, Romania, Slovakia and Sweden). Messer has an even more limited geographic presence, enjoying relevant market shares in Austria, the Czech Republic, Romania and Slovenia, while having limited or no activities in the remaining countries (Denmark, Germany, Italy, the Netherlands, Norway, Portugal, Slovakia, Spain, Sweden and the United Kingdom), at least in relation to the markets concerned. In addition, Messer is a pure trader of chemicals, with no transfilling capabilities for these specific gases in the EEA.[1170] In line with this, both Air Products and Messer were only mentioned by a few customers responding to the market investigation as credible sources of supply.[1171] In particular, it appears that large customers, which purchase chemical gases (often together with other types of gases, notably industrial gases) in a number of EEA countries, prefer to deal with suppliers with a broader geographic presence. In addition, while customers rated Messer as particularly aggressive in terms of pricing, they did not consider it among the top suppliers in terms of other important parameters of competition, notably security of supply.[1172]As regards Air Products, customers' ratings in relation to the most relevant parameters of competitions, as described in Section 8.6.1.2, were relatively low, at least compared to the other Tier 1 players operating on the

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1168 Responses to RFI Q24 to customers of chemicals, questions 36, 42 and 43.

1169 Responses to RFI Q24 to customers of chemicals, question 38.

1170 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 21, ID 6230.

1171 Responses to RFI Q24 to customers of chemicals, question 36.

1172 Responses to RFI Q24 to customers of chemicals, question 38.

market.[1173] Also in terms of pricing, Air Products is not perceived as a particularly aggressive player.[1174] In line with these considerations, […] explained, in the context of the second phase investigation, that while Linde, Praxair and Air Liquide are considered as the main credible suppliers active on the markets for chemical gases, Air Products and Messer could be a viable source of supply only to a certain extent.[1175]

(987) Therefore, while Air Products and Messer may exert some competitive pressure in relation to certain gas markets in certain countries, they are generally not able to exert the same type of constraint that suppliers such as Praxair, Linde and Air Liquide may exercise on each other. Furthermore, Air Products and Messer may, post-Transaction, consider it to be more profitable to compete even less given the reduction of the competitive pressure in the relevant markets brought about by the elimination of a relevant competitive player such as Praxair or Linde.[1176] Therefore, Air Products and Messer are not fully able to counteract the loss of competitive pressure resulting from the Transaction.

(988) In relation to **other players**, as discussed in Section 8.6.1.2, providers such as Westfalen, Gerling Holz and Strandmollen were mentioned as credible sources of supply by a very limited number of customers.[1177] In terms of parameters of competition, while such suppliers were rated, on average, at comparable levels to Praxair and Linde in relation to timely deliveries, they were rated at lower levels, compared to the Notifying Parties, in terms of purity of the products offered and, more importantly, in terms of security of supply.[1178] These suppliers have a meaningful presence only in a limited number of EEA countries and are thus not well placed to supply gases to large customers, typically purchasing chemicals in various geographies. Furthermore, these types of suppliers are not generally able to supply a wide portfolio of gases at competitive conditions, at least compared to major Tier 1 players. For example, […] explained that *"Gerling & Holtz is a small German company […] is mainly active as a retailer and has a limited geographic presence […]; therefore, its activities are not comparable to those of major gas suppliers."*[1179] Therefore, these providers are not able to counteract the loss of competitive pressure resulting from the Transaction.

(989) Finally, chemical companies, which are active in the generation of the base chemical molecules do not generally supply customers, but rather sell the molecules to gas companies for further processing. To a lesser extent, some chemical companies may sell the molecules directly to customers which require them in large quantities, that is to say in bulk. However, these chemical companies do not supply customers with chemical gases in cylinders.[1180] Therefore, since chemical producers do not exert competitive pressure on the markets for the cylinder supply of chemical gases already pre-Transaction and there is no evidence in the Commission's file that this will change post-Transaction (given that chemical companies do not have the

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1173 Responses to RFI Q24 to customers of chemicals, question 38.

1174 Responses to RFI Q24 to customers of chemicals, question 37.

1175 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 6, ID 6084.

1176 Horizontal Merger Guidelines, paragraph 24.

1177 Responses to RFI Q24 to customers of chemicals, question 36.

1178 Responses to RFI Q24 to customers of chemicals, question 38.

1179 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 6, ID 6084.

1180 See, for example, footnote 1117 in relation to […]'s activities.

necessary equipment, notably in terms of transfilling, as explained in Section 8.6.1.2), the Commission considers that this types of companies are not able to counteract the loss of competitive pressure derived from the Transaction.

(990) In line with the considerations expressed above, the market investigation revealed that many customers expect competitors to raise prices in response to a price increase for chemical gases by the merged entity, rather than counteracting such behaviour with alternative strategies.[1181]

ii. Barriers to entry and expansion

(991) The Commission considers that market entry and expansion do not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. In this respect the Commission notes the following.

(992) First, **barriers to expansion appear to be relatively high**. The Notifying Parties argue that suppliers of industrial gases could easily expand their offering of specialty gases, including chemical gases, and that expanding into a new product market would cost around [hundreds of thousands of euro] (per product) and would take about […] months, mainly due to the instalment of dedicated transfilling lines and the necessary approval processes.[1182] Although the time and costs needed to expand activities are not prohibitive, the Commission notes that they are nevertheless significant. In addition, as explained in Section 8.6.1.2, customers value suppliers that are able to offer a wide range of chemical gases, which means that the costs and the time required to complete expansion would be higher for providers needing to invest in multiple products. Finally, given that volumes purchased by customers on single product markets are generally low, targeted expansion investments for the sole purpose of entering specific product markets are unlikely to be justified.

(993) Second, **barriers to entry appear to be high**. According to the data submitted by the Notifying Parties, the costs of entering the markets for the cylinder supply of chemical gases (without including in-house production) amount to about EUR […] million, while the required time would be about […] months.[1183] In addition, as explained by Air Liquide *"compared to other industrial gases specialty gases represent strategic products for customers who require very specific products for their processes. Sourcing, manufacturing, logistics are very complex and require specific know-how, technologies and competencies."*[1184] If costs are high for suppliers which are already active in the provision of other types of gases, costs will be even higher for non-gas suppliers, given the relevant links between chemical gases and other gases (notably, industrial gases), as discussed in Section 8.6.1.2.

(994) The market investigation corroborated the finding that entry constitutes a lengthy and costly process.[1185] Overall, no expansion and no entry of suppliers' activities in the markets for chemical gases are expected in the next two years.[1186]

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1181 Responses to RFI Q24 to customers of chemicals, question 51.

1182 Annex 81 to Form CO.

1183 Annex 81 to Form CO. The time and costs associated with the entry into the markets for chemicals relate to the investments required for the various stages of the supply chain, excluding the generation stage. No details have been provided in relation to each stage of the supply chain.

1184 Air Liquide's response to RFI Q28 to suppliers of chemicals, question 45.

1185 Responses to RFI Q28 to suppliers of specialty gases, question 3.

1186 Responses to RFI Q24 to customers of chemicals, questions 40 and 41, and responses to RFI Q28 to suppliers of specialty gases, questions 29 and 30.

iii. Countervailing buyer power

(995) The Commission considers that buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction. In this respect the Commission notes the following.

(996) First, the market investigation revealed that **switching** is difficult and does not occur often. The majority of customers explained that they did not switch supplier recently. While some customers explained that this is due to the fact that they have a good relationship with their current supplier(s), some customers mentioned that no switching occurred due to unfavourable market conditions and/or high switching costs.[1187] For example, a large customer, […], explained that *"Bids did not justify switching costs. No compelling price decrease or service improvement offered."*[1188] Instead, […] stated that they *"don(')t have options."*[1189] Moreover, […] explained that *"the volumes of chemical gases we source (in) cylinders is minimal where we believe that extensive sourcing project would not generate enough savings to counter the cost for the tender."*[1190] Moreover, a significant number of customers, including large chemical companies such as […], […] and […], actually stated that switching is difficult (long and expensive) or very difficult (very long and very expensive).[1191] Notably, contrary to the Notifying Parties' argument that chemical gases generally do not require qualification, a very significant number of customers indicated that they purchase chemical gases which have been tested and meet all of the company's specifications as a result of a qualification process, especially in relation to gases that need to be used for special applications.[1192] In addition, […] explained that a barrier to switching results from *"less competition due to low demand and/or most importantly legal permission to store/handle products is needed and not in every case granted due to high and complex restrictions."* [1193]

(997) Second, while customers purchasing chemical gases consider to have some **bargaining power** vis-à-vis their suppliers in the negotiation process[1194], a significant number of them believe that such bargaining position will decrease as a result of the Transaction, notably due to *"less competition"* in the marketplace.[1195]

(998) The above considerations are particularly relevant in view of the fact the many customers purchasing chemical gases source them from different suppliers, thus engaging into multi-sourcing strategies.[1196] This means that, in light of the reduced competition brought by the Transaction, their switching possibilities and, consequently, their bargaining power will be further reduced post-Transaction.

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1187 Responses to RFI Q24 to customers of chemicals, question 44.

1188 […]'s responses to RFIQ24 to customers of chemicals, question 44, ID 3879.

1189 […]' responses to RFIQ24 to customers of chemicals, question 44, ID 3017.

1190 […]'s responses to RFIQ24 to customers of chemicals, question 44, ID 3930.

1191 Responses to RFI Q24 to customers of chemicals, question 45.

1192 Responses to RFI Q24 to customers of chemicals, question 4.

1193 […]'s responses to RFI Q24 to customers of chemicals, question 45, ID 2999.

1194 Responses to RFI Q24 to customers of chemicals, question 46.

1195 Responses to RFI Q24 to customers of chemicals, question 49.

1196 Responses to RFI Q24 to customers of chemicals, question 30. This is not inconsistent with the fact that customers usually source different gases from the same supplier. In fact, customers which require different gases usually seek multiple sources that can provide all, or a large number of the required gases.

iv. Conclusion

(999) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the relevant markets are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely effects of the Transaction**

(1000) On the basis of the considerations expressed in Sections 8.6.1 to 8.6.2.2.b.iv, the Commission considers that the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario.

(1001) This view is shared by the participants in the market investigation.

(1002) In particular, a significant number of customers, including large purchasers of chemical gases, believe that post-Transaction there will not be sufficient alternative suppliers on the market[1197] due to the fact the *"two main competitors merge."*[1198] For instance, […] explained, in the context of the second phase investigation, that:

> "*In the following European countries, post-Transaction, only two main providers of chemical gases (i.e. Air Liquide and the merged entity) will remain on the market: Switzerland, UK, Ireland, Spain and Italy. As mentioned above, while there may be some local gas suppliers, these are mainly retailers and are not able to compete with larger providers, especially in terms of prices and services offered. With regards to Italy, in addition to Air Liquide and the merged entity (i.e. Linde and Praxair, which in Italy operates via Rivoira and SIAD), also SOL will be active on the market for the supply of chemical gases, even though with a smaller presence."*[1199] It further stated that *"There are also chemical gases regarding which* […] *expects that post-merger there will be only one source of supply remaining*."[1200]

(1003) In addition, many customers believe that the merged entity will compete less aggressively than Praxair and Linde pre-Transaction.[1201] In the context of the second phase market investigation, in particular, […] elaborated on this point, explaining that *"post-Transaction, transparency in the market (which is already present) will increase critically. The merging parties will acquire detailed knowledge of pricing and tenders history, thus leading to a better understanding of which customers are served by which suppliers, in which regions and at which conditions. As a result, the Parties' price aggressiveness in tenders is likely to decrease."*[1202]

(1004) Overall, many respondents, including customers of chemical gases that purchase these products in large quantities and for which these gases represent key inputs,

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1197 Responses to RFI Q24 to customers of chemicals, question 48.

1198 […]'s responses to RFI Q24 to customers of chemicals, question 48, ID 2547.

1199 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 11, ID 6084.

1200 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 10, ID 6084.

1201 Responses to RFI Q24 to customers of chemicals, question 50.

1202 Agreed non-confidential minutes of the conference call with […] of 6 April 2018, paragraph 12, ID 6084.

believe that the Transaction will have a negative impact on the markets concerned.[1203] For example, the following large customers expressed negative views:

> […]*: "The merger of two competitors will lead to more consolidated market in chemical gases (…)*[1204] *and consequently this will mean better option for remaining suppliers to increase prices and to make even better profits."*[1205]
>
> […]*: "For products where both Linde & Praxair have strong market share, the market could be disadvantaged by their leading position."*[1206]
>
> […]*: "The potential merger between Linde and Praxair will, for the supply of chemical gases, lead to a less competitive market situation and negative impact due to increased price transparency."*[1207]

**d. <u>Conclusion</u>**

(1005) For the reasons set out in recitals (961)-(1004), the Commission's assessment is that the Transaction would significantly impede effective competition in the following relevant markets for the cylinders supply of chemical gases, as a result of horizontal non-coordinated effects:

(a) Austria, in relation to ethylene and sulphur dioxide;

(b) the Czech Republic, in relation to chlorine, ethane, ethylene, hydrogen sulphide, nitric oxide, sulphur dioxide, and sulphur hexafluoride;

(c) Denmark, in relation to ammonia, butene, methane, and nitric oxide;

(d) Germany, in relation to ethylene, carbon monoxide, methane and nitric oxide;

(e) Italy, in relation to ethylene oxide and iso-butane;

(f) the Netherlands, in relation to butane, carbon monoxide, methane and propane;

(g) Norway, in relation to ammonia, butane, ethane and methane;

(h) Portugal, in relation to methane;

(i) Romania, in relation to ethylene, methane and propane;

(j) Slovakia, in relation to methane;

(k) Slovenia, in relation to sulphur dioxide and sulphur hexafluoride;

(l) Spain, in relation to methane;

(m) Sweden, in relation to methane; and

(n) the United Kingdom, in relation to methane and propane.

(1006) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[1208] and, at least, the removal of a significant competitive constraint on the other markets.[1209]

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1203 Responses to RFI Q24 to customers of chemicals, question 53.

1204 The omitted part of the text reads as follows: "*(propane is a bit easier and more predictable market due to availability of reference prices as well as a bit wider supplier base)."*

1205 […]'s responses to RFI Q24 to customers of chemicals, question 53, ID 2547.

1206 […]'s responses to RFI Q24 to customers of chemicals, question 53, ID 3825.

1207 […]'s responses to RFI Q24 to customers of chemicals, question 54, ID 2999.

1208 That is to say, the following relevant markets: (i) Czech Republic, in relation to chlorine, ethane, ethylene and sulphur dioxide; (ii) Denmark, in relation to butene, methane and nitric oxide; (iii)

*8.6.3. Horizontal coordinated effects*

(1007) In the Article 6(1)(c) Decision, the Commission did not reach a conclusion as to whether the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects with respect to the relevant national markets for the cylinder supply of chemical gases. Such effects would have resulted from coordination between the remaining Tier 1 players aiming at market repartition.

(1008) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives on the merged entity and its remaining Tier 1 competitors to coordinate their market conduct post-Transaction. The Commission therefore considers that the Transaction would not significantly impede effective competition in the markets for the cylinder supply of chemical gases as a result of horizontal coordinated effects. The Commission also notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in those markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

## 8.7. Calibration and other gas mixtures

*8.7.1. Market structure and competitive parameters*

8.7.1.1. Market shares and concentration levels

(1009) Table 43 shows the Notifying Parties' 2016 market shares based on sales in value and volume, as well as the concentration levels, in each of the **horizontally affected** markets[1210] for calibration gases and other gas mixtures (in cylinders) identified in Section 8.1.1. in the relevant EEA countries.

(1010) Detailed market share data, based on sales in volume and value, including information on the Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms integral part of this Decision.

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Germany, in relation to nitric oxide; (iv) Italy, in relation to ethylene oxide; (v) the Netherlands, in relation to methane, (vi) Norway, in relation to ammonia, ethane and methane, (vii) Romania, in relation to ethylene and propane, (viii) Slovakia, in relation to methane; (ix) Slovenia, in relation to sulphur dioxide; and (x) Sweden, in relation to methane.

1209 That is to say, the following relevant markets: (i) Austria, in relation to ethylene and sulphur dioxide; (ii) Czech Republic, in relation to hydrogen sulphide, nitric oxide and sulphur hexafluoride; (iii) Denmark, in relation to ammonia; (iv) Germany, in relation to ethylene, carbon monoxide and methane; (v) Italy, in relation to iso-butane; (vi) the Netherlands, in relation to butane, carbon monoxide and propane; (vii) Norway, in relation to butane; (viii) Portugal, in relation to methane; (ix) Romania, in relation to methane; (x) Slovenia, in relation to sulphur hexafluoride; (xi) Spain, in relation to methane; and (xii) UK, in relation to methane and propane.

1210 Affected markets are identified on the basis of the sale market shares by either value or volume.

**Table 43: Market shares for cylinder supply of calibration and other gas mixtures (2016)[1211]**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Austria | Environmental mixtures | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| | Other calibration mixtures | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | Special application mixtures | [10-20]% | [20-30]% | [40-50]% | [2500-3000] | [3000-3500] | [700-800] |
| Belgium | Other calibration mixtures | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Special application mixtures | [0-5]% | [10-20]% | [20-30]% | [2000-2500] | [2500-3000] | [0-100] |
| Bulgaria | Environmental mixtures | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3000-3500] | [200-300] |
| | Special application mixtures | [40-50]% | [30-40]% | [70-80]% | [2500-3000] | [5500-6000] | [2500-3000] |
| Czech Republic | Environmental mixtures | [80-90]% | [0-5]% | [80-90]% | [6500-7000] | [6500-7000] | [0-100] |
| | Other calibration mixtures | [5-10]% | [80-90]% | [80-90]% | [6500-7000] | [7000-7500] | [900-1000] |
| | Special application mixtures | [10-20]% | [40-50]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| Denmark | Environmental mixtures | [10-20]% | [30-40]% | [40-50]% | [2000-2500] | [3000-3500] | [700-800] |
| | Special application mixtures | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [300-400] |
| Germany | Environmental mixtures | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| | Other calibration mixtures | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [700-800] |
| | Special application mixtures | [40-50]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Greece | Environmental mixtures* | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |

1211 In relation to the HHI reported in the Table, it should be noted that in some markets the Notifying Parties have attributed non-negligible markets shares to a general category "Others" on an aggregated basis. Such category "Others" has been excluded for the purpose of calculating the HHI reported in the Table. Therefore, the reported HHI levels pre- and post- Transaction constitute the lowest HHI levels one could compute. Where the Notifying Parties have attributed to the category "Others" market shares above [20-30]%, and thus the HHI levels could be substantially higher than those reported in the Table, this is marked with an asterisk (*).

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Hungary | Environmental mixtures* | [5-10]% | [20-30]% | [20-30]% | [2000-2500] | [2500-3000] | [200-300] |
| | Other calibration mixtures | [20-30]% | [20-30]% | [50-60]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Special application mixtures | [20-30]% | [30-40]% | [60-70]% | [3000-3500] | [5500-6000] | [2000-2500] |
| Italy | Environmental mixtures | [10-20]% | [5-10]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Other calibration mixtures | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Special application mixtures | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| Netherlands | Environmental mixtures | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [100-200] |
| | Other calibration mixtures | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Special application mixtures | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3500-4000] | [1000-1500] |
| Norway | Environmental mixtures* | [10-20]% | [30-40]% | [40-50]% | [1000-1500] | [2000-2500] | [800-900] |
| | Special application mixtures* | [40-50]% | [10-20]% | [50-60]% | [1500-2000] | [2500-3000] | [1000-1500] |
| Poland | Special application mixtures | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| Portugal | Environmental mixtures | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| | Special application mixtures | [20-30]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| Romania | Special application mixtures* | [40-50]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [400-500] |
| Slovakia | Other calibration mixtures | [0-5]% | [60-70]% | [60-70]% | [4000-4500] | [4500-5000] | [400-500] |
| | Special application mixtures | [0-5]% | [60-70]% | [60-70]% | [4000-4500] | [4500-5000] | [200-300] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Slovenia[1212] | Environmental mixtures | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [3000-3500] | [500-600] |
| | Other calibration mixtures | [0-5]% | [60-70]% | [60-70]% | [4500-5000] | [4500-5000] | [100-200] |
| | Special application mixtures | [0-5]% | [80-90]% | [80-90]% | [7000-7500] | [7000-7500] | [200-300] |
| Spain | Environmental mixtures | [10-20]% | [10-20]% | [20-30]% | [2500-3000] | [2500-3000] | [300-400] |
| | Other calibration mixtures | [5-10]% | [20-30]% | [20-30]% | [2500-3000] | [2500-3000] | [200-300] |
| Sweden | Environmental mixtures | [70-80]% | [10-20]% | [80-90]% | [5500-6000] | [7000-7500] | [1000-1500] |
| | Special application mixtures* | [70-80]% | [0-5]% | [70-80]% | [5500-6000] | [5500-6000] | [100-200] |
| United Kingdom | Special application mixtures | [40-50]% | [0-5]% | [40-50]% | [3000-3500] | [3500-4000] | [100-200] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Austria | Environmental mixtures | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| | Other calibration mixtures | [0-5]% | [20-30]% | [20-30]% | [2500-3000] | [2500-3000] | [0-100] |
| | Special application mixtures | [10-20]% | [20-30]% | [40-50]% | [2500-3000] | [3000-3500] | [700-800] |
| Belgium | Other calibration mixtures | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Special application mixtures | [0-5]% | [10-20]% | [10-20]% | [2000-2500] | [2000-2500] | [0-100] |
| Bulgaria | Environmental mixtures | [0-5]% | [40-50]% | [40-50]% | [3000-3500] | [3000-3500] | [200-300] |
| | Special application mixtures | [40-50]% | [30-40]% | [70-80]% | [2500-3000] | [5000-5500] | [2500-3000] |

[1212] In relation to Slovenia, the Notifying Parties submitted that their activities overlap in this country, giving rise to affected markets on different types of specialty gases (Form CO, Chapter C, Section 6, paragraphs 730-731). However, in other parts of the Form CO, the Notifying Parties indicated that in […] Linde sold its subsidiary in Slovenia, as result of which it will no longer sell industrial gases and helium directly to end-customers in the country (Form CO, Chapter A, Section 6, footnote 44, and Chapter D, Section 6, footnote 519). Since the Notifying Parties have not explicitly indicated that Linde has divested its specialty gas business in Slovenia, the Commission considers that affected markets would arise in relation to the cylinder supply of calibration and other gas mixtures in this country.

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Czech Republic | Environmental mixtures | [80-90]% | [0-5]% | [80-90]% | [6500-7000] | [6500-7000] | [0-100] |
| | Other calibration mixtures | [5-10]% | [80-90]% | [80-90]% | [6500-7000] | [7000-7500] | [900-1000] |
| | Special application mixtures | [10-20]% | [40-50]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| Denmark | Environmental mixtures | [10-20]% | [30-40]% | [40-50]% | [2000-2500] | [3000-3500] | [700-800] |
| | Special application mixtures | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [3000-3500] | [300-400] |
| Germany | Environmental mixtures | [40-50]% | [0-5]% | [40-50]% | [3000-3500] | [3500-4000] | [300-400] |
| | Other calibration mixtures | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [700-800] |
| | Special application mixtures | [40-50]% | [5-10]% | [40-50]% | [3000-3500] | [3000-3500] | [300-400] |
| Greece | Environmental mixtures* | [20-30]% | [5-10]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| Hungary | Environmental mixtures* | [5-10]% | [20-30]% | [20-30]% | [2000-2500] | [2500-3000] | [200-300] |
| | Other calibration mixtures | [20-30]% | [20-30]% | [50-60]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Special application mixtures | [20-30]% | [30-40]% | [60-70]% | [3000-3500] | [5500-6000] | [2000-2500] |
| Italy | Environmental mixtures | [10-20]% | [5-10]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | Other calibration mixtures | [0-5]% | [30-40] | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Special application mixtures | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| Netherlands | Environmental mixtures | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | Other calibration mixtures | [20-30]% | [20-30]% | [40-50]% | [2000-2500] | [2500-3000] | [800-900] |
| | Special application mixtures | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3500-4000] | [1000-1500] |
| Norway | Environmental mixtures* | [10-20]% | [30-40]% | [40-50]% | [1000-1500] | [2000-2500] | [800-900] |
| | Special application mixtures* | [40-50]% | [10-20]% | [50-60]% | [1500-2000] | [2500-3000] | [1000-1500] |
| Poland | Special application mixtures | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Portugal | Environmental mixtures | [10-20]% | [10-20]% | [30-40]% | [2000-2500] | [2500-3000] | [500-600] |
| | Special application mixtures | [20-30]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [600-700] |
| Romania | Special application mixtures* | [40-50]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [400-500] |
| Slovakia | Other calibration mixtures | [0-5]% | [60-70]% | [60-70]% | [4000-4500] | [4500-5000] | [400-500] |
| | Special application mixtures | [0-5]% | [60-70]% | [60-70]% | [4000-4500] | [4500-5000] | [200-300] |
| Slovenia[1213] | Environmental mixtures | [30-40]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [500-600] |
| | Other calibration mixtures | [0-5]% | [60-70]% | [60-70]% | [4500-5000] | [4500-5000] | [100-200] |
| | Special application mixtures | [0-5]% | [80-90]% | [80-90]% | [7000-7500] | [7000-7500] | [200-300] |
| Spain | Environmental mixtures | [10-20]% | [10-20]% | [20-30]% | [2500-3000] | [2500-3000] | [300-400] |
| | Other calibration mixtures | [5-10]% | [20-30]% | [20-30]% | [2500-3000] | [3000-3500] | [200-300] |
| Sweden | Environmental mixtures | [70-80]% | [10-20]% | [80-90]% | [4500-5000] | [6000-6500] | [1000-1500] |
| | Special application mixtures* | [70-80]% | [0-5]% | [70-80]% | [4500-5000] | [5000-5500] | [200-300] |
| United Kingdom | Special application mixtures | [40-50]% | [0-5]% | [40-50]% | [3000-3500] | [3500-4000] | [100-200] |

*Source: Commission's compilation based on Annex Q28.1 to RFI 48.*

8.7.1.2. General market conditions and competitive parameters

(1011) As a preliminary point, the Commission acknowledges that in the markets for the cylinder supply of calibration gases and other gas mixtures the Notifying Parties are active at the blending stage of the supply chain. Calibration gas mixtures are mixed from more than 500 qualified components. The Notifying Parties generally purchase raw materials, like volatile chemicals, from specialist suppliers. However, small quantities of industrial gases, which the Notifying Parties can source internally, are also used as raw materials.[1214] Hence, the Notifying Parties are not active at the generation and purification stages of the supply chain, but only blend, in-house,

1213 See footnote 1212.

1214 Calibration mixtures can generally be distinguished between non-balance (for example, acetylenes, alcohols, aldehydes, etc.) and balance gas components (for example, oxygen, nitrogen, argon). Non-balance components are not generated by the Notifying Parties; however, most balance gas components are generated by the Notifying Parties (Form CO, Chapter C, Annex 62, footnote 4).

almost the totality of the calibration mixtures and then distribute them to customers.[1215]

(1012) With respect to the **general market conditions** in said markets, the market investigation revealed that there is a low level of competitiveness in the affected markets. More than two thirds of the respondents rated the level of competition in those markets between 1 and 3 in a range of 5 (where one indicates that the market is not competitive, and five that the market is very competitive). For more than the majority of the respondents their replies did not differ depending on the country where they purchase the relevant mixtures or depending on the mixtures considered.[1216]

(1013) This can be explained by the fact that the markets under consideration are characterised by the presence of very few suppliers.[1217] The vast majority of customers indicated that the most credible players are the largest gas suppliers, that is, Praxair, Linde, and Air Liquide, while Air Products and Messer were considered as credible suppliers by a lower number of respondents.[1218] For instance, a customer purchasing in Sweden complained about the level of concentration in that market, "[t]*here are too few alternative suppliers in the market to reach healthy competition*".[1219] Another customer drew a distinction between the level of competitiveness between the industrial gases market and the calibration gases, "*Ma*[n]*y competitors for common gas like nitrogen…Less competitors for calibration gas*".[1220]

(1014) The reasons why there is only a low number of credible suppliers in the market, and thus a low level of competition, are manifold and are essentially linked to the parameters of competition. Only the large (industrial) gas companies are able to deliver on the parameters that customers consider important and on which they rely to select suppliers.

(1015) In terms of **parameters of competition**, respondents, on average, indicated security of supply as the most important driving factor in the selection of suppliers, followed by: purity of product; blend precision and accuracy (for mixtures); timely deliveries; reputation of the supplier; price (including transport costs), and ability to customise mixtures.[1221]

(1016) A competitor explained the above rating, pointing out that, as far as calibration gases are concerned, a high quality level is so important that it is considered as a must-have for suppliers to be credible, "*Purity or more general "product quality" is more important e.g. in case of ESG, calibration gas mixtures and Nobel Gases and less important e.g. in case of Refrigerants. In many cases (except refrigerants) the quality of specialty gas products is very important for the end users, however the customers expects high quality from specialty gas suppliers. In this sense high quality is a must ("entry ticket") and customers decide on the supplier based on other criteria*".[1222]

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1215 Form CO, Section 6, Chapter C, paragraphs 698-700.

1216 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 32.

1217 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 17, ID 5990.

1218 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 36.

1219 […]'s response to RFI Q27 to customers of calibration gases, question 46.3, ID 2541.

1220 […]'s response to RFI Q27 to customers of calibration gases, question 47.1, ID 2336.

1221 Responses to RFI Q27 to customers of calibration gases, question 33; responses to RFI Q28 to suppliers of specialty gases, question 22.

1222 Messer's response to RFI Q28 to suppliers of specialty gases, question 22.2.3, ID 2953

For this reason, as a first step, the Notifying Parties, like all suppliers active at the blending stage of the supply chain, carry out an analysis of the raw materials to ensure their purity and therefore that the final outcome meets the customers' specifications as for purity, accuracy and stability.

(1017) With specific respect to blend precision and accuracy, a customer confirmed that "*suppliers must be able to provide* [it] *with very high quality mixtures, which generally include different types of gases, notably industrial gases*".[1223] A competitor added in this respect that specialised mixtures require high purity standards.[1224] For this specific reason, typically only large gas suppliers are able to satisfy demand, "*highly specialised mixtures…generally need to reach very high purity levels. These are very complex mixtures that only large suppliers (such as Praxair and Linde) are generally able to offer*".[1225] With respect to this parameter of competition, a different competitor highlighted that since "*accuracy of the mixtures is of utmost importance…suppliers must have the necessary know-how and, in certain cases, accredited capabilities to serve customers*".[1226]

(1018) Moreover, as it clearly emerged from the market investigation, customers have a preference for sourcing different types of gases from one supplier or a few suppliers (See 8.7.2.2.a.ii). This is line with the data provided by the Notifying Parties.[1227] It follows that large gas suppliers, with activities in different gas businesses, are the preferred choice for many of them since they are able to offer customers a wide product portfolio.

(1019) A competitor clearly explained the link between the calibration gas business and other gas businesses, as well as customers' practice to source a large part of their requirements from the same supplier, "*Being able to supply calibration gases and other specialty mixtures is very important for suppliers to get access to large customers operating in a variety of key sectors, such as the chemical and the automotive industries. Many of these customers purchase not only calibration gases and specialty mixtures, but they also buy other types of specialty gases (for example, chemical gases) and industrial gases. For example, large chemical companies purchase industrial and chemical gases for their business operations, and calibration gases for their labs. Therefore, being able to provide a full range of different gases represents a critical competitive advantage for suppliers to serve customers purchasing a wide variety of products, which constitute a relevant part of the market*".[1228]

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1223 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 17 ID5990.

1224 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 25, ID6302.

1225 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 25, ID 6302.

1226 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 36 ID6402.

1227 Notifying Parties' reply to RFI57, question 27. The Notifying Parties have provided data on the proportion of their sales of calibration gases supplied with other types of gases, that is to say supplied to the same customer, irrespective of whether these gases are part of the same contract and/or are sold to the customer at the same moment in time. About […]%,[…]% and […]% of Praxair's and Linde's sales of calibration gases (in 2016) were supplied to the same customers together with industrial gases, helium and chemical gases, respectively.

1228 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 38, ID6402.

*8.7.2. Horizontal non-coordinated effects*

(1020) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive effects in the affected markets for calibration and other gas mixtures identified in Section 8.1.1. Unless otherwise specified, the findings set out in this Section, and in particular the results of the market investigation, do not materially differ depending on the gas type/mixture. As regards possible differences depending on the EEA country, although national specificities indeed exist, the overall structure and the main characteristics of supply and demand in the markets for the cylinders supply of calibration gases and other gas mixtures under consideration do not appear to vary significantly across countries. Therefore, unless otherwise specified the findings of this Section do not materially differ depending on the geography at stake. The respondents to the market investigation explained that their answers would not much differ depending on either the type of gas/mixture or country considered.[1229]

8.7.2.1. Notifying Parties' view

(1021) The Notifying Parties acknowledged that, given their significant market shares and/or the significant market share increments, the Transaction could *prima facie* raise serious doubts as to its compatibility with the internal market within the meaning of the Article 6(1)(c) of the Merger Regulation in a number of affected markets.[1230]

(1022) In relation to the markets where the divestment envisaged in the Form CO would have removed the full overlap between the Notifying Parties' activities, the Notifying Parties did not take a view as to whether the Transaction would impede effective competition. With respect to the markets where the divestment as envisaged in the Form CO would not have removed the full overlap between the Notifying Parties' activities entirely, that is to say, cylinder supply of calibration gases and other gas mixtures in Italy, the Notifying Parties argue that the Transaction would not impede effective competition.[1231]

(1023) In particular, the Notifying Parties argue that, in Italy and for all calibration gases and other gas mixtures taken together, the increment resulting from the Transaction would be small ([0-5]%) and that post-Transaction the merged entity's two largest competitors, Air Products and Air Liquide, will have market shares similar to those of the merged entity. The Notifying Parties also explain that switching costs for customers are low and that changing supplier is common and fairly easy.[1232]

(1024) In the Reply to the Statement of Objections the Notifying Parties contested the Commission's argument that the cost of aluminium cylinders, being higher than the costs of steel cylinders, represents a barrier to entry.

8.7.2.2. Results of the market investigation and Commission's assessment

(1025) In the following recitals the Commission analyses the likely horizontal non-coordinated effects of the Transaction in the markets for the supply of calibration gases and other gas mixtures. First, it assesses the competitive constraints exerted by the Notifying Parties on each other and their competitors, pre-Transaction, which

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1229 Responses to RFI Q27 to customers of calibration gases and other mixtures; responses to RFI Q28 to suppliers of specialty gases.

1230 Form CO, Section 6, Chapter C, paragraphs 729-730.

1231 Form CO, Section 6, Chapter C, paragraphs 733.

1232 Form CO, Section 6, Chapter C, paragraphs 734-736.

would be removed by the Transaction (Section 8.7.2.2.a). Then, it assesses the competitive constraints that post-Transaction will remain in the markets for the supply of calibration gases and other gas mixtures and their likelihood to off-set the anticompetitive effects which may result from the Transaction (Section 8.7.2.2.b). Finally, based on the evidence presented in the previous Sections (Section 8.7.2.2.c), the Commission undertakes an overall assessment of the likely effects of the Transaction and formulates a conclusion (Section 8.7.2.2.d).

(1026) The Commission concludes that the Transaction would significantly impede effective competition in a number of the horizontally affected national markets for calibration gases and other gas mixtures identified in Section 8.7.1.1. This is the case for the markets where the Notifying Parties' market shares are particularly high and/or the market is very concentrated (as explained in Section 8.7.2.2.a.i) and where the market characteristics are such that the removal of the competitive constraint as a result of the Transaction is unlikely to be offset by other factors (as explained in Sections 8.7.2.2.a.ii to 8.7.2.2.b.iv).

**a. Assessment of the competitive constraint exercised by the Notifying Parties**

i. Market shares

(1027) First, as illustrated in Table 43 and Annex I, in terms of sales, the Transaction leads to large or very large combined market shares in a number of affected markets. Although market shares are only a useful first indication of the market structure and of the respective positions of the Notifying Parties,[1233] the Commission considers that these high market shares, combined with the very significant concentration levels of the affected markets, are likely to be evidence of a significant increase of market power of the merged entity post-Transaction.

(1028) In relation to the markets for the cylinder supply of **calibration gases and other gas mixtures**, the Transaction leads to large combined market shares, above 50% in: Bulgaria, for special application mixtures (value and volume); the Czech Republic, for environmental, other calibration and special application mixtures (value and volume); Denmark, for special application mixtures (value); Hungary, for other calibration and special application mixtures (value and volume); Norway, for special application mixtures (value and volume); Slovakia, for other calibration and special application mixtures (value and volume); Slovenia, for other calibration and special application mixtures (value and volume); and Sweden, for environmental and special application mixtures (value and volume). In addition, post-Transaction, only the merged entity and two remaining suppliers – Air Liquide and Messer, or Air Liquide and Air Products – will be serving the relevant markets in a number of countries in the EEA.

(1029) With respect to the **concentration levels** in the affected markets for the supply of calibration gases and other mixtures, post-Transaction, the HHI level will be above 2 000 in the vast majority of these markets and above [3000-3500] in a large number of them, in both value and volume terms. Namely, regarding environmental mixtures, the HHI level would be above 2 000 in 12 Member States, and above [3000-3500] in seven member States (six Member States considering market shares in volume).[1234]

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1233 Horizontal Merger Guidelines, paragraph 14.

1234 Austria, Bulgaria, Czech Republic, Denmark, Germany, Hungary, the Netherlands, Norway, Portugal, Slovenia, Spain, Sweden (HHI> 2 000) and Austria, Bulgaria, Czech Republic, Denmark, Germany, Slovenia (only in value), and Sweden (HHI > [3000-3500]).

As for other calibration mixtures, the HHI level would be above 2 000 in 10 Member States, and above [3000-3500] in 6 of them.[1235] Finally, with respect to special application mixtures, the HHI level would be above 2 000 in 17 Member States and above [3000-3500] in 12 Member States.[1236]

(1030) In particular, with respect to the markets for the cylinder supply of **calibration gases and other gas mixtures** at national level, the Commission notes the following[1237] [1238]:

(a) In Austria: the Notifying Parties would be the market leader for environmental mixtures and special application mixtures with combined market shares of [40-50]% and [40-50]%, respectively. In both cases the increments brought by the Transaction would be substantial, in order of more than [10-20]%. Messer would be the number two player, with market shares of about [30-40]% and [30-40]%, respectively, while Air Liquide would be number three with market shares of about [20-30]% and [20-30]%, respectively.

(b) In Bulgaria: the Notifying Parties would be the market leader for environmental mixtures and special application mixtures, with combined market shares of about [40-50]% and [70-80]%, respectively. Messer would be the number two player with a [30-40]% market share and about [10-20]%, respectively. Air Liquide would follow with a [10-20]% market share and about [5-10]%, respectively.

(c) In the Czech Republic: the Notifying Parties would be the market leader for environmental[1239], other calibration, and special application mixtures, with combined market shares of [80-90]%, [80-90]% and [50-60]%, respectively. The number two and three players would be: Messer, with market shares of [5-10]%, [5-10]% and [10-20]%, respectively, and Air Products with market shares of [5-10]%, [5-10]% and [10-20]%, respectively.

(d) In Denmark: the Notifying Parties would be the market leader for environmental and special application mixtures with combined market shares

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1235 Austria, Belgium, Czech Republic, Germany, Hungary, Italy, the Netherlands, Slovakia, Slovenia, and Spain (HHI > 2 000), and Czech Republic, Germany, Hungary, Netherlands, Slovakia, and Slovenia (HHI > [3000-3500]).

1236 Austria, Belgium, Bulgaria, Czech Republic, Denmark, Germany, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden, and the United Kingdom (HHI > 2 000), and Austria, Bulgaria, Czech Republic, Denmark, Germany, Hungary, the Netherlands, Portugal, Slovakia, Slovenia, Sweden, and the United Kingdom (HHI > [3000-3500]).

1237 The Commission notes that, in relation to the markets for the cylinder supply of calibration gases which are not specified in this recital (1030), that is to say (i) Austria, in relation to other calibration mixtures, (ii) Belgium, in relation to other calibration and special application mixtures, (iii) Greece, in relation to environmental mixtures, and (iv) Italy, in relation to other calibration and special application mixtures, the Notifying Parties' combined market shares and/or the concentration levels in the markets concerned are relatively low. Thus, the Commission considers that the Transaction would not significantly impede effective competition in these markets. In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in the markets listed in recital (1030) also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects on the markets listed as (i) to (iv) in the first sentence of this footnote. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's activities in the markets for the cylinder supply of calibration and other gas mixtures in the EEA.

1238 All figures in value and volume, unless noted otherwise.

1239 With respect to environmental mixtures, the increment brought by the Transaction would be of [0-5]% in value.

of [40-50]% and about [50-60]%, respectively. Air Liquide would be the number two player with market shares of about [30-40]%, for both mixtures.

(e) In Germany: the Notifying Parties would be the market leader for environmental, other calibration and special application mixtures with combined market shares of about [40-50]% for each of the mixtures. Air Liquide would be the number two player with market shares of about [30-40]% in each market. Westfalen is also present in all three categories of mixtures with market shares of [5-10]%. Air Products and Messer would follow, each with market shares of about [5-10]% in all the above mixtures.

(f) In Hungary: the Notifying Parties would be the market leader with market shares of [50-60]% and [60-70]% in other calibration and special application mixtures. The number two player would be Messer with market shares of [40-50]% and [30-40]%, respectively. As for environmental mixtures, the number one player would be Messer with a [40-50]% market share, followed by the merged entity with a market share of [20-30]%.[1240]

(g) In Italy: in relation to environmental mixtures, the market leader would be Air Products with a market share of about [30-40]%, followed by Air Liquide with a market share of [20-30]%, and by the Notifying Parties with a combined market share of [20-30]%. SOL would also be present with a [5-10]% market share.

(h) In the Netherlands: the Notifying Parties would be the market leader for other application mixtures and special application mixtures with combined market shares of [40-50]% and [40-50]%, respectively. The other significant players would be Air Liquide with market shares of [30-40]%, followed by Air Products and Messer with market shares of [10-20]% and [5-10]%, respectively, for both mixtures. As for environmental mixtures, Air Liquide and the Notifying Parties would have market shares of [30-40]% and [30-40]%, respectively. Air Products and Messer are also present with market shares of [10-20]% and [5-10]%, respectively.

(i) In Norway: the Notifying Parties would be the market leader for environmental and special application mixtures with combined market shares of [40-50]% and [50-60]%, respectively.[1241]

(j) In Poland: the Notifying Parties would be the market leader for special application mixtures with a market share of [40-50]%, followed by Air Liquide, Air Products and Messer, all with a [10-20]% market share.

(k) In Portugal: the Notifying Parties would be the market leader for special application mixtures with a [40-50]% market share, followed by Air Liquide with a market share of about [30-40]%. Air Products will also be present with a market share of about [10-20]%. As for environmental mixtures, Air Liquide would be the market leader with a market share of about [30-40]% followed by the Notifying Parties that would have a [30-40]% market share. Air Products would be number three with a market share of about [10-20]%.

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1240 In relation to environmental mixtures, the Notifying Parties attributed a market share of [20-30]% (in value and volume) to "Other" competitors, without specifying their identity.

1241 The Notifying Parties attributed market shares of [50-60]% and [40-50]% (in value and volume) to "Other" competitors in relation to environmental and special application mixtures, respectively, without specifying their identity.

(l) In Romania: the Notifying Parties would be the market leader for special application mixtures with a [40-50]% market share, followed by Air Liquide that would have a [10-20]% market share, while Messer a [5-10]% market share.[1242]

(m) In Slovakia: the Notifying Parties would be the market leader for other calibration mixtures and special application mixtures with a [60-70]% market share for both mixtures. Messer would have market shares of [10-20]% and [10-20]% in the two categories, respectively, Air Products of about [10-20]% and Air Liquide of about [5-10]% in relation to both types of mixtures.

(n) In Slovenia: the Notifying Parties would be the market leader for special application, other calibration and environmental mixtures, with combined market shares of [80-90]%, [60-70]%, and [40-50]%, respectively. Messer would be the number two player with market shares of [10-20]%, [20-30]%, and [30-40]%, respectively.

(o) In Spain: for environmental and other calibration mixtures, the market leader would be Air Products with a market share of about [30-40]% in both categories, followed by Air Liquide, with a market share of about [30-40]% in the two categories. The Notifying Parties' combined market shares for environmental and other calibration mixtures will be [20-30]% and [20-30]%, respectively.

(p) In Sweden: the Notifying Parties would be the market leader for environmental and special application mixtures with combined market shares between [80-90]% and [80-90]% and between [70-80]% and [70-80]%, respectively.[1243]

(q) In the United Kingdom: the Notifying Parties would be the market leader for special application mixtures with a combined market shares of [40-50]%, followed by Air Liquide with a [30-40]% market share and Air Product with a [10-20]% market share.

(1031) The results of the market investigation underpin both the very high market shares and concentration levels underlined in the preceding recitals. When asked whether post-Transaction there would be a sufficient number of alternative suppliers of calibration gases and other gas mixtures, less than half of the respondents stated that this would be the case, almost a quarter of the respondents claimed that the number would not be sufficient, while the remaining respondents admitted that they did not know.[1244]

(1032) Therefore, the Commission considers that the Transaction would lead to a significant increase of the merged entity's market power post-Transaction. As illustrated in this Section, generally the Transaction would reduce the number of credible competitors on the markets under consideration from four to three and, as a result, the level of competitiveness on those markets would also be reduced. The Commission further notes that with respect to three markets – namely the markets for special application mixtures in Bulgaria, and for environmental mixtures and special application mixtures in Norway – the increment brought by Transaction would be such that, with

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1242 The Notifying Parties attributed a market share of about [30-40]% (in value and volume) to "Other" competitors, without specifying their identity.

1243 The Notifying Parties attributed market shares of [10-20]% in value and [20-30]% in volume and of [20-30]% in value and [20-30]% in volume in relation to environmental and special application mixtures, respectively, to "Other" competitors, without specifying their identity.

1244 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 48.

market shares of [70-80]%, [40-50]%, and [50-60]%, the merger entity would essentially be the only significant player on the market. Indeed, for example, according to the data provided by the Parties, in Norway [50-60]% of the market for environmental mixtures and [40-50]% of the market for special application mixtures is attributed to Others, which the Commission assumes being very small players.

ii. Closeness of competition

(1033) The market investigation revealed that the Notifying Parties are close competitors in the markets for the supply of calibration gases and other gas mixtures.

(1034) First, customers responding to the market investigation consider that Linde closely competes with Air Liquide and Praxair, and to a lesser extent with Air Products and Messer, where present. They further consider, in turn, that Praxair closely competes with Linde and Air Liquide, and to a lesser extent with Air Products and Messer, where present.[1245] This is also generally confirmed by competitors responding to the market investigation.[1246]

(1035) Second, in terms of price aggressiveness, overall the most aggressive players appear to be Air Liquide, Linde and Praxair.[1247]

(1036) Third, in the same way as for other specialty gases, the Commission observes that the Notifying Parties' derive a strong competitive advantage from being among the very few credible players at global level in the industrial gases and helium businesses, which are strongly linked to the calibration gas business.

(1037) Indeed, calibration gases often contain some industrial gases as raw materials, which the Notifying Parties produce and can therefore internally source, at no additional cost. As confirmed by a customer, "*suppliers must be able to provide* [it] *with very high quality mixtures, which generally include different types of gases, notably industrial gases*".[1248]

(1038) Moreover, as many customers and suppliers emphasized, helium is considered as an essential gas for customers of specialty gases, among which calibrations gases and mixtures. In this respect, a competitor noted that, "*Helium is a key product for many Specialty Gas customers (especially those who also use electronic specialty gases and calibration gases and other gas mixtures)*".[1249] Hence, by holding a strong position on the markets for helium, as discussed in Sections 8.9 and 8.10, post-Transaction the merged entity would be able to leverage such position to enjoy higher sales in the calibration gases and other gas mixtures business.

(1039) In the same way as for other specialty gases, a further strong competitive advantage for the Notifying Parties – and important evidence of closeness – is the fact that, by being active on numerous gas markets, they can offer customers a **broad product portfolio**. Since calibration gases and other gas mixtures are typically bought in low volumes, customers typically select suppliers on the basis of their ability to provide them with such gases for which they require low volumes, together with gases for which they require larger volumes, in particular industrial gases. Moreover, customers attach particular importance to suppliers' ability to make, along with

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1245 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 42 and 43.

1246 Responses to RFI Q28 to suppliers of specialty gases, questions 31 and 32.

1247 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 37.

1248 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 17, ID 5990.

1249 Messer's response to RFI Q28 to suppliers of specialty gases, question 22.10.3, ID2953.

simple mixtures, customised and more complex ones, containing up to 40 components. They also consider it is essential for suppliers to meet their demand in short time frames. Both aspects are important drivers in the selection of suppliers. Indeed, it is convenient for a customer to allocate its demand for simple mixtures to the same supplier that also has the know-how and capability to provide it with more complex mixtures. Competitors and customers confirmed this in the context of the market investigation.

(1040) Thus, competitors responding to the market investigation explained that specialty gases in general are often purchased in combination with industrial gases and helium. This is particularly the case for customers sourcing calibration gases and other mixtures.[1250] One of the Notifying Parties' competitors in the Italian market explained this point and acknowledged the difference between suppliers who can and suppliers who cannot offer a wide range of products, "*being able to supply these products is important* […] *since calibration gas mixtures are "complementary products" that customers purchasing other types of gases may request.…The main suppliers in Italy are Sapio, SIAD, SOL, Rivoira, and Air Liquide, with Sapio and SIAD enjoying a relatively strong position. These providers do supply calibration mixtures, but not all of them can offer a wide range of products.*"[1251] Another competitor, "*explain*[ed] *that it is important to offer this type of gases in the product portfolio*".[1252] A different competitor explained what drives customers' selection of suppliers, which is also what differentiates suppliers among each other and qualify them as credible suppliers or not: "[m]*any mixtures are customised based on purchasers' requirements. Not all suppliers are able to meet new demand in a short time frame (typically within 2 to 3 weeks from a customer's order). Therefore, most complex gases typically drive customers' demand. This means that if customers purchase complex gases from a certain supplier, they generally allocate their demand for simpler products to the same supplier, for simplicity reasons. Therefore, being able to offer a broad portfolio of customers is very important for suppliers to constitute a real, credible alternative for customers*".[1253]

(1041) Fourth, as emphasised in this Section, specialised mixtures require high purity standards which typically only large gas suppliers are able to meet, "*highly specialised mixtures…generally need to reach very high purity levels. These are very complex mixtures that only large suppliers (such as Praxair and Linde) are generally able to offer*".[1254]

(1042) Therefore, the Commission considers that the Notifying Parties are close competitors to a significant degree so that the Transaction could potentially give rise to significant price effects as a result of the removal of the constraint that pre-Transaction the Notifying Parties exerted on each other and on the market.

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1250 Responses to RFI Q28 to suppliers of specialty gases, question 22.10.

1251 Agreed non-confidential minutes of the conference call with [a competitor] of 16 March 2018, paragraphs 23 and 24, ID6302.

1252 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 14, ID6198.

1253 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 37 ID6402.

1254 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 25, ID 6302.

iii. Specific competitive constraints exercised by the Notifying Parties

(1043) The Commission considers that the Notifying Parties appear to exert important competitive constraints on each other, as well as on the remaining competitors in some national markets for the cylinder supply of environmental mixtures, other application mixtures and special application mixtures. This is not only in the light of their large market shares and the degree of closeness mentioned in Section 8.7.2.2.a.ii. The Notifying Parties moreover benefit from an unmatchable position in terms of: reputation, ability to offer a high degree of quality, as well as precision and accuracy in blending mixtures, timely deliveries, ability to internally source other gases and helium, and therefore to offer customers a wide product portfolio, as well as having a large geographic footprint. As a result of the Transaction, such important competitive constraint would be eliminated.

(1044) When considering the most important parameters of competition, customers responded to the market investigation by attributing similar ratings to Praxair and Linde in relation to: security of supply, purity of the product, blend precision and accuracy, timely deliveries and overall service level.[1255]

(1045) As far as security of supply is concerned, Linde appears to compete head-to-head with Air Liquide and Praxair, followed by Air Products.[1256]

(1046) With respect to the purity of the products offered, while Linde, Praxair and Air Liquide are considered as the most competitive, Air Products' rating lags well behind that of these three players. Messer's rating is even lower.[1257] Also in regards to blend precision and accuracy, the market investigation revealed that Linde and Praxair compete with each other and with Air Liquide.[1258] All three are rated as the best players on the market, whereas, once again, Air Products and Messer appear to be far less competitive. The vast majority of the respondents to the market investigation indicated that their replies do not vary depending on the gas mixtures sourced and the country where it is delivered.[1259]

(1047) As regards timely deliveries, a parameter of competition which is considered as important or very important by the vast majority of customers,[1260] Praxair and Linde are the only two players which compete head-to head, followed – distantly – by Air Liquide, Messer and Air Products.[1261]

(1048) Finally, as for overall service level, Linde is rated as the best performing player in the market, followed by Air Liquide and Praxair. [1262]

iv. Conclusion

(1049) On the basis of the above considerations, the Commission considers that the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, which would be removed by the Transaction, in the markets for the cylinder supply of calibration gases and other gas mixtures in the

1255 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.
1256 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.8.
1257 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.1.
1258 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.2.
1259 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 38.1.10, 38.1.11, 38.2.10, 38.2.11, 38.8.10, 38.8.11.
1260 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 33.5.
1261 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.4.
1262 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.5.

following EEA countries: (i) Austria, in relation to environmental, and special application mixtures; (ii) in Bulgaria, in relation to environmental, and special application mixtures; (iii) in the Czech Republic, in relation to environmental, other calibration, and special application mixtures; (iv) in Denmark, in relation to environmental, and special application mixtures; (v) in Germany, in relation to environmental, other calibration, and special application mixtures; (vi) Hungary, in relation to environmental, other calibration, and special application mixtures; (vii) in Italy, in relation to environmental mixtures; (viii) in the Netherlands, in relation to environmental, other calibration, and special application mixtures; (ix) in Norway in relation to environmental, and special application mixtures; (x) in Poland, in relation to special application mixtures; (xi) in Portugal, in relation to environmental, and special application mixtures; (xii) in Romania, in relation to special application mixtures; (xiii) in Slovakia, in relation to other calibration, and special application mixtures; (xiv) in Slovenia, in relation to environmental, other calibration, and special application mixtures; (xv) in Spain, in relation to environmental, and other calibration mixtures; (xvi) in Sweden, in relation to environmental, and special application mixtures; and (xvii) in the United Kingdom, in relation to special application mixtures.

**b. Assessment of the other competitive constraints in the markets**

i. Other players

(1050) As explained in Section 8.7.2.2.a.i, although the competitive landscape varies to a certain extent depending on the country and the gas or mixture considered, the overall market structure appears to be homogeneous. There are three categories of suppliers: (i) Tier 1 players, such as the merged entity, Air Liquide, and Air Products; (ii) Tier 2 Players, such as Messer, and to a limited extent, thus with low market shares, SOL and Westfalen; and (iii) other small local suppliers such as SICO, Specialty Gases and Risam in Italy, Rießner Gases in Germany, and Strandmollen in Denmark.

(1051) The market investigation clearly indicated that the market is very concentrated, with only a small number of large players that are considered as credible suppliers by customers.[1263] By way of example, a respondent described the situation in the markets under consideration as, "*characterised by the presence of very few suppliers*".[1264]

(1052) The market investigation also confirmed that, due to the links between calibration gases and other gas mixtures, and other gases, such as industrial gases highlighted under Section 8.7.2.2.a.ii, post-Transaction only few operators would be able to exert competitive constraints on the Notifying Parties. Among these operators, Air Liquide, and to a limited extent Messer and Air Products, would be the most credible ones.

(1053) **Air Liquide** has market shares (i) above [30-40]% in all the affected markets for calibration gases and other gas mixtures in Portugal, Germany, the Netherlands, Spain, and the United Kingdom, and (ii) between around [20-30] and [30-40]% in all the affected markets for calibration gases and other gas mixtures in Denmark, Italy, and Austria. In all other affected markets identified in recital (1031), Air Liquide has

1263 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 11.

1264 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 17, ID5990.

lower market shares or no activity. Although Air Liquide does not have the same broad geographical presence as the merged entity, it is the only player which is considered by customers to be as competitive as the Notifying Parties with respect to all important parameters of competition, that is: security of supply; quality; blend precision and accuracy.[1265]

(1054) **Messer** has market shares of around, or above, [20-30]% in Austria (environmental and special application mixtures), Bulgaria (environmental mixtures), Hungary (environmental, other calibration, and special application mixtures), and Slovenia (environmental and other calibration mixtures). In all other affected markets identified in recital (1031), Messer has lower market shares (< [20-30]%) or no activities. Moreover, customers responding to the market investigation declared that they considered Messer as being not particularly competitive, compared to Praxair, Linde and Air Liquide, in terms of price aggressiveness, purity of the product and time deliveries.[1266]

(1055) As for **Air Products**, its market shares are around or above [30-40]%, in Italy (environmental mixtures) and Spain (environmental and other calibration mixtures). In all other affected markets identified in recital (1030), Air Products has lower market shares (< [20-30]%) or no activities. Air Products' rating in terms of purity of price aggressiveness, purity of the products, reputation, and timely deliveries was significantly lower than that of Praxair, Linde and Air Liquide.[1267]

ii. Entry and expansion

(1056) First, all respondents to the market investigation declared that in the past five years there has been no entry in the markets for the cylinder supply of calibration and other gas mixtures.[1268] Moreover, both customers and suppliers stated that no entry and no expansion of suppliers' activities in the markets for calibration gases and other gas mixtures are expected in the next two years.[1269] Furthermore, it appears that a number of relevant barriers to entry and expansion exist.

(1057) First, **barriers to expansion appear to be relatively high**. The Notifying Parties argue that suppliers of industrial gases could easily expand their offering of specialty gases, including calibration gases and other gas mixtures, and that expanding into a new product market would cost around [hundreds of thousands of euro] (per filling booth) and would take about […] months, mainly due to the instalment of dedicated transfilling lines.[1270] Although the time and costs needed to expand activities are not prohibitive, the Commission notes that they are nevertheless significant. In addition, as explained in Section 8.7.1.2, customers value suppliers that are able to offer a wide range of gases (including other specialty gases and industrial gases), which means that the costs and the time required to complete expansion would be higher for providers needing to invest in multiple products. Finally, given that volumes

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1265 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 38.8.1, 38.1.1, and 38.2.1.

1266 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 37.5, 38.1.5 and 38.4.5.

1267 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 37.3, 38.1.3, 38.6.3 and 38.4.3.

1268 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 39; responses to RFI Q28 to suppliers of specialty gases, question 28.

1269 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 40 and 41, and responses to RFI Q28 to suppliers of specialty gases, questions 29 and 30.

1270 Annex 81 to Form CO.

purchased by customers on single product markets are generally low, targeted expansion investments for the sole purpose of entering specific product markets are unlikely to be justified.

(1058) Second, **barriers to entry** that a new or existing operator would have to confront are the need for a strong presence in the industrial gas markets, as well as the need for local distribution networks. A competitor responding to the market investigation explained why these two elements are important to compete effectively in the markets under consideration, "*the supply of calibration gases requires local distribution networks and that having a strong presence in the industrial gas markets is important for the development of the business. It is essential to have a strong industrial gases distribution network in order to cost-effectively distribute calibration mixtures and other speciality gases*."[1271]

(1059) A further barrier to entry is represented by the fact that, as the Notifying Parties explain, certain calibration gases require international certifications (notably, ISO standards) as well as official accreditations by independent technical bodies in certain countries, which clearly constitute relevant barriers to entry.[1272] Indeed, customers purchasing calibration and other mixtures may require certain qualifications which are costly (about [hundreds of thousands of euro]) and take time to be performed (between […] and […] months).[1273]

(1060) Lastly, a new entrant would have to acquire a sufficient number of cylinders, including aluminium cylinders which are more costly, so as to be able to supply customers. The market investigation highlighted that many calibration gases and special application mixtures are delivered through aluminium cylinders, which are more expensive than steel cylinders, the latter normally used to ship most specialty gases. Messer expressly stated that, "*many of calibration gases and special application mixtures are delivered in cylinders made of aluminium, which is more expensive* [than steel]".[1274] Most of the aluminium cylinders are reusable, which means that, once the product is delivered to customers, they are returned to suppliers.[1275] Moreover, as indicated by the Notifying Parties themselves, to further minimise the risk of cross-contamination, cylinders can only be recycled to be filled in with calibration gas mixtures within the same group classification. This further increases the cost and burden for potential new entrants and for suppliers that would like to expand their offer.

(1061) In the Reply to the Statement of Objections, the Notifying Parties contested the above finding arguing that the cost of aluminium cylinders does not constitute a barrier to entry.[1276] The Commission acknowledges that while this is certainly not the main barrier to enter the EEA markets for the cylinder supply of calibration gases and other mixtures, it is nonetheless an ancillary barrier which reinforces the ability of the other stronger barriers, if not to impede, at least to delay entry.

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1271 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 14, ID6198.

1272 Form CO, Section 8, Chapter C, paragraph 944. Responses to RFI Q27 to customers of calibration gases and other mixtures, question 33.2.3.

1273 Form CO, Section 8, Chapter C, paragraph 917.

1274 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraph 18, ID6230.

1275 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, paragraphs 18 and 19, ID6230; agreed non-confidential minutes of [a competitor] of 11 April 2018, paragraph 26, ID6302.

1276 Reply to the Statement of Objections, Section 4.3.1, paragraphs 127-130.

iii. Countervailing buyer power

(1062) With respect to buyer power, the Commission observes that in the markets for the cylinder supply of calibration gases and other gas mixtures there appears to be neither likely nor sufficient buyer power so as to counter the increase in market power that would result from the Transaction.

(1063) First, while half of the respondents to the market investigation consider having some bargaining power in the negotiation process with their suppliers, a relevant number of them believe that such power would decrease as a result of the Transaction.[1277]

(1064) Second, the market investigation revealed that switching does not occur often. When customers were asked to assess their ability to switch, the majority of them reported that switching is relatively easy, and to a lesser extent very easy. However, in practice, the vast majority of customers reported that they have not switched supplier recently.[1278] A customer of Linde expressly stated that it has not switched "*in the last 5 years*".[1279] The main reasons for not switching are that: (i) the number of alternative suppliers is limited; (ii) there are no better offers from alternative suppliers; (iii) the service offered by the current supplier is satisfactory or adequate, thus "*there are no economic advantages for change*"[1280]; (iv) customers are loyal to their existing suppliers, in particular to Linde, then Praxair, Messer, and to a limited extent Air Products.[1281]

(1065) Third, customers of calibration gases require very high quality levels, which further complicates switching. As confirmed by a customer, "*For calibration gas in very high quality* [switching] *is difficult*".[1282]

(1066) Fourth, there are only a very limited number of operators in the markets under consideration to which, post-Transaction, customers could and would switch. According to most respondents to the market investigation, the only credible suppliers are: Linde, Air Liquide, Praxair, Air Products and, to a lesser extent, Messer. Only very few respondents suggest that local players represent a credible alternative for customers.[1283] In terms of price aggressiveness, overall Praxair and Linde are rated as the most aggressive players, followed by Air Liquide.[1284] As far as other parameters of competition are concerned, such as security of supply, purity of product, and blend precision and accuracy (for mixtures), on average customers consistently rated Linde, Air Liquide and Praxair as best performing (consistently better than Air Products and Messer).[1285] A customer for instance reported sourcing "*calibration gas mixtures mostly from large industrial gas companies (i.e. Linde, Praxair, Air Products, and Air Liquide), which are active throughout Europe but also, to a more limited extent, from local suppliers, where present* ".[1286]

(1067) The reputation of a supplier is another aspect that customers highly value and that was rated between important and very important by the large majority of the

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1277 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 46 and 49.

1278 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 44.

1279 […]'s response to RFI Q27 to customers of calibration gases and other mixtures, question 44.1, ID1883.

1280 […]'s response to RFI Q27 to customers of calibration gases and other mixtures, question 44.2, ID3020.

1281 Response to RFI Q27 to customers of calibration gases and other mixtures, question 44.2.

1282 […]'s response to RFI Q27 to customers of calibration gases and other mixtures, question 45.3, ID2336.

1283 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 36.

1284 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 37.

1285 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 38.

1286 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 14, ID6082.

respondents to the market investigation.[1287] As two customers have put it, "*The market of process gas is based on high-profile suppliers*"[1288], "*When the su[p]plier has a good name it's easier to sell the products*".[1289]

(1068) The Commission further notes that the Notifying Parties are active in the blending stage of the supply chain and that they can internally source industrial gases, which are used as raw materials for certain mixtures. Moreover, they can rely on their own distribution network set up for selling industrial gases, so as to efficiently distribute specialty gases, among which calibration gases and other gas mixtures. This grants them a clear competitive advantage, especially vis-à-vis smaller suppliers that do not have the same capabilities. A competitor responding to the market investigation explained the link between industrial gases and calibration gases as follows, "*the supply of calibration gases requires local distribution networks and that having a strong presence in the industrial gas markets is important for the development of the business. It is essential to have a strong industrial gases distribution network in order to cost-effectively distribute calibration mixtures and other speciality gases. Since most calibration mixtures require the use of industrial gases, a supplier's presence in the industrial gas markets is helpful for the specialty gas business.*"[1290]

(1069) Lastly, the Commission observes that the demand for calibration gases and other gas mixtures is expected to grow in the years to come.[1291] As a result, the Notifying Parties would be able to take advantage of their established position and reputation in all the main gas markets, as well as their wide presence within the EEA. They could also leverage their broad product portfolio given customers' – especially large customers' - preference for buying more than one type of gases from a limited number of suppliers. The wide product portfolio that Praxair and Linde would be able to offer customers post-Transaction gives them a clear advantage over their competitors (see Section 8.7.2.2.a.ii).

iv. Conclusion

(1070) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the relevant markets are unlikely to off-set the likely anticompetitive effects of the Transaction.

**c. Likely effects of the Transaction**

(1071) A significant number of customers believe that post-Transaction the merged entity would compete less aggressively than Praxair and Linde pre-Transaction and that there would not be sufficient alternative suppliers on the markets under consideration.[1292] Overall, a significant number of respondents believe that the Transaction would have negative impact on these markets.[1293]

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1287 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 33.7.

1288 […]'s response to RFI Q27 to customers of calibration gases and other mixtures, question 33.7.3, ID3020.

1289 […]'s response to RFI Q27 to customers of calibration gases and other mixtures, question 33.7.3, ID2451.

1290 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, paragraph 14, ID6198.

1291 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 39, ID6402.

1292 Responses to RFI Q27 to customers of calibration gases and other mixtures, questions 48 and 50.

1293 Responses to RFI Q27 to customers of calibration gases and other mixtures, question 53.

(1072) A customer that sources helium, noble gases, ESGs, and calibration gases and other gas mixtures raised concerns on the likely effects of the Transaction on all these markets, confirming the existence of strong links among them. Precisely, it stated that "[t]he *concerns expressed … in relation to the proposed transaction hold true also in relation to this type of gases* [that is, calibration gases and other mixtures]. *If Praxair and Linde were to merge, their position would become dominant on many markets and competition will be further reduced.*"[1294] More specifically, this customer pointed to the likelihood that post-Transaction there would only be two credible large players on the worldwide market for the supply of gases; the merged entity and Air Liquide, "*if Linde and Praxair were to merge, the markets for the supply of gases would be dominated by two companies worldwide, i.e. the merged entity and Air Liquide. They would de facto split the market between themselves and leave no room for any competition on the market*".[1295]

(1073) Another customer shared these concerns and specifically stated that the Transaction will lead to a lessening of competition in Italy, Spain, the UK, and the Nordic countries, "[…] *considers that the merger will have a negative impact on the markets for the supply of calibration and specialty mixtures. The reduction in the number of viable suppliers from four to three will likely lead to a substantial lessening of competition. This holds true for all countries where* […] *purchases this types of gases for its operations* [Belgium, Italy, Spain, the UK, and the Nordic countries]".[1296]

(1074) Competitors were also of the opinion that the Transaction would have a negative impact on the markets in question, especially on those markets where a high level of know-how and capability is required, "[a competitor] *believes that the transaction is likely to have an impact in relation to highly specialised mixtures, which generally need to reach very high purity levels. These are very complex mixtures that only large suppliers (such as Praxair and Linde) are generally able to offer*".[1297]

**d. <u>Overall conclusion</u>**

(1075) For the reasons set out in recitals (1020)-(1074), the Commission's assessment is that, with regard to horizontal non-coordinated effects, the Transaction would significantly impede effective competition in the following markets:

(a) in Austria, in relation to environmental, and special application, mixtures;

(b) in Bulgaria, in relation to environmental, and special application, mixtures;

(c) in the Czech Republic, in relation to environmental, other calibration, and special application mixtures;

(d) in Denmark, in relation to environmental, and special application, mixtures;

(e) in Germany, in relation to environmental, other calibration, and special application mixtures;

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1294 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 18, ID5990.

1295 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, paragraph 20, ID5990.

1296 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, paragraph 15 ID6082.

1297 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, paragraph 25 ID6302.

(f) in Hungary, in relation to environmental, other calibration, and special application mixtures;

(g) in Italy, in relation to environmental mixtures;

(h) in the Netherlands, in relation to environmental, other calibration, and special application mixtures;

(i) in Norway in relation to environmental, and special application, mixtures;

(j) in Poland, in relation to special application mixtures;

(k) in Portugal, in relation to environmental, and special application, mixtures;

(l) in Romania, in relation to special application mixtures;

(m) in Slovakia, in relation to other calibration, and special application, mixtures;

(n) in Slovenia, in relation to environmental, other calibration, and special application mixtures;

(o) in Spain, in relation to environmental, and other calibration, mixtures;

(p) in Sweden, in relation to environmental, and special application, mixtures; and

(q) in the United Kingdom, in relation to special application mixtures.

(1076) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[1298] and, at least, to a removal of a significant competitive constraint on the other markets.[1299]

*8.7.3. Horizontal coordinated effects*

(1077) In the Article 6(1)(c) Decision, the Commission did not reach a conclusion as to whether the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects with respect to the markets for the cylinder supply of calibration gases and other gas mixtures. Such effects would have resulted from coordination between the remaining Tier 1 players aimed at market repartition.

(1078) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives on the merged entity and its remaining Tier 1 competitors to coordinate their market conduct post-Transaction. Thus, the

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1298 That is to say, the following relevant markets: (i) Bulgaria, in relation to special application mixtures; (ii) Czech Republic, in relation to environmental, other calibration and special application mixtures; (iii) Denmark, in relation to special application mixtures; (iv) Hungary, in relation to other calibration and special application mixtures; (v) Norway, in relation to special application mixtures; (vi) Slovakia, in relation to other calibration and special application mixtures; (vii) Slovenia, in relation to other calibration and special application mixtures; and (viii) Sweden, in relation to environmental and special application mixtures.

1299 That is to say, the following relevant markets: (i) Austria, in relation to environmental and special application mixtures; (ii) Bulgaria, in relation to environmental mixtures; (iii) Denmark, in relation to environmental mixtures; (iv) Germany, in relation to environmental, other calibration and special application mixtures; (v) Hungary, in relation to environmental mixtures; (vi) Italy, in relation to environmental mixtures; (vii) the Netherlands, in relation to environmental, other calibration and special application mixtures; (viii) Norway in relation to environmental mixtures; (ix) Poland, in relation to special application mixtures; (x) Portugal, in relation to environmental and special application mixtures; (xi) Romania, in relation to special application mixtures; (xii) Slovenia, in relation to environmental mixtures; (xiii) Spain, in relation to environmental and other calibration mixtures; and (xiv) United Kingdom, in relation to special application mixtures.

Commission considers that the Transaction would not significantly impede effective competition in the markets for the cylinder supply of calibration and other gas mixtures as a result of horizontal coordinated effects. In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in those markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

## 8.8. Refrigerants

### *8.8.1. Market structure and competitive parameters*

#### 8.8.1.1. Market shares and concentration levels

(1079) Table 44 shows the Notifying Parties' 2016 market shares based on **sales in value and volume**, as well as the concentration levels, in each of the horizontally affected markets (either in terms of value or volume, or both) for refrigerants (in cylinders) identified in Section 8.1.1 in the relevant EEA countries.

(1080) Further detailed market share data, based on sales in value and volume, including information on the Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

**Table 44: Market shares for cylinder supply of refrigerants (2016)[1300]**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography[1301]** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Germany | R-134A | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-404A | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | R-407C | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-417A | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [2000-2500] | [0-100] |
| | R-507 | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |

1300 In relation to the HHI reported in the Table, it should be noted that in some markets the Notifying Parties have attributed non-negligible market shares to a general category "Others" on an aggregated basis. Such category "Others" has been excluded for the purpose of calculating the HHI reported in the Table. Therefore, the reported HHI levels pre- and post- Transaction constitute the lowest HHI levels one could compute. Where the Notifying Parties have attributed to the category "Others" market shares above [20-30]%, and thus the HHI levels could be substantially higher than those reported in the Table, this is marked with an asterisk (*).

1301 As regards Austria, Bulgaria and Hungary, in relation to which the Commission did not conclude in the Article 6(1)(c) Decision on whether the Transaction would raise serious doubts as to its compatibility with the internal market, the Notifying Parties have submitted that no affected market would arise on gas-by-gas basis in the period 2014-2016 (Notifying Parties' reply to RFI57, question 36).

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography[1301]** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Italy | R-1234yf | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | R-134A | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [0-100] |
| | R-32 | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | R-404A | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | R-407C | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | R-407F | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | R-410A | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [100-200] |
| | R-422D | [0-5]% | [20-30]% | [30-40]% | [2000-2500] | [2000-2500] | [100-200] |
| | R-437A | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-449A | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | R-452A | [0-5]% | [30-40]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-507 | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| Netherlands | R-134A[1302]* | [10-20]% | [0-5]% | [10-20]% | [1000-1500] | [1000-1500] | [0-100] |
| | R-508B* | [10-20]% | [5-10]% | [20-30]% | [1000-1500] | [1000-1500] | [200-300] |
| Norway | R-134A | [30-40]% | [5-10]% | [40-50]% | [3000-3500] | [3500-4000] | [300-400] |
| Romania | R-1234yf | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [300-400] |
| | R-134A* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [0-100] |
| | R-404A* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-407C* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [100-200] |
| | R-407F* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2000-2500] | [100-200] |
| | R-410A* | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [100-200] |
| Slovakia | R-407C* | [30-40]% | [0-5]% | [30-40]% | [1000-1500] | [1000-1500] | [0-100] |

[1302] Affected in volume.

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography[1301]** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Slovenia[1303] | R-1234yf | [5-10]% | [10-20]% | [20-30]% | [2000-2500] | [2000-2500] | [200-300] |
| | R-404A | [10-20]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [500-600] |
| | R-407C* | [5-10]% | [10-20]% | [10-20]% | [1000-1500] | [1000-1500] | [100-200] |
| | R-410A* | [5-10]% | [20-30]% | [30-40]% | [1500-2000] | [1500-2000] | [400-500] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography[1304]** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Germany | R-134A | [20-30]% | [0-5]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-404A | [40-50]% | [0-5]% | [40-50]% | [2500-3000] | [2500-3000] | [0-100] |
| | R-407C | [30-40]% | [0-5]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-417A | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [2000-2500] | [0-100] |
| | R-507[1305] | [10-20]% | [0-5]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| Italy | R-1234yf | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | R-134A | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [0-100] |
| | R-32 | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | R-404A | [5-10]% | [20-30]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | R-407C | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | R-407F[1306] | [0-5]% | [10-20]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| | R-410A | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |

1303 In relation to Slovenia, the Notifying Parties submitted that their activities overlap in this country, giving rise to affected markets on different types of specialty gases (Form CO, Chapter C, Section 6, paragraphs 730-731). However, in other parts of the Form CO, the Notifying Parties indicated that in […] Lindesold its subsidiary in Slovenia, as result of which it will no longer sell industrial gases and helium directly to end-customers in the country (Form CO, Chapter A, Section 6, footnote 44, and Chapter D, Section 6, footnote 519). Since the Notifying Parties have not explicitly indicated that Linde has divested its specialty gas business in Slovenia, the Commission considers that affected markets would arise in relation to the cylinder supply of chemical gases in this country.

1304 See footnote 1301.

1305 Affected in value.

1306 Affected in value.

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography[1304]** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | R-422D | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| | R-437A | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-449A | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | R-452A | [0-5]% | [30-40]% | [30-40]% | [2000-2500] | [2000-2500] | [0-100] |
| | R-507 | [0-5]% | [20-30]% | [20-30]% | [1500-2000] | [1500-2000] | [0-100] |
| Netherlands | R-134A[1307]* | [10-20]% | [5-10]% | [20-30]% | [1000-1500] | [1000-1500] | [200-300] |
| | R-508B* | [10-20]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [300-400] |
| Norway | R-134A | [40-50]% | [0-5]% | [40-50]% | [3500-4000] | [3500-4000] | [0-100] |
| Romania | R-1234yf | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [300-400] |
| | R-134A* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2000-2500] | [100-200] |
| | R-404A* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2000-2500] | [100-200] |
| | R-407C* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| | R-407F* | [40-50]% | [5-10]% | [40-50]% | [2000-2500] | [2500-3000] | [400-500] |
| | R-410A* | [40-50]% | [0-5]% | [40-50]% | [2000-2500] | [2500-3000] | [200-300] |
| Slovakia | R-407C* | [30-40]% | [0-5]% | [30-40]% | [1000-1500] | [1000-1500] | [0-100] |
| Slovenia[1308] | R-1234yf | [10-20]% | [10-20]% | [20-30]% | [1500-2000] | [1500-2000] | [300-400] |
| | R-404A | [10-20]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [700-800] |
| | R-407C* | [10-20]% | [10-20]% | [20-30]% | [1000-1500] | [1000-1500] | [200-300] |
| | R-410A* | [10-20]% | [20-30]% | [30-40]% | [1500-2000] | [2000-2500] | [500-600] |

*Source: Commission's compilation based on Annex Q28.1 to RFI 48.*

8.8.1.2. Competitive parameters and general market conditions

(1081) Customers responding to the market investigation rated the **level of competitiveness** of the markets for the supply of refrigerants in cylinders at about 2.7 on a scale of 5

1307 Affected in value.
1308 See footnote 1303.

points.[1309] The majority of respondents indicated that there are sufficient players on the market to elicit competitive offers, while a number of customers believe that is not the case.[1310]

(1082) In terms of **parameters of competition**, customers, on average, consider safety and supply security as the most important driving factors in the selection of their suppliers, followed by timely deliveries and price.[1311]

(1083) While some respondents recognised that suppliers' geographic footprint in the EEA may differ to some extent, most customers indicated that the overall competitive situation does not significantly differ depending on the gas or country concerned.[1312]

*8.8.2. Horizontal non-coordinated effects*

(1084) In the Article 6(1)(c) Decision, the Commission did not reach a conclusion as to whether the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement in relation to the national markets for the cylinder supply of refrigerants.

(1085) The second phase investigation revealed that although the Notifying Parties are active in the supply of refrigerant gases to complement their product offering, this does not represent a core business for them. They enjoy relatively moderate market shares on the markets concerned and, overall, do not have a strong presence in the same EEA countries. Therefore, the Commission considers that the Transaction would not significantly impede effective competition in the national markets for the cylinder supply of refrigerants.

(1086) In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in other gas markets would also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects in the refrigerant markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in the national markets for the cylinder supply of refrigerants.

*8.8.3. Horizontal coordinated effects*

(1087) In the Article 6(1)(c) Decision, the Commission did not reach a conclusion as to whether the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects with respect to the relevant national markets for the cylinder supply of refrigerants. Such effects would have resulted from coordination between the remaining Tier 1 players aiming at market repartition.

(1088) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives of the merged entity and its remaining Tier 1 competitors to coordinate their market conduct post-Transaction. Thus, the Commission considers that the Transaction would not significantly impede effective competition in the markets for the cylinder supply of refrigerants as a result of horizontal coordinated effects. The Commission also notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in other gas markets would also

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1309 Responses to RFI Q25 to customers of refrigerants, question 32.
1310 Responses to RFI Q25 to customers of refrigerants, question 47.
1311 Responses to RFI Q25 to customers of refrigerants, question 33.
1312 Responses to RFI Q25 to customers of refrigerants, questions 32 and 33.

exclude the possibility that the Transaction would lead to horizontal coordinated effects in the refrigerant markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in the national markets for the cylinder supply of refrigerants.

## 8.9. Wholesale supply of helium

*8.9.1. Market structure and competitive parameters*

8.9.1.1. Market shares, and concentration levels

(1089) In this Section the Commission presents, first, market shares based on capacity (Section 8.9.1.1.1), then market shares based on sales (Section 8.9.1.1.2).

8.9.1.1.1. Capacity shares

(1090) As explained in Section 7.4.1, in order to be active in the helium wholesale market, access to helium sources is crucial. At worldwide level, helium is typically sourced by industrial gas companies in two ways:

(a) direct sourcing, which refers to direct access to helium sources either (i) by means of participation in the production process (via a Joint Venture agreement with the helium producer), or (ii) through a supply agreement with the helium producer;

(b) secondary sourcing, which refers to secondary supply arrangements entered into between an industrial gas company, with direct access to helium sources, and a competitor for the supply of helium (e.g. back-to-back supply agreements).

(1091) Tables 45 to 47 show the Notifying Parties' helium global capacity shares, in volumes, in 2017, as well as the concentration levels,[1313] in the global procurement of helium:[1314]

(a) Table 45 refers to global capacity shares exclusively based on direct sourcing agreements, which encompasses all the volumes available from direct sourcing agreements (including volumes subsequently sold to competitors through secondary sourcing agreements);

(b) Table 46 refers to global capacity shares exclusively based on secondary sourcing agreements (*i.e.* based on the volumes available to an industrial gas company from secondary supply agreements);[1315]

(c) Table 47 refers to net global capacity shares, which (i) include volumes available from both direct and secondary sourcing agreements (*i.e.* the combination of (a) and (b)), but (ii) exclude volumes sourced on the basis of direct sourcing agreements and subsequently sold to competitors through secondary sourcing agreements (these volumes being no longer available to the industrial gas company).

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[1313] In relation to the HHI reported in Tables 45 to 47, it should be noted that the Notifying Parties have attributed capacity shares to a general category "Others" on an aggregated basis. Such category "Others" has been excluded for the purpose of calculating the HHI reported in the Tables. Therefore, the reported HHI levels pre- and post- Transaction constitute the lowest HHI levels one could compute.

[1314] Detailed market shares tables, including information on the Parties' competitors, are included in Annex I, which forms an integral part of this Decision.

[1315] Given the long term duration and the volumes at stake (*i.e.* […] tons in 2017), the supply agreement between Linde and […] is reflected as a secondary sourcing, which is in the Notifying Parties' favour as it reduces Linde' net global capacity share and increases […]'s.

**Table 45: Global capacity shares based on direct sourcing contracts (2017)**

| | | Share | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Region** | **Year** | **Linde (incl. Helison)[1316]** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Global | 2017 | [20-30]% | [10-20]% | [40-50]% | [1500-2000] | [2500-3000] | [900-1000] |

*Source: Reply to RFI 57*

**Table 46: Global capacity shares based on secondary sourcing contracts (2017)**

| | | Share | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Region** | **Year** | **Linde (incl helison)** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Global | 2017 | [0-5]% | [20-30]% | [20-30]% | [2000-2500] | [2000-2500] | [0-100] |

*Source: Reply to RFI 57*

**Table 47: Net Global capacity shares (2017)**

| | | Share | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Region** | **Year** | **Linde (incl. Helison)** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Global | 2017 | [10-20]% | [20-30]% | [30-40]% | [1500-2000] | [2500-3000] | [700-800] |

*Source: Reply to RFI 57*

(1092) Tables 48 and 49 provide the Notifying Parties' forecasts of (i) their global capacity shares based on direct sourcing agreements (Table 48) and (ii) their net global capacity shares (Table 49), between 2018 and 2021, taking into account future developments in the global market for the procurement of helium (such as the new helium sources that are currently under development in Qatar and Russia).[1317]

**Table 48: Forecast of the global capacity shares based on direct sourcing contracts (2018-2021)**

| | | Share | | |
|---|---|---|---|---|
| **Region** | **Year** | **Linde (incl. Helison)** | **Praxair** | **Combined** |
| Global | 2018 | [20-30]% | [10-20]% | [40-50]% |
| | 2019 | [20-30]% | [10-20]% | [30-40]% |
| | 2020 | [20-30]% | [10-20]% | [30-40]% |
| | 2021 | [20-30]% | [10-20]% | [30-40]% |

*Source: Reply to RFI 57*

1316 Helison is a joint venture between Linde and Sonatrach in Algeria (Commission's decision of 23 December 2002 in case M.2868 – Linde/Sonatrach/JV and Form CO Chapter D, footnote 522).

1317 The Notifying Parties did not provide forecasts of their global capacity shares based on secondary sourcing agreements.

**Table 49: Forecast of the net global capacity shares (2018-2021)**

| | | Share | | |
|---|---|---|---|---|
| **Region** | **Year** | **Linde (incl. Helison)** | **Praxair** | **Combined** |
| Global | 2018 | [10-20]% | [10-20]% | [30-40]% |
| | 2019 | [10-20]% | [10-20]% | [30-40]% |
| | 2020 | [20-30]% | [10-20]% | [30-40]% |
| | 2021 | [20-30]% | [10-20]% | [30-40]% |

*Source: Reply to RFI 57*

8.9.1.1.2. Sales shares

(1093) The Notifying Parties have computed wholesale market shares including only sales to independent retailers, that is to say retailers which have no direct access to helium sources but which operate their own helium transfill centre(s). Conversely, the wholesale market shares provided by the Notifying Parties exclude:

(a) *Sales to retailers that are mere resellers*, with no helium transfill centres. Sales to such resellers have been included by the Notifying Parties in their retail sales and are thus reflected in the retail market shares;

(b) *Sales to other wholesalers* so as to avoid double counting of volumes. The Notifying Parties argue that sales to other wholesalers are, in any event, limited since the retail supply of helium is primarily carried out by vertically integrated players with direct access to helium sources;[1318]

(c) *Captive sales of vertically integrated players*. The volumes associated to these sales are particularly substantial, given that retail supply of helium is primarily carried out by vertically integrated players with direct access to helium sources.[1319]

(1094) As a result of these exclusions, the total size of the wholesale market presented by the Notifying Parties is very limited, and its significance for the assessment of the Transaction is questionable.

(1095) In the Article 6(1)(c) Decision, the Commission considered that for a more meaningful understanding of the competitive dynamics in the market for wholesale supply of helium, market shares should include captive sales on the ground that volumes supplied on the wholesale merchant market are highly related to and dependent on the captive sales of vertically integrated players.[1320] The Notifying Parties contested the above approach, considering it "*entirely irrelevant.*" They argued that attributing their captive sales to their wholesale market shares does not provide a meaningful reflection of their competitive position in the wholesale market and grossly overstate their position.[1321] During the second phase investigation, the Commission found that, at global level, wholesale market shares including captive

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1318 Form CO, Chapter D, paragraphs 1043 and 1174. The Notifying Parties indicate that sales between wholesalers are limited to (i) sales resulting from secondary sourcing arrangements and (ii) spot sales (which are qualified as "*insignificant*" – the Notifying Parties' response to RFI 36, question 33).

1319 At EEA level, the Notifying Parties have also provided market shares including captive sales of vertically integrated players (Annex 88 to the Form CO).

1320 At wholesale level, vertically integrated suppliers only sell excess helium not needed for their own retail operation (see Section 8.9.4.2.2).

1321 Helium Paper, Section 1.4, page 13.

sales would be equivalent to global capacity shares[1322] and, thus, their analysis is redundant.

(1096) The second phase investigation also revealed that, contrary to the Notifying Parties' allegations, sales to other wholesalers (including secondary sourcing sales and spot sales) are of particular importance. For instance, in 2017, (i) Linde's global sales to other wholesalers accounted for […]% of Linde's direct sourcing of helium worldwide ([…] tons); (ii) […]% of the helium procured globally by Air Liquide was sourced from other wholesalers (*i.e.* […]tons); and (iii) […]% of the helium procured globally by Iwatani (*i.e.* […] tons) was sourced from […].[1323] The importance of sales to other wholesalers is also corroborated by the Notifying Parties internal documents which reveal that: (i) in 2016, Linde sold […] tons ([…] MMscf) of crude helium to […];[1324] (ii) […] is Praxair's "[…]";[1325] and (iii) Linde is the only player that is "[…]."[1326]

(1097) In their Reply to the Statement of Objections (Section 5.5), the Notifying Parties also argued that back-to-back supply agreements (secondary sourcing) should be disregarded when computing wholesale market shares on the grounds that back-to-back contracts are equivalent to direct sourcing and, thus, do not constitute a "*traditional vertical supply arrangement.*" As explained in Sections 8.9.1.2 and 8.9.4, contrary to the Notifying Parties' claim, secondary sourcing is not equivalent to direct sourcing and, thus, should be taken into account to assess the competitive dynamics in the wholesale market as well as the risk of input foreclosure.

(1098) In view of the foregoing, in this Decision, the Commission's assessment of the impact of the Transaction on the global wholesale market (i) does not further take into account captive sales of vertically integrated players but (ii) considers sales to other wholesalers, such approach being in line with the precedents.[1327]

(1099) Table 50 shows the Notifying Parties' market shares[1328], both in value and volume, as well as the concentration levels,[1329] in the global wholesale market, as well as in the EEA, excluding both sales to other wholesalers and captive sales.[1330]

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1322 Notifying Parties' reply to RFI 48, question 66. As explained in Section 8.8.1.2, helium being perishable and difficult to store, industrial gas companies must always balance their global helium supply and demand. It follows that the total volumes of helium they source globally match the total volumes of helium they sell worldwide (which are primarily captive sales).

1323 Notifying Parties' reply to RFI 57, Annexe Q13.

1324 Helium Paper, Annex 01-04, slides 3 and 26.

1325 Praxair, […] [ID 4599-26066].

1326 Linde, […] [ID4834-73413].

1327 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 153.

1328 […]. This Decision refers to the non-confidential figures provided by Linde to the Commission. Confidential figures are provided in Annex 89 to the Form CO.

1329 In relation to the HHI reported in Table 50, it should be noted that in some markets the Notifying Parties have attributed market shares to a general category "Others" on an aggregated basis. Such category "Others" has been excluded for the purpose of calculating the HHI reported in the Table. Therefore, the reported HHI levels pre- and post- Transaction constitute the lowest HHI levels one could compute.

1330 Detailed market shares tables, including information on the Parties' competitors, are included in Annex I, which forms an integral part of this Decision.

**Table 50: Market shares for the wholesale supply of helium**

**(excluding sales to other wholesalers and captive sales**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Year** | **Linde (incl. Helison)** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| EEA | 2017 | [10-20]% | [5-10]% | [20-30]% | > [2000-2500] | > [2500-3000] | > [200-300] |
| | 2016 | [10-20]% | [5-10]% | [10-20]%-[20-30]% | > [2000-2500] | > [2500-3000] | > [100-200] |
| | 2015 | [10-20]% | [5-10]% | [10-20]%-[20-30]% | > [2000-2500] | > [2500-3000] | > [100-200] |
| | 2014 | [10-20]%-[20-30]% | [5-10]% | [20-30]%-[30-40]% | > [2000-2500] | > [2500-3000] | > [200-300] |
| Global | 2016 | [10-20]%-[20-30]% | [5-10]% | [20-30]% | > [2000-2500] | > [2500-3000] | > [100-200] |
| | 2015 | [10-20]% | [5-10]% | [20-30]% | > [2000-2500] | > [2500-3000] | > [200-300] |
| | 2014 | [10-20]% | [10-20]% | [20-30]%-[30-40]% | > [2500-3000] | > [2500-3000] | > [200-300] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Year** | **Linde (incl. Helison)** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| EEA | 2017 | [20-30]% | [5-10]% | [30-40]% | > [2000-2500] | > [2000-2500] | > [400-500] |
| | 2016 | [10-20]%-[20-30]% | [5-10]% | [20-30]%-[30-40]% | > [2000-2500] | > [2000-2500] | > [200-300] |
| | 2015 | [20-30]% | [5-10]% | [20-30]%-[30-40]% | > [2000-2500] | > [2500-3000] | > [200-300] |
| | 2014 | [20-30]%-[30-40]% | [5-10]% | [30-40]% | > [2000-2500] | > [2500-3000] | > [300-400] |
| Global | 2016 | [10-20]%-[20-30]% | [5-10]% | [20-30]% | > [2000-2500] | > [2500-3000] | > [100-200] |
| | 2015 | [10-20]% | [5-10]% | [20-30]% | > [2000-2500] | > [2500-3000] | > [200-300] |
| | 2014 | [10-20]%-[20-30]% | [5-10]% | [20-30]% | > [2500-3000] | > [2500-3000] | > [200-300] |

*Source: Annex 88 to the Form CO and Reply to RFI 36*

(1100) Table 51 shows the Notifying Parties' market shares, in volume,[1331] as well as the concentration levels, in the global wholesale market, including sales to other wholesalers but excluding captive sales.[1332]

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1331 The Notifying Parties did not provide sales to other wholesalers in value (Notifying Parties' reply to RFI 57, Annex Q13).

1332 Detailed market shares tables, including information on the Parties' competitors, are included in Annex I, which forms an integral part of this Decision.

**Table 51: Market shares for the wholesale supply of helium**

**(including sales to other wholesalers and excluding captive sales)**

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography[1333]** | **Year** | **Linde (incl. Helison)** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Global | 2017 | [40-50]% | [10-20]% | [60-70]% | [2500-3000] | [4000-4500] | [1500-2000] |

*Source: Reply to RFI 57, Annex Q13*

(1101) The high volatility of wholesale market shares excluding sales to other wholesalers and captive sales of vertically integrated players is explained by the very limited total size of the global wholesale market and its EEA segment: […] tons worldwide in 2016 (or approximately [5-10]% of worldwide demand) and […] tons in the EEA in 2017 (or approximately [0-5]% of EEA demand).

8.9.1.2. Competitive parameters and general market conditions

(1102) **First, the Commission found that competitiveness in the helium sector is driven by the access to helium sources**. As explained in Section 7.4.1, market participants stressed the very limited number of helium sources worldwide and the scarcity of this gas, which is regularly subject to shortages.[1334] Competitors have all indicated that they experienced one or several shortage(s) of helium in the past ten years (including recently), leading to price increases, delivery delays and supply disruption.[1335] For instance, in 2017, the embargo in Qatar entailed (i) the application of price "*surcharges*", notably by Linde in Scandinavia (+ EUR 1.5/$m^3$),[1336] and supply disruptions with the allocation of deliveries amongst customers depending on their historical demand.[1337] Several market participants have indicated that the overall situation has improved since the opening of Qatar II in December 2013 and many respondents referred to new sources currently under development, notably in Russia (Gazprom's Amur project), Qatar (Qatar III), Tanzania, as well as several projects in the USA.[1338] However, some of these new sources have been delayed and, according to Gasworld[1339] and the Notifying Parties[1340], the global supply of helium is currently tightening again, […].[1341]

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1333 The Notifying Parties did not provide wholesale market shares including captive sales at EEA level.

1334 Responses to RFI Q22 to helium retail customers, question 15 and responses to RFI Q34 to helium competitors, question 68. Also, agreed non-confidential minutes of the conference call with SIAD of 21 March 2018, ID 6257, paragraph 39.

1335 Notably, responses to RFI Q34 to helium competitors, question 68 and RFI Q33 to helium producers, question 14. Also, Praxair's internal presentation, […] [ID4592-48145]: "".

1336 Praxair's internal email dated […] [ID4599-31721].

1337 Helium Paper, Annex 01-05, dated 3 November 2017, slide 5.

1338 Responses to RFI Q33 to helium producers, questions 5 and 6.

1339 Gasworld, "*Helium supply tightens again*", 7 February 2018 [ID6131] and Gasworld, "*Helium: Here we go again, potentially*", 8 February 2018 [ID6132].

1340 Notifying Parties' response to RFI 48, question 69. Also, Annex 01-05 to the Helium Paper, slide 21 ("*industry SvD [Supply vs Demand]* […]").

1341 Annex 01-04 to the Helium Paper, slide 3 and 4. Also, agreed non-confidential minutes of the conference call with Noble Helium of 1 March 2018, ID5169, paragraph 10: "*without new sources, the global production of helium will clearly be insufficient to satisfy the market demand*."

(1103) In this context, all market participants interviewed during the second phase investigation confirmed that competitiveness in the helium sector is driven by the access to helium sources, including:

– end-customers, such as **[...]** ("*access to sources is one of the most relevant factors that* […] *consider[s] when selecting a supplier*");[1342]

– independent retailers, such as **SOL** ("*companies need to be able to gain access to these helium sources in order to be a reliable and competitive player*");[1343] and

– wholesalers, such as **Air Products** ("*in order to be competitive on the downstream markets, [it is] paramount to secure access to helium sources"*), **Air Liquide** ("*competition in the helium business is driven by access to sources*"), and **Uniper** ("*the first step to enter the global helium business is securing access to helium sources*").[1344]

(1104) **Second, the market investigation revealed that the number of industrial gas companies competing for direct access to helium sources is limited**. More specifically, the market investigation showed that helium producers typically favour Tier 1 players, whose financial strength and market presence is such that they can commit to purchase very large quantities of helium for the long term (contract duration is up to 20 years) under strict take-or-pay commitments. For example, Gazprom explained that "*only Tier one companies (i.e. Air Products, Air Liquide, Linde, Praxair, and Matheson) have been invited to participate in the tender [for the new Amur source]. Smaller players were not invited to submit bids as they did not meet the specific requirements (notably in terms of credit ratings).*"[1345] Similarly, Matheson indicated that the financial strength of the buyer is "*an important factor and often serves to include or exclude a potential buyer. The major helium producers typically do not want to bother with smaller buyers whose credit may not be as strong given the very high take or pay commitments required in these contracts.*"[1346]

(1105) Most competitors of the Notifying Parties interviewed during the second phase market investigation expressly confirmed the above:

– **SOL** explained that "*most tenders organised by ExxonMobil and Rasgas are large tenders where bids for volumes lower than 100-150 ISO containers a year are not accepted. Consequently, only Tier 1 players, with sufficient retail sales, can participate in such tenders. Smaller (Tier 2) players (e.g. Messer, Air Water, Global Gases, SOL, Wesfalen, Oy Woykowski, and SIAD) have difficulties in securing direct access to helium sources and tend to source helium on the wholesale market from Tier 1 players*";[1347]

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1342 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990, paragraph 5. Also, agreed non-confidential minutes of the conference calls (i) with […] of 20 March 2018, ID6082, paragraphs 18-19; and (ii) with […] of 19 March 2018, ID6233, paragraph 33.

1343 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, ID6226, paragraph 24.

1344 Agreed non-confidential minutes of the conference calls with (i) Air Products of 15 March 2018, ID6198, paragraph 20, (ii) Air Liquide of 22 March 2018, ID6404, paragraph 4; (iii) Uniper of 26 February 2018, ID5244, paragraph 5.

1345 Agreed non-confidential minutes of the conference call with Gazprom of 30 January 2018, ID4907, paragraph 9.

1346 Matheson's reply to RFI Q34 to helium competitors, question 69.2.1 (ID4245).

1347 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, ID6226, paragraphs 27-30.

– **[A competitor]** pointed out that "*helium sources are dominated by large industrial gas companies, such as Linde and Praxair. Indeed, helium producers favour these large players due to the existence of high and long-term take-or-pay commitments. Smaller players, such as* [a competitor], *cannot commit for such large volumes and are thus de facto excluded from most tenders*";[1348]

– **Messer** stated that "*it is difficult for mid-size players like Messer (and impossible for small players) to secure direct access to helium sources, due to their limited helium demand. Indeed, helium producers, such as ExxonMobil, organize tenders where the volumes of helium to be awarded (70 ISO containers a year for the smallest lots) are significant compared to Messer's total demand (around 90 to 100 ISO containers a year), which limits its ability to bid and to diversify its sourcing portfolio*";[1349]

– **Uniper** indicated that: "*securing access to helium sources […] is extremely difficult for new and smaller players. The latter are indeed de facto excluded from the (large) tenders organized by helium producers (e.g. ExxonMobil), where only Tier one players are invited to participate in*";[1350]

– **Westfallen** explained that: "*Tenders are only accessible to large players. For instance, […] in the tenders organised by RasGas (Qatar) and ExxonMobil (US), bids for volumes lower than 40 ISO containers a year (RasGas) or 75 ISO containers a year (ExxonMobil) are not accepted. Westfalen cannot bid for such high volumes which largely exceed its annual demand*";[1351]

– **Air Products** stated that "*given the existence of high take if tendered commitments, helium producers usually supply a limited number of large customers which can effectively manage such high quantities of helium. Helium producers "pre-qualify" the companies entitled to participate in their tenders, notably on the basis of (i) their financial ability to pay for the product and (ii) their ISO container fleet, which must be large enough to pick up the volumes at stake*."[1352]

(1106) Helium being perishable and difficult to store, industrial gas companies must always balance their global helium supply and demand. Consequently, they cannot commit to take-or-pay obligations exceeding their demand, which means that small players are *de facto* excluded from large tenders organised by the main helium producers. Thus, the ability of an industrial gas company to compete for direct access to helium is closely related to its sales on the downstream markets for the wholesale and retail supply of helium. The Reply to the Statement of Objections disputes the above on the

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1348 Agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, ID6302, paragraph 30.

1349 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID6230, paragraph 29. Also, Messer's reply to RFI Q34 to helium competitors, ID02965, question 69.1.1 ("*the offered quantities are so high that smaller companies cannot participate in the bidding process*") and question 71 ("*AP, AL Linde/Praxair and Matheson. The others have problems with too huge quantities in the tenders*").

1350 Agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID5244, paragraph 5.

1351 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID6108, paragraph 7. Also, Westfalen's reply to RFI Q34, question 47.8.4 (ID03782): "*it is very difficult for small players like Westfalen to get a contract directly with a source."*

1352 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6404, paragraph 19.

grounds that a company may have wholesale activities in geographies where it has no (or limited) retail operations (such as Matheson in the EEA) and that Uniper plans to supply helium exclusively at wholesale level.[1353] Such assertions do not undermine the fact that the downstream (wholesale or retail) demand drives sourcing decisions and, therefore, are irrelevant. In any event, the Commission notes that the supply of helium is primarily carried out at retail level (rather than at wholesale level).[1354] For instance, Matheson's wholesale sales in the EEA (where it has no retail operations) are extremely limited[1355] and Matheson qualifies itself as a "*very small players in the EEA*", where it "*competes selectively […] in few regions.*"[1356] The Commission also notes that Uniper's business model, which has no precedent in the helium sector, has not been tested yet on the market. Furthermore, the Notifying Parties explicitly acknowledged in the Helium Paper that: "[…]."[1357]

(1107) **Third, it stems from the market investigation that helium suppliers with no (or limited) direct access to helium sources, which must procure helium from competitors (through secondary sourcing agreements), are less competitive in terms of reliability of supply and pricing**.[1358] The close relationship between direct sourcing and competitiveness has been stressed by most market participants interviewed during the second phase market investigation; including:

– end-customers, such as **[…]** (small helium suppliers "*do not have direct access to helium sources, which entails high risks in terms of security of supply*") and **[…]** ("*large players […] are more competitive in terms of supply reliability and prices (due to their direct access to helium sources) […] smaller players have no (or limited) direct access to helium sources, which forces them to procure helium from the large players and thus make them less competitive in terms of pricing and supply reliability*");[1359]

– independent retailers, such as **SOL** ("*the inability of Tier 2 players to secure direct access to helium sources affect their sourcing conditions, which are much less favourable than those obtained by Tier 1 players*");[1360]

– wholesalers, such as **Air Liquide** ("*small players that are not vertically integrated, with no (or limited) direct access to helium sources, […] do not exert significant competitive constraints on the market, notably because they depend on their largest competitors for their helium sourcing*") and **Messer**: "*it is fundamental to be vertically integrated with direct access to helium sources. […] helium suppliers with no direct access to helium sources are not significant players.*"[1361]

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1353 Reply to the Statement of Objections, paragraph 140. In this respect,

1354 Form CO, Chapter D, paragraph 1043.

1355 That is to say 80 tons in 2016 according to Annex 89 to the Form CO.

1356 Matheson's response to RFI Q34 to helium competitors, questions 21 and 25, ID4245.

1357 Helium Paper, Section 1.3.1, page 11, as well as page 9: "[…]". Also, Form CO, Chapter D, paragraph 1174, which states that wholesalers, contrary to retailers, "[…]."

1358 Notably Matheson's reply to RFI Q34 to helium competitors, question 13, ID4245 ("*direct sourcing is very important as customer believe a supplier who has direct supply agreements in place with the source will be more reliable, especially during time of shortage*").

1359 Notably agreed non-confidential minutes of the conference calls (i) with […] of 20 March 2018, ID6082, paragraphs 18-19; and (iii) with […] of 19 March 2018, ID6233, paragraph 33.

1360 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, ID6226, paragraph 30;

1361 Agreed non-confidential minutes of the conference calls (i) with Air Liquide of 22 March 2018, ID6404, paragraph 4; and (ii) with Messer of 15 March 2018, ID6230, paragraph 26.

(1108) The above contradicts the Notifying Parties' claim that secondary sourcing agreements, in particular back-to-back supply contracts, are equivalent to direct sourcing agreements.[1362] The evidence in the Commission's file shows, on the contrary, that back-to-back contracts may be less competitive than direct sourcing contracts, for several reasons:

(a) The terms and conditions of a back-to-back contract may not mirror the terms and conditions of the corresponding direct sourcing agreement and may be less competitive. Messer notably explained that "*it is a significant disadvantage to have a back-to-back contract versus direct contract with a producer*" since *"conditions may be worse.*"[1363] As a matter of fact, the pricing in the back-to-back contract between […] and […] differs from the pricing in the direct sourcing contract between […] and […]. In particular, the price formula set out in Article 7.3.3 of the back-to-back contract includes […];[1364]

(b) Long term back-to-back agreements usually include a price revision clause to the benefit of the primary contractor, which may affect the competitiveness of the back-to-back contract. According to Uniper, such a price-revision clause may "*become a significant disadvantage when the first price revision begins. In such case, [the primary contractor] alone will negotiate the contractual volumes, the contract price and potentially other contractual arrangements with [the helium producer]. [The Primary contractor] will – given the legal possibility to do so – very likely adapt the contract to its needs and in its own favor. The secondary buyer has no choice but to accept the outcome and […] – never gets the chance to negotiate individual and/or more favorable conditions than his competitor*."[1365] For instance, the back-to-back contract between […] and […] provides that […] may request and negotiate a revision of the price paid under the direct sourcing contract (which automatically affects the price paid […] under the back-to-back contract), without involving […] in the discussion with the helium producer.[1366] For instance, should […] disagree with the revised price requested and negotiated by […], its only option is to terminate the back-to-back contract subject to a payment that may be significant (up to […]);[1367]

(c) The volumes supplied under a back-to-back contract may not be handed over at the source by the secondary contractor but by the primary contractor, which may therefore further control and influence the supplies of its competitor. Indeed, according to the Form CO, "*some source operators only allow entry to their plants to direct contract holders.*"[1368] This is also corroborated by the back-to-back agreement between […] and […] which provides […][1369] […];

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1362 Reply to the Statement of Objections, Section 5.3, pages 31-33.

1363 Messer's reply to RFI Q62, question 8.2 ID7840. Also, SIAD's reply to RFI Q62, question 8.2 ID7384: "*competition is lower when buying from a secondary source because of the higher price.*"

1364 Notifying Parties' reply to RFI 48, Annexes 48.1 and 48.2.

1365 Uniper's reply to RFI Q62, question 8.2 ID7739.

1366 Articles 7.4 and 7.5 of the back-to-back contract between […] and […], which notably provides that […] (Annexes 48.1 and 48.2 to the Notifying Parties' reply to RFI 48).

1367 Articles 7.4.1.b and 7.4.2.b of the back-to-back contract between […] and […] (Annex 48.2 to the Notifying Parties' reply to RFI 48)

1368 Form CO, Chapter D, paragraph 1236.

1369 Article 20 of the back-to-back contract between […] and […] (Annex 48.2 to the Notifying Parties' reply to RFI 48).

(d) In situations of crises, such as shortages or supply shortfall, the primary contractor may have the ability to favour its own retail sales to the detriment of the competitor supplied under a back-to-back agreement. Indeed, secondary sourcing agreements typically include a *Force Majeure* provision allowing the supplier to reduce supply in such cases. This has been corroborated by Westfalen, which indicated that "*in the event of a shortage, the merged entity would be able to use the force majeure provision included in its contracts to favour its own retail operations to the detriment of competitors sourcing helium from it*."[1370] This is also confirmed by the Notifying Parties' internal documents, which reveal that, in the context of the Qatar embargo in 2017, […][1371],and […];[1372]

(e) Unlike direct sourcing contracts, back-to-back contracts may not allow for the development of a long-term relationship with the helium producers. For instance, Messer expressly stated that "*it is a significant disadvantage to have a back-to-back contract versus direct contract with a producer"* since *"there is no long-term relationship with the producer.*"[1373]

(1109) **Fourth, the market investigation confirmed that the size and the diversity of an industrial gas supplier's helium sourcing portfolio are crucial and highly relevant elements to assess its strength as a competitor for the supply of helium to customers**. Indeed, contrary to the Notifying Parties' claim,[1374] both end-customers[1375] and competitors[1376] confirmed the necessity of having a balanced helium sourcing portfolio, with access to various sources so as to be able to respond to (or to mitigate) major or minor supply disruptions. In particular:

– **Air Liquide** explained that *"having a large and diversified helium sourcing portfolio constitutes a huge competitive advantage as it enables to better*

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1370 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID 6108, paragraph 12. Also, Matheson's reply to RFI Q34, question 13.8.1, ID4245: "*Direct sourcing is very important as customers believe a supplier who has direct supply agreements in place with the source will be more reliable, especially during times of shortages*"; and [a competitor]'s reply to RFI Q62, question 8.2 (ID7601).

1371 Praxair's internal email exchange […] [ID4598-53824].

1372 Linde's internal presentation, […] [ID4834-87606]. Some supply contracts may include provisions limiting the ability of a supplier to favour its own retail operations (in case of shortages / supply tightening) by requiring the supplier to evenly limit supply among its downstream customers proportionately or to allocate the supply amongst its customers in a "*fair and reasonable manner.*" (Notifying Parties' reply to RFI 48, question 70). However, this is not always the case, as stressed by Messer: "*not all supply agreements entered into between competitors include provision limiting the ability of the supplier to favour its own retail operations*" (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 30). Also, agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 24: "*some supply contracts provide that helium is distributed among customers in a fair manner.*"

1373 Messer's reply to RFI Q62, question 8.2 ID7840. Also SIAD's reply to RFI Q62, question 8.2 ID7384: "*competition is lower when buying from a secondary source because of the higher price.*"

1374 Reply to the Statement of Objections, Section 5.1 (pages 29-30).

1375 Notably agreed non-confidential minutes of the conference calls (i) with […] of 22 March 2018, ID5990, paragraph 5 ("*It is in fact important that providers have direct access to more than one helium source in order to have control of the supply chain and thus guarantee the delivery of the product to customers*"); and (ii) with […] of 19 March 2018, ID6233, paragraph 30 ("*Since helium is a scarce resource that is extracted in few locations in the world, some of which potentially subject to high instability risks (such as Qatar and Algeria), ensuring diversified sourcing is necessary*").

1376 Notably agreed non-confidential minutes of the conference call with [a competitor] of 11 April 2018, ID6302 (paragraph 28).

*balance the demand and supply, and thus to be more resilient when facing helium shortages*";[1377]

– **Westfalen** stated that "*due to the scarcity of helium and the existence of regular shortages affecting the global supply, Westfalen believes that relying on just two sources seriously affects its competitiveness and that it is essential to have a least three sources*";[1378]

– **Air Products** indicated that "*due to the limited number of helium source and their fluctuating reliability, […] in order to be competitive on the downstream markets, it is not only paramount to secure access to helium sources, but also to have a diversified sourcing portfolio. A player sourcing helium from one or two locations may experience supply disruption*";[1379]

– **Matheson** stated that: "*a supplier with multiple sources is better able to provide supply security and reliability.*"[1380]

(1110) In their Reply to the Statement of Objections, the Notifying Parties expressly acknowledged that source diversity has been "*repeatedly highlighted as an important factor by market participants*" and that the size and diversity of a company's sourcing portfolio "*has significant relevance when assessing [a] company's strength as a competitor.*"[1381] The above is also corroborated by the Notifying Parties' internal documents[1382], which show that, when prospecting for new customers, Linde and Praxair actually highlight and promote the diversity of their helium sourcing portfolio.[1383]

(1111) The size and diversity of the helium sourcing portfolio is all the more important given that:

(a) the global helium production is highly concentrated: in 2017, two countries accounted for [70-80]% of the global production (*i.e.* the USA ([50-60]%) and Qatar ([30-40]%)) and the four largest helium sources represented close to [70-80]% of the global production (*i.e.* ExxonMobil ([…]%), Qatar II ([…]%), BLM ([…]%), and Qatar I ([…]%));[1384]

(b) the sourcing costs and reliability of supply vary significantly from one source to another (depending notably on the outage/shortfall frequency and the geopolitical instability).[1385] For instance, US sources are perceived as more reliable and low costs compared to Qatari sources.[1386] The lack of reliability of

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1377 Agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, ID6404 paragraph 7.

1378 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID6108, paragraph 6.

1379 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 20.

1380 Notably Matheson's reply to RFI Q34 to helium competitors, question 13, ID4245.

1381 Reply to the Statement of Objections, paragraph 132.

1382 Notably Praxair's internal presentation, […] [ID 4599-26066] […]; Praxair's internal presentation, […] [ID4598-65604] ("[…]"); Praxair's internal presentation, […] [ID4592-23246] ("[…]"); and Linde's internal presentation, […] [ID4762-28877 ("[…]").

1383 For example, Praxair's draft email to be addressed to […]. , dated […] [ID4591-44341]: "[…]."

1384 See Table 3. Also, Praxair's internal presentation, […] [ID 4599-26066]: "[…]".

1385 Notifying Parties' reply to RFI 48, question 46.

1386 Responses to RFI Q34 to helium competitors, where many respondents referred to a helium shortage in 2017 due to the geopolitical crisis in Qatar. Also, agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, ID6404, paragraph §6: "*US sources are easily accessible and low-*

Qatar is not only due to the geopolitical instability in the Middle-East region, but also to the existence of a mechanical risk.[1387] Sources located in Algeria are low costs but unreliable in terms security of supply.[1388]

(1112) As regards the **general conditions of competition**, the market investigation shows that:

(a) *at sourcing level*: helium producers consider that they are able to elicit competitive offers but stressed the limited number of credible purchasers;[1389]

(b) *at sales level*: wholesale customers have all indicated that competition is already limited or very limited, and that the offers received from wholesalers are either "*not very competitive*" or "*not competitive*".[1390]

(1113) As regards the **parameters of competition**, the market investigation shows that:

(a) *at sourcing level*, competitors and helium producers have both indicated that, when competing for direct access to helium sources, the most important criteria are the price, the financial strength of the buyer, as well as the reputation and expertise.[1391]

(b) *at sales level*, wholesale customers and competitors have indicated that the most important parameters of competition are security of supply (which is due to the scarcity of helium and the risk of shortages),[1392] prices (including transport costs), timely deliveries, and the supplier's vertical integration (in particular its direct access to helium sources).[1393] In particular, the Commission notes that all respondents to the market investigation (but for one which is not active in the EEA), including customers with low and medium-sized helium demand, stressed the importance of the security of supply, rating it either 4 or 5 on a scale of 5 points, which contradicts the Notifying Parties' assertion that […].[1394] Other key parameters are the reputation of the supplier, the location of its helium sources, as well as the overall service level.[1395]

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*cost compared to sources located in Qatar, which are more expensive and subject to geopolitical instability, as illustrated by the Qatar embargo in July 2017.*" Also, Praxair's internal presentations referring to "[…]" (Praxair, […] [ID 4599-26066]) and "[…]" (Praxair, […] [ID4592-48145]).

1387 Praxair's internal email exchange, dated […] [ID4598-65603]: "[…]". Also, Praxair, […] [ID4592-48145].

1388 Matheson's reply to RFI Q34 to helium competitors, question 17.1, ID4245 ("*Helium supplied to the EEA from Algeria is usually competitively priced, however, the lack of reliability of this source reduces its value*"). Also, Praxair's internal presentation, […] [ID 4599-26066]: "[…]".

1389 Responses to RFI Q33 to helium producers, question 27.

1390 Responses to RFI Q34 to helium competitors, question 46.2. Also, Westfalen's reply to RFI Q34 to helium competitors of 12 January 2018, question 25.1, ID03782: "*Already today, Linde and Praxair are not willing to offer us competitive prices on a wholesale level, since we are competing with them (…)*".

1391 Responses to RFI Q33 to helium producers, question 16 and RFI Q34 to helium competitors, question 69.

1392 Responses to RFI Q34 to helium competitors, question 13.7.

1393 Notably Matheson's response to RFI Q34 to helium competitors of 12 January 2018, question 13, ID4245: "*(…) Direct sourcing is very important as customers believe a supplier who has direct supply agreements in place with the source will be more reliable, especially during times of shortages*."

1394 Reply to the Statement of Objections, paragraph 134. As regards the Notifying Parties' reference to Air Products' statement that security of supply is not important for spot sales, the Commission notes that spot sales are "*insignificant*" (Notifying Parties' response to RFI 36, question 33).

1395 Responses to RFI Q34 to helium competitors, question 13.

*8.9.2. Horizontal non-coordinated effects*

(1114) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive effects in the affected market for the wholesale supply of helium identified in Section 8.9.1.

8.9.2.1. Notifying Parties' view

(1115) In the Form CO, the Notifying Parties argued that the Transaction will not significantly impede effective competition with respect to helium sourcing and wholesale supply.[1396]

(1116) First, the Notifying Parties claimed that the competitive landscape for helium sourcing is subject to significant changes. More specifically, they referred to the fact that (i) Iwatani entered the market for the sourcing of helium in 2013, that (ii) Messer recently gained access to new sources in the USA and Poland, and that (iii) Air Products has been awarded the entire output of Qatar III, which will considerably increase its current sourcing capacity. They also argued that the global supply is expected to significantly increase, with several new sources currently under development notably in Russia and Canada. Moreover, in the Notifying Parties' view, helium producers have significant bargaining power and dictate the volumes to be tendered on the market and the pricing at sourcing level, parameters on which the merged entity would have no influence. The Notifying Parties also consider that […].

(1117) Second, considering wholesale market share data excluding captive use and sales to other wholesalers, the Notifying Parties argued in the Form CO that the Transaction would not significantly change the competitive situation, Praxair's market share being modest. It follows that the merged entity's combined market share would be moderate, both at global and EEA levels, with a limited increment (between [5-10]% and [5-10]%). They also claimed that they would face, both at EEA and global levels, strong competitors, including notably Matheson (the market leader) and Air Products, which have market share equivalent to or higher than the Parties', but also many other players, such as Air Liquide, Iwatani, Messer, PGNiG, and Gazprom. The Notifying Parties also alleged that "[…]" and that almost all their competitors have excess capacity. Finally, it was argued that the merged entity would be unable to reduce the volumes sold at wholesale level since (i) helium is a by-product of natural gas production and (ii) the Notifying Parties are subject to long term take-or-pay commitments.

(1118) Moreover, in the Thematic Papers, the Notifying Parties contested several findings of the Article 6(1)(c) Decision.

(1119) First, the Notifying Parties alleged that competition for direct access to helium sources is not limited to Tier 1 players, but also includes Matheson, Iwatani, and Messer, as well as IACX, Uniper, and Weil (which would explain the decline in the global capacity shares of Linde, Praxair, and Air Products). The Notifying Parties also claimed that helium producers, such as PGNiG and Gazprom increasingly offer smaller volumes of helium over shorter durations in order to facilitate the competition of smaller industrial gas companies so as to avoid being reliant on Tier 1 players.[1397]

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1396 Form CO, Chapter D, paragraphs 1080 to 1094 and 1096 to 1108.

1397 Helium Paper, Section 1.1.1, pages 2 and 3.

(1120) Second, Linde and Praxair argued that competing for direct sourcing of helium does not require to have a strong presence on the wholesale and retail markets on the ground that (i) several suppliers (such as Iwatani, Messer, and Matheson) have direct access to helium sources despite limited downstream sales and (ii) the most important factors to win a source of helium are the price and the financial strength of the bidder rather than market presence.[1398]

(1121) Third, the Notifying Parties claimed that the size and diversity of their combined sourcing portfolio has no impact on their competitors' ability to secure additional direct sources for the following reasons: (i) Linde and Praxair being already subject to high take or pay obligations, it would be financially risky for the merged entity to commit to additional volumes; (ii) in helium tenders, there is no incumbent's advantage preventing competitors (including small players) from securing new sources, and (iii) competitors do not rely on the Notifying Parties for their helium sourcing given that […].[1399]

(1122) Fourth, it is alleged that the Transaction does not raise competition concerns at wholesale level because (i) Linde and Praxair's helium businesses focus on retail sales, with limited wholesale activities, and (ii) taking into account captive sales of vertically integrated players is not relevant to assess the Notifying Parties' competitive position at wholesale level.[1400]

(1123) In the Reply to the Statement of Objections, the Notifying Parties disputed several findings of the Statement of Objections.

(1124) First, they contested the fact that competitiveness in the helium sector is driven by access to sources. In particular, it is asserted that (i) the strength of the retail distribution network is more important; (ii) security of supply is "*only an important factor for customers with large helium demand*" and that (ii) having a diverse sourcing portfolio does not reduce the risk of shortages and entails inefficiencies and higher costs due to a more complex supply chain.[1401]

(1125) Second, the Notifying Parties restated that small or mid-size players are not precluded from gaining access to helium sources since they can conclude secondary sourcing contracts or purchase helium together with other small players. Besides the arguments already raised in the Thematic Papers, the Notifying Parties stated that the ability of a company to participate in helium tenders is not determined by the size of its downstream helium business as illustrated by (i) the fact that a company may have wholesale activities in geographies where it has no (or limited) retail operations, and by (ii) Uniper's plan to supply helium exclusively at wholesale level.[1402]

(1126) Third, Linde and Praxair claimed that secondary sourcing is as competitive as direct sourcing. In particular, they asserted that back-to-back supply contracts are "*equivalent to direct sourcing with respect to commercial terms and security of supply*" since (i) they are typically entered at the same time, subject to the same terms and conditions, and (ii) control and risk associated to the secondary volumes

1398 Helium Paper, Section 1.1.2, pages 3 and 4.
1399 Helium Paper, Section 1.1.3, pages 4 and 5.
1400 Helium Paper, Section 1.4, pages 13.
1401 Reply to the Statement of Objections, Section 5.1, pages 29-30.
1402 Reply to the Statement of Objections, Section 5.2, pages 30-31.

are generally handed over at source by the secondary contractor, "*thereby eliminating any further downstream control or influence of the primary contractor*."[1403]

(1127) Fourth, it argued that the Commission significantly overstates the Notifying Parties' market position on the grounds that (i) sales to other wholesalers – in particular, back-to-back supply agreements, which "*represent a form of commercial risk sharing/cooperation rather than a traditional vertical supply arrangement*" – are irrelevant and should not be taken into account when computing wholesale market shares; (ii) the market size is underestimated due to the Notifying Parties' limited knowledge of their competitors' secondary sourcing/wholesale sales; and (iii) [a significant share] of Linde's market share is due to a contract with […]which expires in […] (and may not be renewed).[1404]

(1128) Fifth, Linde and Praxair disputed the Commission's finding that having a large cryogenic portable tank fleet confers a competitive advantage. More specifically, they consider that the acquisition of such tanks does not constitute a barrier to entry or expansion given notably that (i) it is possible to lease such tanks from third-parties and (ii) the lead time associated with new sources is long enough to allow a supplier to develop the fleet required to handle the additional volume.[1405]

(1129) Lastly, the Notifying Parties stated that their access to the BLM system does not constitute a significant competitive advantage as it is a declining asset, which is becoming increasingly less relevant for the supply of helium in the EEA.[1406]

8.9.2.2. Results of the market investigation and Commission's assessment

(1130) In the following, the Commission analyses the horizontal non-coordinated effects of the Transaction in the global market for the wholesale supply of helium. To this aim, first, it assesses the competitive constraints exerted by the Notifying Parties on each other and their competitors pre-Transaction, which would be removed by the Transaction (Section 8.9.2.2.a); then, it assesses the other competitive constraints in the wholesale market, which will remain post-Transaction, and their likelihood to off-set the anticompetitive effects of the Transaction (Section 8.9.2.2.b). Finally, the Commission undertakes an overall assessment of likely effects of the Transaction, based on the evidence presented in the previous Sections (Section 8.9.2.2.c), and then it sets its conclusions (Section 8.9.2.2.d).

**a. <u>Assessment of competitive constraints exercised by the Notifying Parties</u>**

(1131) As explained in this Section, the Notifying Parties appear to exert important competitive constraints in the helium wholesale market on each other as well as on the remaining competitors, which would be removed by the Transaction. This is true both in light of (i) their large capacity and market shares, (ii) the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), but also in view of (iii) their market performance, (iv) their diversified helium sourcing portfolio, and (v) their high degree of vertical integration.

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1403 Reply to the Statement of Objections, Section 5.3, pages 31-33.
1404 Reply to the Statement of Objections, Section 5.5, page 34.
1405 Reply to the Statement of Objections, Section 5.4, pages 33-34.
1406 Reply to the Statement of Objections, Section 5.6, page 35.

i. Capacity and market shares

(1132) First, **in terms of capacity**, the market investigation revealed that the sourcing of helium is oligopolistic, the four main players (namely Linde, Praxair, Air Products, and Air Liquide) representing together [80-90]% of the total global capacity based on direct sourcing ([80-90]% in terms of net capacity worldwide) (see Tables 45 to 47 and Annex I).

(1133) Considering global capacity based on direct sourcing, pre-Transaction, Linde is the market leader ([20-30]%) and Praxair is the fourth largest player ([10-20]%). The two main competitors are Air Liquide ([20-30]%) and Air Products ([20-30]%). The remaining competitors are much smaller: Matheson ([5-10]%), Iwatani ([0-5]%), IACX ([0-5]%), and Messer ([0-5]%) (see Table 45 and Annex I). Post-Transaction, the merged entity would have on its own a combined global capacity above [40-50]%, with a substantial increment, brought by Praxair, of [10-20] percentage points. The merged entity combined capacity share would be twice as big as its two main competitors individually (Air Liquide and Air Products), and much greater than the other players (six time larger than Matheson's, 11 times larger than Iwatani's, and more than 30 times larger than IACX's and Messer's). The concentration level would thus be very high with a post-Transaction HHI above [2500-3000] and a delta above [900-100].

(1134) Considering global net capacity, the assessment is broadly similar to the above. Pre-Transaction, Linde and Praxair are respectively the third and fourth largest players, with individual capacity shares comprised between [10-20]% and [20-30]% (see Table 47 and Annex I). The main competitors are Air Liquide ([20-30]%) and Air Products ([20-30]%), followed by much smaller players (*i.e.* Matheson ([5-10]%), Iwatani ([0-5]%), IACX ([0-5]%), and Messer ([0-5]%)). Post-Transaction, the merged entity would become the market leader with a large increment (+[10-20]%) brought by Linde and a global net capacity share of [30-40]%, much higher than all competitors. Concentration levels would be also very high with a post-Transaction HHI larger than [2500-3000] and a delta HHI above [700-800].

(1135) The Commission also notes that, contrary to the Notifying Parties' assertion, the decline in the global capacity shares of Linde, Praxair, and Air Products, in the past years, does not corroborate the competitive constraints exerted by smaller players as it is mostly due to (i) the strengthening of Air Liquide's capacity (plus [5-10] percentage points of global capacity share between 2006 and 2017) and (ii) the divestment of helium sourcing agreements following the acquisition of BOC by Linde in 2006 (which enabled Matheson to gain [5-10] percentage points of global capacity share).[1407]

(1136) Second, **in terms of sales**, considering market share data excluding sales to other wholesalers and captive use (see Table 50 and Annex I), the market appears oligopolistic (with a high post-Transaction HHI – exceeding [2500-3000] – and a delta well above 150). The four largest players (Matheson, Air Products, Linde, and Praxair) account for more than [80-90]% of the market worldwide. At both EEA and global levels, the merged entity would be the second largest player, with a market share comprised between [20-30]% ([30-40]% considering EEA volumes in 2017). However, as explained in Section 8.9.1.1.2, the wholesale market excluding sales to

[1407] Annex 91 to the Form CO.

other wholesalers and captive use (i) is so small that market shares are volatile and of limited reliability to assess the Notifying Parties' market power and (ii) does not fully reflect the competitive dynamics in the wholesale market. The inadequacy of the approach suggested by the Notifying Parties is illustrated by the fact that, according to Linde and Praxair, Matheson is the market leader in the EEA, with a [40-50]% market share, whereas Matheson qualifies itself a "*very small players in the EEA*", where it "*competes selectively […] in few regions.*"[1408]

(1137) Considering market share data including sales to other wholesalers (and excluding captive use) (see Table 51 and Annex I), pre-Transaction, at global level, Linde is the market leader ([40-50]%), followed by Praxair ([10-20]%).[1409] The main competitors are Air Liquide ([10-20]%), Iwatani ([5-10]%), Air Products ([5-10]%), and Matheson ([0-5]%). Post-Transaction, the merged entity would be by far the largest player worldwide, with a high combined market share ([60-70]%) and a large increment of [10-20] percentage points brought by Praxair. The market share of Air Liquide, the main competitor, would be four times lower ([10-20]%). According to settled case law, such a large market share may in itself be evidence of the existence of a dominant position, which is confirmed by several market participants.[1410] As a result of the Transaction, the wholesale market would be extremely concentrated (with a high post-Transaction HHI exceeding [4000-4500] and a delta close to [1500-2000]), the merged entity and Air Liquide accounting together for close to [80-90]% of the market.

(1138) In their Reply to the Statement of Objections (Section 5.5), Linde and Praxair argued that the Commission significantly overstates the Notifying Parties' market shares. In this respect, the Commission notes that, contrary to Linde's and Praxair's assertions: (i) back-to-back contracts are not equivalent to direct sourcing contracts and, thus, are relevant to assess the competitive dynamics in the wholesale market (see Section 8.9.1.2) and (ii) the contract between […] is valid until […] and […].[1411] Moreover, the Commission notes that the Notifying Parties' claim that the market size may be underestimated, due to their limited knowledge of their competitors' back-to-back contracts, first, has not been further substantiated by Linde and Praxair, which did not provide any supporting elements, and, second, such limited knowledge is unlikely, the market being rather transparent due to its oligopolistic nature and the limited number of sources worldwide. In any event, the Commission found that the Notifying Parties' market shares in the wholesale market may not reflect fully their strength on this market notably due to the existence of very high barriers to entry related to the access to helium sources. In this respect, the market investigation revealed that, post-Transaction, the merged entity's sourcing portfolio would have no equivalent on the market, in terms of size and diversity, which would constitute a considerable competitive advantage (see Section 8.9.2.2.b).

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1408 Matheson's response to RFI Q34 to helium competitors, questions 21 and 25, ID4245.

1409 Such high market shares show that, although the Notifying Parties' helium business mainly focus on retail supply, their wholesale activities are significant.

1410 Notably SOL's reply to RFI Q34 to helium competitors of 12 January 2018, question 82 (ID04168): "*the new entity may have a dominant position towards wholesale and retail supplies*." Also, Matheson's reply to RFI Q34 to helium competitors, question 15 (ID4245).

1411 Notably, Notifying Parties' reply to RFI 48, question 47.

(1139) In view of the foregoing, the Commission considers that the Notifying Parties' large combined capacity shares and market shares would lead to a significant increase of market power post-Transaction.

ii. Closeness of competition

(1140) As regards closeness of competition, the market investigation confirmed that the Notifying Parties are close competitors both in terms of sourcing and sales. Competitors, wholesale customers, and helium producers consider that Praxair is Linde's second closest competitor and that Linde is Praxair's closest competitor. Air Liquide and Air Products are also viewed as close competitors of the Notifying Parties, compared to Matheson, Iwatani, IACX, and Messer.[1412]

(1141) The market investigation revealed that, in the helium wholesale market, only Tier 1 players, and to a more limited extent Matheson, compete closely with each other due to their direct access to helium sources. Indeed, as explained in Section 8.9.1.2, small or mid-size players have no (or limited) direct access to helium sources, which affects their competitiveness in terms of reliability of supply and pricing.

(1142) The above is confirmed by the analysis of the Notifying Parties' internal documents, which shows that the main focus and key benchmarking of Linde's and Praxair's helium activities is undertaken primarily against […]. Other players, such as […], are most of the time assessed collectively or not even mentioned. For instance, […].[1413] Similarly, […].[1414]

(1143) In light of the above, the Commission considers that the Notifying Parties are close competitors to a significant degree so that the Transaction could potentially give rise to significant price effects by removing the constraint pre-Transaction extended by the Notifying Parties on each other and on the market.

iii. Specific constraints exercised by the Notifying Parties

(1144) The Commission found that the Notifying Parties exert important competitive constraints in the helium wholesale market, which is not only due to their high capacity/market shares and closeness of competition, but also to (i) their market performance with respect to the main parameters of competition, (ii) their large and diversified helium sourcing portfolio, including their privileged access to the BLM system, and (iii) their high degree of vertical integration. As a result of the Transaction, such important competitive constraints would be eliminated.

(1145) When looking at the most important parameters of competition discussed in Section 8.9.1.2, the market investigation has shown that Linde and Praxair are very competitive players. In terms of sourcing, Linde is viewed by market participants as the most competitive player for all key competition parameters (*i.e.* price, financial strength, reputation and expertise), closely followed by Air Liquide, Praxair, and Air Liquide.[1415] Similarly, at sales level, Linde is viewed by market participants as the most competitive player for all key competition parameters (*i.e.* security of supply, vertical integration, prices, timely deliveries, location of the supplier's helium

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1412 Responses to RFI Q33 to helium producers, questions 24 and 25 and RFI Q34 to helium competitors, questions 21, 22, 77 and 78.

1413 Linde's internal presentation, […] [ID4762-28877].

1414 Praxair's internal presentation, […] [ID 4599-26066]. Also, Praxair's internal presentation, […] [ID4591-46581], slide 8 […] .

1415 Responses to RFI Q34 to helium competitors, questions 50 and 51.

sources, as well as reputation and overall service level). Praxair is perceived as the second most competitive players notably with respect to timely deliveries and location of the sources.[1416]

(1146) The Commission further notes that the Notifying Parties have certain characteristics allowing them to credibly compete on the helium wholesale market and to exert important competitive pressure on each other and on other market participants.

(1147) First, **the sourcing portfolio of the merged entity would have no equivalent** in terms of size and variety of sources, which, according to the results of the market investigation and contrary to the Notifying Parties' claim,[1417] constitutes a major competitive advantage, allowing the Notifying Parties (i) to better balance the demand and supply so as to be able to respond to (or to mitigate) supply disruptions and (ii) to eliminate substantial transportation costs (see Section 8.9.1.2).

(1148) As detailed below in Table 52, pre-Transaction, Linde's and Praxair's respective sourcing portfolios are already very diversified, with (direct or secondary) access to a large number of sources (respectively […] and […] sources out of 19 worldwide in 2017)[1418] and are to large extent complementary. Linde is already perceived on the market as the "*most diversified player in terms of available sources*."[1419] The only competitors with relatively similar sourcing portfolio are Air Products and Air Liquide, which respectively had access to […] and […] sources in 2017. Post-Transaction, the merged entity would have (direct or secondary) access to […] helium sources worldwide (out of 19), controlling a large share of their total output (between [20-40]% and [80-100]%).[1420] Moreover, the Commission notes that […].[1421] Such diversified portfolio would enable the merged entity to have access to very reliable and low-cost sources, such as US sources, which would account for […] of its total helium sourcing (excluding the BLM system), limiting thus its exposure to Qatar and Algeria, which are less reliable (see Section 8.9.1.2).

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1416 Responses to RFI Q34 to helium competitors, questions 15 to 17. Notably, Messer's reply to RFI Q34 to helium competitors, question 15 (ID02965): "*the best [wholesale supplier] is Linde from sourcing situation and who can balance volumes via BLM in the US*".

1417 Reply to the Statement of Objections, paragraph 135, which states that having a diversified sourcing portfolio entails inefficiencies and higher logistics costs. However, the Commission notes that the Notifying Parties expressly acknowledge that the diversity of sourcing allows to "*limit the potential impact [of shortage]*."

1418 Also agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraph 32: "*Linde [is] the most diversified player in terms of available sources*".

1419 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID 6233, paragraph 32.

1420 The merged entity would have no access to only […] sources worldwide: […].In 2017, these […] sources accounted together for only [0-20]% of the global helium production (Notifying Parties' reply to RFI 48, Annex Q44). Moreover, […] is expected to stop producing helium by […] (Notifying Parties' reply to RFI 57, question 11.d) and, […] is a "*declining assets*" (Praxair's internal presentation, […] [ID4592-23246]).

1421 Notifying Parties' reply to RFI 48, Annex Q44.

**Table 52: Helium sourcing portfolio (2017)**

| | | NET CAPACITY 2017 *(% of the source's total output)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Country** *(% of global capacity)* | **Source** | Linde | Praxair | *Comb.* | AP | AL | MTG | Iwatani | IACX | Messer | Others |
| USA ([50-60]%) | ExxonMobil | | | | | | | | | | |
| | BLM | | | | | | | | | | |
| | Linn Jayhawk | | | | | | | | | | |
| | DCP - Liberal | | | | | | | | | | |
| | Doe Canyon | | | | | | | | | | |
| | DCP Rock Ridge | | | | | | | | | | |
| | Linn Satanta | | | | | | | | | | |
| | Duke energy | | | | | | | | | | |
| | Nagadoches | | | | | | | | | | |
| | Sunray | | | | | | | | | | |
| | Weil - Mankota | | | | | | | | | | |
| | Pioneer Fain | | | | | | | | | | |
| Qatar ([30-40]%) | Qatar II | | | | | | | | | | |
| | Qatar I | | | | | | | | | | |
| Algeria ([5-10]%) | Skikda | | | | | | | | | | |
| | Arzew | | | | | | | | | | |
| Australia ([0-5]%) | Darwin | | | | | | | | | | |
| Russia ([0-5]%) | Orenburg | | | | | | | | | | |
| Poland ([0-5]%) | PGNiG | | | | | | | | | | |

[…]

*Source: Reply to RFI 48 (Annex Q44)*

(1149) The superiority of the merged entity's sourcing portfolio would be further strengthened by its **privileged access to the BLM system**. Indeed, as explained in Sections 7.4.1 and 8.9.4, despite its depletion, the BLM system remains the third largest helium source worldwide, accounting for [10-20]% of the global supply in 2017,[1422] and will continue to be a key asset for the supply of helium in the EEA in the coming years (at least until 2021 and potentially beyond).[1423] The Notifying Parties control together 60% of the refining capacities connected to the BLM pipeline, own [a large share] of the private-owned helium stored in the BLM reservoir, and accounted for [50-70]% of the BLM total output in 2017. The above would grant the merged entity considerable production flexibility, with a lower exposure to take-or-pay commitments than most competitors (the BLM system is the

1422 Notifying Parties' reply to RFI 48, Annex Q44, according to which, in 2021, the BLM will remain the third largest helium source worldwide and represent [10-20]% of the global supply.

1423 Agreed non-confidential minutes of the conference calls (i) with Air Products of 15 March 2018, ID 6798, paragraph 28 ("*there are still large quantities of helium stored in the BLM storage facility. [Air Products] expects the BLM system to remain operational after its privatisation which is scheduled in September 2021*"), and (ii) with Air Liquide of 22 March 2018, ID 6404, paragraphs 14-15 (the US BLM system "*still plays a key role at worldwide level*" and "*will keep running for at least four more years*"). Also, Helium Paper, Annex 01-02, […], slides 67 to 72, providing BLM production forecasts for 2021-2029.

"[…]").[1424] Market participants confirmed that, apart from Air Products, no other player would benefit from the BLM flexibility.[1425] This would further increase the merged entity's ability to balance global helium supply / demand and, thus, to mitigate supply disruptions. The above also contradicts the Notifying Parties' allegation pursuant to which the Linde and Praxair are subject to high take-or-pay commitments preventing them to commit to additional volumes.

(1150) During the second phase investigation, several market participants stressed the diversity, superiority, and even dominance of the merged entity's sourcing portfolio. For example, (i) Air Products indicated that the "*sourcing portfolio [of the merged entity] would have no equivalent on the market*"; (ii) […] stated that "*the merged entity would have a dominant position in relation to access to helium sources, with the largest and most diversified sourcing portfolio*"; and (iii) according to Westfalen; "*post-merger, Linde and Praxair would be dominant in terms of helium sourcing, which would allow them to source helium at better costs and with a high degree of flexibility thanks to their access to the BLM storage facility.*"[1426]

(1151) The superiority of the Notifying Parties' sourcing portfolios is also confirmed by the analysis of their internal documents. For instance, Linde's internal presentations refer to "[…]"[1427], highlighting its key strengths:

"[…]"[1428]

(1152) Similarly, Praxair's internal documents stress the competitiveness of Praxair's sourcing portfolio, highlighting in particular its "[…]" and […]:[1429]

"[…]."[1430]

(1153) Second, the Commission notes that the Notifying Parties are among the very few players which are active throughout all the helium supply chain. Linde and Praxair are indeed **highly vertically integrated** with strong position at each level of the supply chain:

(a) ***direct access to helium sources***: as previously indicated, the merged entity would control [40-50]% of the global capacity based on direct sourcing. No other players would have such a great direct sourcing portfolio. Pre-Transaction, Linde is the only supplier that […]. Contrary to the Notifying Parties' allegation[1431], post-Transaction, the merged entity would remain the

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1424 Praxair's internal presentation, […] [ID 4599-26066].

1425 Notably, agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 32: "*Linde, Air Products, and Praxair have a strong advantage due to their privileged access to the BLM storage facility, which grants them a lot of flexibility to balance their global helium supply and demand. […] only these three players can benefit from the BLM flexibility*"

1426 Agreed non-confidential minutes of the conference calls (i) with […] of 22 March 2018, ID5990, paragraph 6; (ii) with Air Products of 15 March 2018, ID6198, paragraph 31; and (iii) with Westfalen of 19 March 2018, ID6108, paragraph 10.

1427 Linde, […] [ID4762-28877].

1428 Linde, […] [ID4834-73413]. Also, Linde, […] [ID4834-75123]: […].

1429 Notably, Praxair, […] [ID4601-367] ("[…]"); Praxair, […] [ID4592-48145], slide 22 ("[…]" "[…]") and slide 25 ("[…]").

1430 Praxair's internal email exchange dated […] [ID4591-44341]. Also, Praxair's internal email exchanges dated […] [ID4598-65603].

1431 Helium Paper, footnote 25.

only player that does not rely on competitors for its helium sourcing,[1432] which would constitute a very strong competitive advantage in terms of reliability of supply and pricing (see Section 8.9.1.2). The Commission also notes that several competitors procure significant volumes of helium from the Notifying Parties ([…]). For instance, in 2017, (i) […] relied on Linde for [20-30]% of its global helium sourcing in 2017 ([…] tons), and (ii) […] relied on Praxair for [40-50]% of its global helium sourcing ([…] tons).[1433], Moreover, in 2016, Linde sold […] tons ([…] MMscf) of crude helium to […];[1434]

(b) ***large helium refining capabilities***: as explained in Section 6.3, some industrial gas companies run refineries. In particular, in the USA, Linde and Praxair own and operate three refineries, which are used to refine crude helium, sourced from the BLM reservoir or from other crude sources, for their own downstream operations or for third parties (tolling). With a capacity of […] tons a year, Linde's refinery in Otis (Kansas) is "[…]"[1435], after Praxair's refinery in Ulysses (Kansas) and Air Products' refinery in Liberal (Kansas), which both have a capacity of […] tons a year. Linde and Praxair account together for more than half ([50-60]%) of the US refining capabilities providing tolling to third parties.[1436] Apart from Air Products (31%) and, to a much more limited extent, IACX (1%)[1437], other industrial gas companies, notably Air Liquide, do not have refining capacities and, thus, need to conclude tolling agreements for the refining of the helium sourced from the BLM or from other US crude sources. Such refining capacities are highly strategic as they provide the Notifying Parties with a privileged access (i) to the BLM system, granting them flexibility, and (ii) to the low-cost and reliable US crude sources.[1438] This is expressly corroborated by the Notifying Parties' internal documents. For example, in recent internal presentations, Praxair stated "[…]"[1439] and "[…]";[1440]

**(c)** ***engineering capabilities for the design and supply of helium liquefaction plants:*** during the second phase investigation, the Commission found that, together with Air Liquide, Linde is the only industrial gas company capable of building helium liquefaction units. This has been confirmed by two market participants, that is to say Air Liquide and Uniper.[1441] Linde notably

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1432 According to the Notifying Parties' reply to RFI 57 (Annex Q13), in 2017, excluding the volumes supplied between Linde and Praxair, the Notifying Parties sold to competitors […] tons of helium and sourced from them […] tons of helium, which gives the merged entity a net excess of […] tons.

1433 Notifying Parties' reply to RFI 57, Annexe Q13.

1434 Helium Paper, Annex 01-04, slides 3 and 26.

1435 Linde's internal presentation, […] [ID4834-75123].

1436 US refining capabilities providing tolling to third parties included (i) refineries connected to the BLM pipeline and (ii) the Ladder Creek Helium plant operated by Duke Energy (Notifying Parties' reply to (i) RFI 48, question 55, and (ii) RFI 57, questions 15 to 18.)

1437 Two other companies also operates refineries offering tolling to third parties, *i.e.* Keyes and Duke Energy. The latter are not industrial gas companies and much lower refining capacities than the Notifying Parties: Keyes (4%) and Duke Energy (12%).

1438 That is to say DCP Liberal, DCP Rock Ridge, Linn Jayhawk, Linn Satanta, Nagadoche, Pioneer fain, Sunray, and Weil Mankota.

1439 Praxair, […] [ID 4599-26066].

1440 Praxair, […] [ID4591-46581].

1441 Agreed non-confidential minutes of the conference calls (i) with Air Liquide of 22 March 2018, ID6404, paragraph 19; and (ii) with Uniper of 26 February 2018, ID5244, paragraph 8.

engineered and supplied the main technological equipment of the new Amur helium production units, including liquefaction plants; [1442]

(d) ***large fleet of cryogenic portable tanks***: such tanks, which are specifically designed for the transportation over long distances, are very costly ([up to EUR million]per tank) and constitute a high barrier to entry.[1443] Praxair owns approximately […] cryogenic portable tanks, while Linde owns approximately […] cryogenic portable tanks.[1444] Pre-Transaction, Linde fleet is already the "[…]" worldwide,[1445] which means that, post-Transaction, the merged entity's fleet of approximately […] cryogenic containers will have no equivalent on the market and will be much larger than any other competitors. This would constitute another strong competitive advantage allowing the merged entity to easily redeploy its fleet to diversify its sourcing portfolio or mitigate supply disruptions. This is notably corroborated by Westfalen: "*the combination of Praxair's and Linde's ISO container fleets […] would enable the merged entity to dominate the market. Such a fleet would have no equivalent and would constitute a very strong competitive advantage in terms of logistics, allowing Praxair and Linde to easily redeploy their fleet in case of events affecting the global supply of helium.*"[1446]

The Notifying Parties dispute the above, notably on the grounds that cryogenic portable tanks may be leased from third parties (such as wholesale suppliers or customers) and that ownership is not a pre-requisite.[1447] In this respect, the evidence in the Commission's file suggests that helium suppliers own most of the cryogenic portable tanks they operate and lease container from third parties mainly on a short-term and punctual basis.[1448] Moreover, according to the Form CO, "*wholesalers do not provide for […] cryogenic containers*" (paragraph 1261). As a matter of fact, the Notifying Parties own the […] majority of the cryogenic portable tanks they operate and lease to and from third parties a […] limited number of tanks. For instance, while Linde owns […] containers, it currently leases from third parties only […]containers, on a "*short-term […] and ad hoc basis*" in order to "*overcome logistics shortages*", and does "*not currently lease cryogenic containers to third parties other than in connection with their wholesale sales.*"[1449] Besides, as further explained in Section 8.9.5, the market investigation confirmed that cryogenic portable tanks constitute a high barrier to entry. This is expressly corroborated by the

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1442 Agreed non-confidential minutes of the conference call with Gazprom 30 January 2018, ID4907, paragraph 8.

1443 Form CO, Chapter D, paragraph 1260.

1444 Form CO, Chapter D, footnote 505. Linde also manufactures cryogenic portable tanks but has very limited market share of [5-10]% worldwide. Moreover, cryogenic portable tanks manufactured by Linde are considered by all industry players to be of lower quality (see Form CO, Chapter D, paragraphs 1153 to 1158).

1445 Linde's internal presentation, […] [ID4834-75123].

1446 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID6108, paragraph 11. Also agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 18: "*helium suppliers are constrained by their fleet of ISO containers. The latter being very expensive, helium suppliers usually have relatively tight fleets. As a result, the unexpected outage of one source typically entails logistic issues as it requires the redeployement of the ISO container fleet at worldwide level.*"

1447 Reply to the Statement of Objections, Section 5.4, pages 33-34.

1448 Notably, Replies to RFI Q34, questions 9 and 11.

1449 Form CO, Chapter D, paragraph 1263 and, for Praxair, paragraphs 1261-1262.

Notifying Parties' internal documents which state, for example that "[…]"[1450] and "[…]."[1451]

(e) ***large downstream wholesale and retail operations***: as a result of the combination of their downstream wholesale and retail operations, the Notifying Parties' helium demand would significantly increase and be unmatched on the market, which would further enhanced the ability of the merged entity to compete for direct access to helium sources (and to obtain better sourcing terms and conditions).[1452] As explained in Section 8.9.1.2, the ability of an industrial gas company to compete for direct access to helium is closely related to its sales on the downstream markets for the wholesale and retail supply of helium, which is explicitly acknowledged by the Notifying Parties: "[…]."[1453] The above clearly contradicts the Notifying Parties' assertion pursuant to which competing for direct sourcing of helium does not require having a strong presence on the wholesale and retail markets.[1454]

(1154) As further explained in Section 8.9.4, the market investigation confirmed that such a high degree vertical integration would not only provide the merged entity with a clear competitive advantage, but would also enable it to hinder the expansion of its competitors, notably by limiting the conclusion of (i) secondary sourcing contracts and/or (ii) tolling agreements for the refining of helium.

iv. Conclusion

(1155) On the basis of the above the Commission considers that the Notifying Parties exert important competitive constraints in the global market for the wholesale supply of helium, on each other, as well as on the remaining competitors, which would be removed by the Transaction.

**b. Assessment of the other competitive constraints in the markets**

(1156) As explained in this Section, the Notifying Parties' competitors and customers do not appear to have the ability to counteract the loss of competition deriving from the Transaction.

i. Competitors (general assessment)

(1157) As a preliminary remark, the Commission notes that the market investigation revealed that the wholesale market is not competitive (Section 8.9.1.2), which discredits the alleged "*intense price competition*" raised by Notifying Parties in the Form CO. This low level of competition is largely due to the scarcity of helium[1455],

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1450 Linde's internal presentation, […] [ID4834-38183].

1451 Linde's internal presentation, […] [ID4834-75123].

1452 Notably agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID6230, paragraph 31: "*in terms of sourcing costs, large players have a costs-advantage of 20% compared to mid-size players such as Messer."*

1453 Helium Paper, Section 1.3.1, page 11. Also, page 9: […]".

1454 Helium Paper, Section 1.1.2, pages 3-4 and Reply to the Statement of Objections, Section 5.2, paragraph 140. In this respect, the Commission also notes that the Notifying Parties did not provide any evidence supporting their claim that Iwatani's, Messer's, and Matheson's helium sourcing exceeds their downstream sales.

1455 As explained in Section 8.8.1.2, the global supply of helium is currently tightening, which has been expressly acknowledged by the Notifying Parties in the course of the second phase investigation (reply to RFI 48, question 69). This clearly contradicts the allegations in the Form CO according to which the wholesale market is characterised by a "*situation of oversupply"*, with almost all competitors having excess capacity.

which limits both (i) the competitors' ability to increase their supply if price increases, especially in case of shortages, and (ii) the number of players with direct access to helium sources and, thus, the number of credible and competitive players (see Section 8.9.1.2).

(1158) As regard the limited number of credible players, the second phase investigation confirmed that small or mid-size players have no (or limited) direct access to helium sources, as they are *de facto* excluded from the large tenders organised by helium producers due to the existence of minimum volumes and strict take-or-pay obligations, which affects their competitiveness. The second phase investigation also revealed that, contrary to the Notifying Parties' assertion,[1456] the fact that small or mid-size players can participate in smaller helium tenders (with lower take-or-pay obligations) does not off-set their exclusion from the large tenders for at least three reasons:

– First, the small tenders organised by ExxonMobil, PGNiG[1457] and Gazprom (in Orenburg) account for a limited share of the global helium supply. PGNiG's and Gazprom (in Orenburg)'s combined output ([…] tons) represents less than [0-5]% of the global supply of helium and around [10-20]% of the EEA demand only. Moreover, […][1458]. Similarly, the small tenders organised by ExxonMobil are very limited (up to […] tons of helium);[1459]

– Second, large Tier 1 players also participate in these small tenders, thus limiting the ability of small or mid-size players to secure volumes. This is notably illustrated by the examples of small tenders provided by the Notifying Parties in the Helium Paper, which were all awarded to Tier 1 players.[1460] As a matter of fact, [40-50]% of Orenburg's total output and [40-50]% of PGNiG's total output are controlled by [Tier 1 players].[1461] The Commission also notes that the attempts of small or mid-size players to gain access to helium sources by partnering with other Tier 2 companies have so far been "*unsuccessful*"[1462], which, according to SOL, is due to the fact that Tier 1 players are able to offer higher prices:

*"Helium producers also tend to organise smaller tenders for the award of lower volumes (80 to 100 ISO containers), which are more accessible to Tier 2 players. SOL attempted to take part in such smaller bids by partnering with other Tier 2 companies. It explained that these attempts were unsuccessful because Tier 1 players took part in these smaller tenders as well, offering higher prices than the ones Tier 2 players could offer. According to SOL, this*

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1456 Helium Paper, Section 1.1.1 (pages 2-3) and Reply to the Statement of Objections, Section 5.2 (pages 30-31).

1457 The Reply to the Statement of Objections (paragraph 139) stresses that PGNiG considers that small or mid-size players (such as Iwatani, Sapio, Sol, and Westfalen) are credible when competing for direct sourcing companies. Contrary to the Notifying Parties' claim, the Commission notes that this merely reflects the fact that the tenders organised by PGNiG are small tenders, which are also accessible to small or mid-size players and, thus, does not undermine the fact that these small or mid-size players are *de facto* excluded from the large helium tenders.

1458 Praxair's internal presentation, […] [ID4592-23246].

1459 Form CO, Chapter D, paragraph 1107.

1460 Helium Paper, section 1.1.2, page 4. "[…] ."

1461 Notifying Parties' reply to RFI 48, Annex Q44.

1462 Reply to the Statement of Objections, paragraph 141.

*may raise the perception that Tier 1 players could be available to pay higher prices to avoid the risk that new players get access to helium sources";*[1463]

– Third, small or mid-size players have limited cryogenic portable tank fleet, which further reduce their ability to secure direct access to helium sources. As previously mentioned, cryogenic portable tanks are very costly ([up to EUR 1 million] per tank) and constitute a high barrier to entry.[1464]

(1159) It stems from the above that, contrary to what is argued in the Form CO, the competitive landscape in the wholesale market is rather stable, which is notably illustrated by the Notifying Parties' global capacity share forecasts (see Tables 48 and 49). In this context, the new sources currently under development are unlikely to modify the current competitive landscape in the short/medium term. Indeed, a significant share of these new sources' production is likely to be allocated to Tier 1 players, if this has not already happened (as illustrated by the sourcing agreements recently entered into by Linde and Praxair regarding the […] source and by the fact that Qatar III has been awarded to Air Products). Furthermore, the Commission notes that the stability of the competitive landscape is strengthened by various factors: (i) the increase in the global supply resulting from the new helium sources would be mitigated by the decline of the US BLM system, (ii) several of these new sources will not be (fully) operational before several years (notably in Russia, Canada, and Tanzania[1465]), and (iii) a large share of the direct sourcing agreements that, according to the Notifying Parties, […].[1466]

ii. Competitors (individual assessment)

(1160) **Air Products** is a Tier 1 and credible player[1467], which closely competes with the Notifying Parties. Similarly to Linde and Praxair, Air Products is vertically integrated with direct access to helium sources. Air Products has been, in particular, awarded 100% of the production of the new Qatar III source, which is currently under development (the start of the new source has been delayed and now expected by the end of 2019). Air Products also has large refining capabilities and privileged access to the US BLM system[1468], which grant it production flexibility, with lower exposure to take-or-pay commitments.[1469] That being said, several elements limit Air Products' market power and thus the competitive constraints exerted by the latter on the Notifying Parties:

– First, post-Transaction, Air Products' global capacity share (based on direct sourcing) would be less than […] that of the merged entity ([20-30]% *vs.* [40-50]%);

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1463 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, ID6226, paragraph 36.

1464 Form CO, Chapter D, paragraph 1260. Also, Linde's internal presentation, […] [ID4834-75123]:" […] ." Also, Linde's internal presentation, […] [ID4834-38183]: "[…]."

1465 Notably, agreed non-confidential minutes of the conference call with Noble Helium of 1 March 2018, ID 5169, paragraph 6 explaining that the development of the new helium source in Tanzania is "*at an early stage"* and that "*if successful"* extraction is not expected before *"the end of 2024*".

1466 Notifying Parties' reply to RFI 36 of 23 January 2018, question 27.

1467 Responses to RFI Q33 to helium producers, question 18 and RFI Q34 to helium competitors, questions 15 and 71.

1468 Air Products accounts for 36% of the refining capacities connected to the BLM pipeline and owns [30-40]% of the private-owned helium stored in the BLM reservoir (Notifying Parties' reply to RFI 48, questions 51 and 55).

1469 Notably, Praxair, […] [ID4591-46581], which indicates that […].

– Second, Air Products sourcing portfolio is much less diversified than the Notifying Parties and strongly relies on the BLM system (which accounts for […]% of its global net sourcing in 2018 *vs.* […]% for Linde and […]% for Praxair).[1470] While Air Products stated that its reliance on the BLM system "*does not affect its competitiveness*"[1471], this view is not shared by Linde, which internally stated that "[…] "[1472] Similarly, […] stated that "*Air Products very much relies on US sources and is therefore not diversified enough, especially if compared to players like Linde*."[1473] The Commission notes that the start of Qatar III will only partially off-set Air Products' reliability on the BLM;[1474]

– Third, according to Linde's internal documents, "[…]"[1475] which is due to (i) […], (ii) […][1476]and (iii) the fact that Qatar III has been delayed. As a result, Air Products must purchase helium from competitors[1477] (for instance, in 2016, Linde sold […] tons ([…] MMscf) of crude helium to Air Products).[1478] It must also source more volumes from the BLM, thus […][1479]: Air Products purchased most of the helium sold at the last BLM auction and sales, so as to increase its BLM inventory (+[5-10]% in 2018 compared 2017) and[…];[1480]

– Fourth, the analysis of the Notifying Parties' internal documents reveals that Air Products' competitiveness in terms of sourcing costs is expected to decrease significantly: "[…]";[1481]

– Finally, Air Products' limited competitive constraints at wholesale level is also corroborated by its limited market shares ([5-10]% including captive sales to other wholesalers), which is [several] times lower than the merged entity's ([60-70]%).

(1161) **Air Liquide** is also a Tier 1 and credible player[1482], which closely competes with the Notifying Parties. Similarly to Linde and Praxair, Air Liquide is vertically integrated with direct access to helium sources. In particular, over the past years, Air Liquide's global capacity increased significantly (e.g. +[20-30]% in 2017 compared to 2015), such increase being primarily driven by the fact that Air Liquide secured additional volumes at Qatar I and II.[1483] However, despite the above, the competitive constraints exerted by Air Liquide on the Notifying Parties are reduced for several reasons:

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1470 Notifying Parties' reply to RFI 48, Annex Q44.

1471 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 22.

1472 Linde, […] [ID4762-28877].

1473 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID 6233, paragraph 32.

1474 According to the Notifying Parties' forecast, in 2021, the BLM would still account for […]% of Air Products' s global net sourcing (*vs.* […]% in 2017) (Annex Q44 to the reply to RFI 48). Also, Linde, […] [ID4762-28877]: "[…]."

1475 Linde, […] [ID4762-28877]. Also, Helium Paper, Annex 01-04, […].

1476 Linde, […] [ID4834-87606].

1477 Linde, […] [ID4762-28877].

1478 Helium Paper, Annex 01-04, slides 3 and 26.

1479 Linde, […] [ID4834-87606: "[…]." Also, Praxair's internal email exchange dated […] [ID4591-44341].

1480 Notifying Parties' reply to RFI 48 (question 52 and Annex Q44) and to RFI 57 (question Q11.c).

1481 Praxair, […] [ID 4599-26066] .

1482 Responses to RFI Q33 to helium producers, question 18 and RFI Q34 to helium competitors, questions 15 and 71.

1483 Notifying Parties' reply to RFI 57, question 10.

– First, post-Transaction, Air Liquide's global capacity share (based on direct sourcing) would be less than […] than that of the merged entity ([20-30]% *vs.* [40-50]%);

– Second, Air Liquide's helium sourcing is much less diversified than the Notifying Parties and relies heavily on [a limited number of] sources (namely […]) representing […]% of its global net sourcing in 2017. Air Liquide's exposure to Qatar is particularly high ([…]% of its net sourcing in 2017 and […]% in 2021).[1484] The Notifying Parties consider internally that Air Liquide's sourcing portfolio is very "[…]"[1485] and "[…]"[1486], which affects its supply reliability: "[…]"[1487]; "[…]"[1488]; "[…]";[1489]

– Third, Air Liquide's sourcing is not flexible, due to high take-or-pay commitment and its limited access to the BLM system (Air Liquide has no refining capacity connected to the BLM pipeline and limited BLM inventory).[1490] The lack of flexibility of Air Liquide's helium sourcing is stressed in the Notifying Parties' internal documents: "[…]"[1491]; "[…]."[1492] As a result, Air Liquide is currently "[…]."[1493] According to the Notifying Parties, this is the reason why Air Liquide developed its own storage facility in Germany and injects helium in the BLM reservoir so as to store the excess volumes sourced from Qatar;[1494]

– Fourth, despite its current excess capacity, Air Liquide is likely to be short of helium by the end of 2019 due to the end of the supply agreement between [...] and […]: "[…]"[1495] Indeed, the volumes supplied by […] to […] are very substantial, accounting for […]% of Air Liquide's total net sourcing at worldwide level in 2017 ([…]tons).[1496] […];[1497]

– Fifth, Air Liquide's competitiveness in terms of sourcing costs is lower than other Tier 1 players[1498] and is likely to deteriorate. According to the Notifying Parties, the storage solutions developed by Air Liquide (i) bear significant additional (development and operational) costs which "[…]", and (ii) are "[…]"[1499] As a matter of fact, […],[1500] which support the view expressed by the Notifying Parties. […];[1501]

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1484 Notifying Parties' reply to RFI 48. Annex Q44. As a matter of comparison, Linde's and Praxair's top three sources account for […]% and […]% of their respective global net sourcing and their exposure to Qatar is much lower ([…]% and […]% of their respective global net sourcing).

1485 Praxair, […] [ID4591-46581].

1486 Praxair's internal email exchange dated […] [ID4591-44341].

1487 Linde, […] [ID4762-28877].

1488 Praxair, […] [ID4592-23246].

1489 Praxair, […] [ID 4599-26066].

1490 Notifying Parties' reply to RFI 48, questions 51 and 55.

1491 Praxair, […] [ID4592-23246].

1492 Praxair, […] [ID 4599-26066].

1493 Praxair's internal email dated […] [ID4599-20418].

1494 Notably, Praxair's internal email dated […] [ID4599-20418] ("[…])"; Linde, […] [ID4834-37413] ("[…]"); Praxair, […] [ID4592-23246] ("[…]").

1495 Linde, […] [ID4834-86847].

1496 Notifying Parties' reply to RFI 57, Annex Q13.

1497 Notifying Parties' reply to RFI 57, Annex Q20.

1498 Praxair, […] [ID4591-46581], according to which […].

1499 Notifying Parties' reply to RFI 48, question 62.

1500 Praxair's email exchanges with […] [ID4596-15181] and […] [ID4596-6834].

1501 Linde, […] [ID4834-37413].

– Finally, Air Liquide's limited competitive constraints at wholesale level are also corroborated by its limited market shares ([10-20]% including captive sales to other wholesalers), which is [several] times lower than the merged entity's ([60-70]%).

(1162) As regards **Matheson**, the second phase investigation confirmed the Notifying Parties' claim that, at wholesale level, Matheson is, to some extent, a credible player able to compete for direct access to helium sources against Tier 1 players.[1502] The analysis of the Notifying Parties' internal documents also reveals that Matheson is perceived by Linde and Praxair as an "[…]" player.[1503] That being said, the second phase investigation also confirmed that the competitive constraints exerted by Matheson on the market are limited for the following reasons:

– First, pre-Transaction, Matheson's global capacity ([5-10]% in 2017) is modest compared to the four Tier 1 players' and the Notifying Parties do not qualify internally Matheson as a major player: "[…]." [1504] The Transaction would further increase the gap between the capacity share of Matheson and the Notifying Parties' ([5-10]% *vs.* [40-50]%). Moreover, the Commission notes that, contrary to Linde's and Praxair's assertion, over the last 10 years, Matheson's global capacity share has been extremely stable ([5-10]% in 2007 *vs*. [5-10]% in 2017)[1505] and that the [5-10] percentage points in capacity share gained in 2006 by Matheson is due to the divestment of sourcing contracts following acquisition of BOC by Linde, rather than Matheson's ability to compete for and win sourcing contracts;

– Second, Matheson's sourcing of helium is not diversified, […]% of it relying on one source, that is to say […].[1506] The Notifying Parties' internal documents also expressly stress the fact that Matheson "[…]."[1507] Such "[…]"[1508] does not only affect Matheson's supply reliability but also its price competitiveness in some regions of the world, notably in Europe;[1509]

– Third, Matheson's sourcing is not flexible, due to high take-or-pay commitments and its limited access to the BLM system (Matheson has no refining capacity connected to the BLM pipeline and limited BLM inventory).[1510] This is corroborated by the Notifying Parties' internal documents, according to which Matheson's flexibility is "[…]",[1511] with "[…]";[1512]

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1502 Notably, agreed non-confidential minutes of the conference call with Gazprom of 30 January 2018, ID4907, paragraph 9. Also, responses to RFI Q33 to helium producers, question 18 and RFI Q34 to helium competitors, questions 15 and 71.

1503 Praxair, […] [ID4591-46581].

1504 Praxair, […] [ID 4599-26066].

1505 Annex 91 to the Form CO.

1506 Although the diversity of Matheson's sourcing portfolio will increase in 2019, […], it will remain heavily reliant on […] ([…]% in 2019) (Annex Q44 to RFI 48).

1507 Linde, […] [ID4762-28877].

1508 Praxair, […] [ID4592-23246].

1509 Matheson's response to RFI Q34 to helium competitors, question Q17, ID4245.

1510 Notifying Parties' reply to RFI 48, questions 51 and 55.

1511 Praxair, […] [ID4591-46581].

1512 Praxair, […] [ID 4599-26066].

– Fifth, according to the Notifying Parties' internal documents, Matheson's sourcing costs are […] than Linde's and Praxair's;[1513]

– Finally, considering market share data including sales to other wholesalers (and excluding captive use),[1514] Matheson's market share in the global market for the wholesale supply of helium is very modest ([0-5]%).

(1163) As regards **Messer**, the Commission notes that most market participants do not consider it a credible wholesale supplier and that the Notifying Parties did not even provide Messer's wholesale market share. The second phase investigation confirmed that the competitive constraints exerted by Messer on the wholesale market are limited for the following reasons:

– First, Messer has very limited direct access to helium sources, and must procure helium from its competitors, which is corroborated by the Notifying Parties' internal documents: "[…]."[1515] Similarly, Matheson indicated that Messer has "*limited direct sourcing and much smaller global market share, hence [is] less credible with respect to future direct sourcing*."[1516] Messer itself explained that it has difficulties to secure direct access to helium sources due to its limited helium demand and that it "*did not even consider participating in the last tender organised by Rasgas, the volumes to be awarded being too high*";[1517]

– Second, as a result of the above, Messer has a modest global capacity share ([0-5]%) and a very unbalanced sourcing portfolio (with only […] sources[1518]), which entails a risk of supply disruption;

– Finally, Messer's sourcing costs are not competitive. Indeed, Messer estimates that "*in terms of sourcing costs, large players have a costs-advantage of* [10-30]*% compared to mid-size players such as Messer*."[1519]

(1164) As regards **Iwatani**, the market investigation revealed that, contrary to the Notifying Parties' assertion, it is not a meaningful supplier in the wholesale market. In terms of helium sourcing, Iwatani is a recent entrant (2013), which most market participants do not regard as a credible and competitive player or as a close competitor to the Notifying Parties.[1520] Iwatani has a modest global capacity share ([0-5]%) and a limited market share ([5-10]% including sales to other wholesalers). It also has limited direct access to helium sources[1521]. Its sourcing portfolio is unbalanced, relying on only two sources, namely Qatar II ([…]%) and ExxonMobil ([…]%). The

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1513 Praxair, […] [ID4591-46581].

1514 As explained in Section 8.8.1.1.2, wholesale market share data excluding sales to other wholesalers and captive use are highly volatile and irrelevant to assess the Transaction.

1515 Linde, […] [ID4762-28877].

1516 Matheson's response to RFI Q34 to helium competitors, ID4245, questions 71 as well as to question 72.9 ("*Messer participates in fewer bids given their relatively small volume of helium purchased through direct sourcing*").

1517 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID6230, paragraph 29

1518 Annex Q44 to RFI 48.

1519 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID6230, paragraph 31

1520 Responses to RFI Q34 to helium competitors (questions 50, 51, 71, 77 and 78) and RFI Q33 to helium producers (questions 18, 24, and 25).

1521 Notably, agreed non-confidential minutes of the conference call with Gazprom of 30 January 2018, ID4907, paragraph 9

Notifying Parties' internal documents confirm that […][1522] They also highlight […]: "[…]."[1523]

(1165) As regards, **PGNiG** and **Gazprom**, the evidence in the Commission's file has generally not provided any indication supporting the Notifying Parties' assertion that they are "*major wholesale suppliers.*"[1524] For example, Gazprom indicated that its wholesale supply of helium in the EEA is "*very limited*" and that it "*expects this activity to slow down*"[1525]. Matheson also stressed the lack of competitiveness of PGNiG and Gazprom notably on the ground that they do not have cryogenic portable tanks ("*all suppliers own their own container assets except PGNiG and Gazprom (Gazprom owns* [a limited number] *containers but insufficient).*"[1526]

(1166) Finally, the evidence in the Commission's file indicates that **IACX**, **Uniper**, and **Weil** are not meaningful suppliers at wholesale level. These players are very small and are not regarded as credible or competitive by market participants.[1527] They have marginal helium sourcing and sales, which is notably due their very limited direct access to helium sources. For example, Uniper is a new entrant in the global helium business in 2017, which (i) purchased limited volumes of crude helium at the BLM (less than 200 tons), (ii) relies on a tolling agreement with […] for its refining, and (iii) has marginal wholesale sales ([…]).[1528] Matheson also indicated that: "*IACX, Weil, Uniper all purchased limited volumes of crude helium from the US BLM for the first time in the last 5 years. These companies must also negotiate tolling agreements and invest in ISO containers to viably bring liquid helium to the market. These companies are not global players and will likely struggle to compete in the wholesale marketplace*."[1529]

iii. Buyer power

(1167) As explained in Section 8.9.5, buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction in the helium wholesale market. In particular, the Commission notes that, switching suppliers at wholesale level is qualified as "*difficult*" by many market participants, which is notably due to the limited number of suppliers, especially in period of shortages.[1530]

iv. Conclusion

(1168) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints present in the global market for the wholesale supply of helium are unlikely to off-set the likely anti-competitive effects of the Transaction.

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1522 Notably, Linde, […] [ID4762-28877] and Praxair, […] [ID4592-23246].

1523 Praxair's internal email dated […] [ID4599-20418]. Also, Praxair; […] [ID4591-46581].

1524 Helium Paper, Section 1.4.

1525 Notably, agreed non-confidential minutes of the conference call with Gazprom of 30 January 2018, ID4907, paragraph 11

1526 Matheson's response to RFI Q34 to helium competitors, ID4245, question 17 as well as to question 71 ("Iwatani and Messer have *limited direct sourcing and much smaller global market share, hence are less credible with respect to future direct sourcing*") and question 72.9 ("*IACX is not typically involved in major or even modest sized bids*").

1527 Responses to RFI Q34 to helium competitors (questions 50, 51, 71, 77 and 78) and RFI Q33 to helium producers (questions 18, 24, and 25).

1528 Agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID5244, paragraphs 4 to 13.

1529 Matheson's response to RFI Q34 to helium competitors, question 74, ID4245.

1530 Responses to RFI Q34 to helium competitors, question 24.

### c. Likely effects of the Transaction

(1169) On the basis of the considerations set out in Sections 8.9.1 to 8.9.2.2.b.iv, the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. The Transaction would therefore significantly impede effective competition in the global helium wholesale market as a result of those effects. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately do in a pre-Transaction scenario.

(1170) This view is shared by the participants to the market investigation. Most of them complained about the Transaction indicating that it would have a negative overall impact on the wholesale supply of helium and that, post-Transaction, there would be no sufficient alternative suppliers.[1531]

(1171) Several market participants, including wholesalers and independent retailers, emphasized the fact that, post-Transaction, the merged entity would be *"dominant*" notably due to its helium sourcing portfolio[1532] and its large fleet of cryogenic portable tanks.[1533] According to them, such a dominant position would "*adversely affect competition on the downstream markets for the wholesale and retail supply of helium.*"[1534]

(1172) In particular, several respondents to the market investigation consider that, post-Transaction, "*the merged entity would be able to dictate the helium market price*"[1535]. For example, according to Matheson, "*the combined Linde/Praxair entity will have significant market power to dictate the market function which will lead to less competition and helium availability and potentially higher pricing*."[1536]

(1173) In addition to the risk of price increases, some market participants expressed concerns about the fact that the dominant position of the merged entity would enable it to "*source helium at better costs"* and that no competitor would be able to obtain comparable terms of supply.[1537] It is therefore unlikely that these cost savings by the merging entity would be passed on to customers. For instance, Messer indicated that "*large industrial gas companies procure more helium and thus have better sourcing costs. Messer estimates that, in terms of sourcing costs, large players have a cost-advantage of 20% compared mid-size players such as Messer. […] the Transaction would compound this problem: no competitor would be able to obtain terms of*

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1531 Responses to RFI Q34 to helium competitors, questions 25 and 29.

1532 Notably, agreed non-confidential minutes of the conference calls (i) with […] of 22 March 2018, ID 5990, paragraph 6; (ii) with [a competitor] of 11 April 2018, ID 6302, paragraph 34; and (iii) with Westfalen of 19 March 2018, ID 6108, paragraph 10. Also, Matheson's reply to RFI 34, question 25 (ID4245).

1533 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID6108, paragraph 11: "*the combination of Praxair's and Linde's ISO container fleets (around* […] *ISO containers) would enable the merged entity to dominate the market*."

1534 Notably, agreed non-confidential minutes of the conference calls (i) with [a competitor] of 11 April 2018, ID 6302, paragraph 34; (ii) with SOL of 16 March 2018, ID 6226, paragraphs 37 and 38 ("*With the merged entity controlling such a high share of the helium sources worldwide, the Transaction would adversely affect competition on the downstream markets for the wholesale and retail supply of helium*").

1535 Notably, agreed non-confidential minutes of the conference calls (i) with Noble Helium of 1 March 2018, ID 5169, paragraph 14; and (ii) with SOL of 16 March 2018, ID 6226, paragraphs 37 and 38.

1536 Matheson's reply to RFI 34, question 29 as well as question 25 (ID4245).

1537 Notably, agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID 6108, paragraphs 10 and 13.

*supply comparable to those enjoyed by the merged entity, as a result of the combination of Linde's and Praxair's helium businesses*."[1538]

**d. Conclusion**

(1174) For the reasons set out in recitals (1114)-(1173) , the Commission's assessment is that the Transaction would significantly impede effective competition in the global market for wholesale supply of helium as result of horizontal non-coordinated effects, either through the creation or strengthening of a dominant position, or, at least, by removing important competitive constraints that the Notifying Parties exerted pre-Transaction upon each other together with the reduction of the competitive pressure on the few remaining competitors.

*8.9.3. Horizontal coordinated effects*

(1175) In the Article 6(1)(c) Decision the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement due to likely horizontal coordinated effects with respect to the global sourcing of helium. Such effects would have resulted from coordination between the Tier 1 players aiming at market repartition.

(1176) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change in the incentives on the merged entity and its remaining Tier 1 competitors to coordinate post-Transaction. The Commission therefore considers that the Transaction would not significantly impede effective competition with respect to the global sourcing of helium as a result of horizontal coordinated effects. The Commission also notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in the global market for the wholesale supply of helium would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in that market. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities with respect to the global sourcing of helium.

*8.9.4. Vertical non-coordinated effects*

(1177) As indicated in Section 8.1.2, the vertical relationship between the upstream market for the wholesale supply of helium (including access to helium sources) and the downstream markets for the retail supply of helium gives rise to vertically affected markets.[1539] [1540]

(1178) The different levels of the helium supply chain being highly interconnected, the Commission considers that the risks of horizontal non-coordinated effects discussed

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1538 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 31.

1539 The Notifying Parties have combined market shares (and capacity shares) exceeding 30% both at wholesale and retail levels (see Sections 8.8.1 and 8.9.1).

1540 As indicated in Section 8.1.2, the Transaction also gives rise to a vertical relationship between (i) the upstream EEA/global market for the helium cryogenic tanks (where Linde is active) and (ii) the downstream global markets for the wholesale supply of helium and the retail supply of helium in cryogenic portable tanks (where both Linde and Praxair are active). This link gives rise to vertically affected markets given that the Notifying Parties' combined market shares on both downstream markets are above 30%. The Commission will not further assess this vertical relationship given that (i) Linde's market share on the upstream market is modest ([5-10]%-[10-20]%) and (ii) no foreclosure concern has been raised in the market investigation with respect to this vertical link.

in Sections 8.9.2, and 8.10.2 could be further compounded by the risks of foreclosure effects discussed hereinafter.

8.9.4.1. Notifying Parties view

(1179) In the Form CO, the Notifying Parties submitted that there is no increased risk of input foreclosure arising from the Transaction and that sourcing capacities are of limited significance when assessing the market power of an industrial gas company in the wholesale and retail markets.[1541]

(1180) First, the Notifying Parties argued that no foreclosure concerns could arise since (i) helium sourced by them is mainly used captively for their own retail operations and (ii) helium is subject to significant take-or-pay commitments and difficult to store, which would make a foreclosure strategy not profitable.

(1181) Second, the Notifying Parties claimed that they would have no ability or incentive to foreclose access to helium in the EEA given that (i) downstream competitors are either already vertically integrated, with access to helium sources, or have a plurality of competitors of the Notifying Parties on the upstream wholesale market from which to source their requirements; (ii) the Notifying Parties have a limited number of wholesale customers in the EEA, and (iii) foreclosing access to helium would not be profitable due to the existence of alternative suppliers able to capture the demand diverted away from foreclosed rivals.

(1182) Moreover, in the Thematic Papers, the Notifying Parties contested several findings of the Article 6(1)(c) Decision.[1542]

(1183) First, the Notifying Parties argued that, post-Transaction, the merged entity would not have the ability to foreclose vertically integrated players (with direct access to helium sources). It is asserted that these competitors do not rely on the Notifying Parties for their helium sourcing given that: (i) Linde […],[1543] (ii) Praxair's sourcing […], and (iii) post-Transaction, the merged entity would actually […] for its helium sourcing. Linde and Praxair also stated that competitors would have sufficient alternative suppliers, [60-70]% of the global helium production being controlled by third parties.

(1184) Second, the Notifying Parties claimed that the merged entity would not have the ability to foreclose independent retailers (with no direct access to helium sources). They submitted that their sales to independent retailers in the EEA are very limited: (i) Praxair has only […] customers and (ii) Linde is only active through […], whose sales cannot be diverted by Linde due to […]. They also alleged that independent retailers would have many alternative wholesale suppliers, such as PGNiG, Gazprom, Matheson, Helison, and Air Products.

(1185) Third, the Notifying Parties submitted that their access to the BLM system does not enable them to meaningfully control the global supply of helium: the amount of global capacity that the merged entity could theoretically limit would not exceed [10-20]% of the annual worldwide capacity (and would decline as the BLM depletes). It is also argued that the merged entity would not have the ability to prevent competitors from withdrawing additional volumes of helium from the BLM reservoir, notably due to the existence of a number of alternative refineries.

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1541 Form CO, Chapter D, paragraphs 1109 to 1145.

1542 Helium Paper, Section 1.3, pages 7 to 13.

1543 At wholesale level, Linde is also active through […].

(1186) Finally, Linde and Praxair asserted that it would not be in the interest of the merged entity to foreclose access to helium since sales to competitors enable (i) to reduce the financial exposure resulting from the existence of high take-or-pay commitments, and (ii) to optimise transportation costs *via* the conclusion of swap agreements. The Notifying Parties also claimed that the use of the BLM to foreclose competitors would involve substantial additional transportation and storage costs, which explains why Linde and Praxair […]. Lastly, they stated that the merged entity would have incentive to conclude tolling agreements so as to sell its excess refining capacities to competitors with no refinery.

(1187) In the Reply to the Statement of Objections, the Notifying Parties argued that the Transaction does not give rise to "*material vertical foreclosure concerns.*" In particular, it is claimed that secondary sourcing contracts (such as back-to-back supply agreements) are irrelevant to assess the risk of input foreclosure as they "*represent a form of commercial risk sharing/cooperation rather than a traditional vertical supply arrangement.*" It is also asserted that the Commission significantly overstates Linde's and Praxair's position on the upstream wholesale market notably on the grounds that (i) the market size is underestimated, the Notifying Parties having limited knowledge of their competitors' sales, and (ii) more than […] of Linde's market share at upstream level is due to the contract entered into with […], which expires in […]and […]. [1544]

8.9.4.2. Results of the market investigation and Commission's assessment

(1188) In the following the Commission will assess, first the ability of the merged entity to foreclose access to helium, second, whether it would have the incentive to do so, and third, whether a foreclosure strategy would have a significant detrimental effect on competition.

8.9.4.2.1. Ability to foreclose access to helium

(1189) As regards, the ability of the Notifying Parties to foreclose access to helium, the Commission notes the following.

(1190) **First, helium is a critical input required to compete on the downstream wholesale and retail markets**. In particular, as explained in Section 8.9.1.2, all participants to the market investigation confirmed that access to helium sources is paramount to be competitive at wholesale and retail levels.[1545] This is all the more true since helium is a scarce product, regularly subject to shortages and difficult to store. In this respect, the Commission notes that, contrary to what was initially alleged in the Form CO, the global supply of helium is currently tightening,[1546] which is not contested by the Notifying Parties[1547] and corroborated by their internal documents: "[…]",[1548] "[…]."[1549]

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1544 Reply to the Statement of Objections, Section 5, pages 29-35 (in particular Section 5.5, page 34).

1545 Notably, TIG's reply to RFI Q34 to helium competitors, question 33.3, ID3678: "*A key factor at Helium is the access to a Helium source somewhere worldwide, so it is a question of access if you can develop the business e.g. in Europe.*"

1546 Gasworld, "*Helium supply tightens again*", 7 February 2018 (ID6131) and Gasworld, "*Helium: Here we go again, potentially*", 8 February 2018 (ID6132). Also, agreed non-confidential minutes of the conference call with Noble Helium of 1 March 2018, ID5169, paragraph 10.

1547 Notifying Parties' response to RFI 48, question 69.

1548 Annex 01-05 to the Helium Paper, slide 21.

1549 Annex 01-04 to the Helium Paper, slides 3 and 4.

(1191) **Second, the market investigation revealed that sales to competitors (including wholesalers and independent retailers) are significant**. Indeed, even though most of the helium sourced by industrial gas companies from helium producers is used for their own retail operations, sales between competitors are considerable, accounting for [10-20]% of the helium sourced worldwide in 2017.[1550]

(1192) **Third, the merged entity would have a significant degree of market power, reaching a dominant position, in the upstream market for wholesale supply of helium**. The merged entity would control [40-50]% of the helium produced worldwide and account for [60-70]% of the global wholesale market, with a large increment brought by Praxair, of [10-20] percentage points (see Section 8.92.2.a). According to settled case law, such a large market share may in itself be evidence of the existence of a dominant position.[1551] In fact, several market participants confirmed that the merged entity would be *"dominant*",[1552] which would "*adversely affect competition on the downstream markets.*"[1553] The market investigation confirmed that the Notifying Parties would be able to foreclose:

(a) *Vertically integrated players (wholesalers)*, which source helium from the merged entity through secondary sourcing arrangements, spot sales, and swap agreements. Indeed, the second phase investigation revealed that Linde's and Praxair's sales to vertically integrated players are important. For instance, in 2017, taking only into account secondary sourcing (excluding swap sales and spot sales): [1554]

- Linde's and Praxair's global sales to other wholesalers accounted for […]% and […]% of their respective direct sourcing of helium;[1555]
- […]% of the helium procured globally by […] was sourced from Linde ([…] tons out of […] tons);
- […]% of the helium procured globally by […] was sourced from Praxair ([…] tons out of […] tons);
- […]% of the helium procured globally by […] was sourced from Linde ([…]) ([…] tons out of […] tons). [1556]

The above shows that, contrary to the Notifying Parties' assertion, competitors do rely on the Notifying Parties for their helium sourcing. The importance of

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1550 In 2017, at global level, sales between competitors amounted to […] tons out of […] tons sourced worldwide from helium producers (Notifying Parties' reply to RFI 57, annex Q13).

1551 Case C-62/86, *Akzo* v *Commission* [1991] ECR I-3359, paragraph 60 and Case T-221/95, *Endemol v. Commission*, [1999] ECR II-1299, paragraph 134.

1552 Notably, agreed non-confidential minutes of the conference calls (i) with […] of 22 March 2018, ID 5990, paragraph 6; (ii) with [a competitor], of 11 April 2018, ID 6302, paragraph 34; and (iii) with Westfalen, of 19 March 2018, ID 6108, paragraphs 10 and 11. Also, Matheson's reply to RFI 34, question 25 (ID4245).

1553 Notably, agreed non-confidential minutes of the conference calls (i) with [a competitor], of 11 April 2018, ID 6302, paragraph 34; (ii) with SOL, of 16 March 2018, ID 6226, paragraphs 37 and 38. Also, SOL's reply to RFI Q34 to helium competitors of 12 January 2018, question 82 (ID4168).

1554 Notifying Parties' reply to RFI 57, Annexe Q13.

1555 […] tons out of […] for Praxair and […] tons out of […] tons for Linde (a large share of Linde's 2017 sales to other wholesalers resulted from the supply contract between Linde and […]).

1556 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 23: "*Should Linde's Algerian joint venture put an end to the above supply, it would be an issue for Air Products as in any situation where a source stops supplying*." Besides, in 2016, Air Products sourced from Linde […] tons ([…] MMscf) of crude helium (Helium Paper, Annex 01-04, slides 3 and 26).

the Notifying Parties' sales to other wholesalers is also corroborated by the Notifying Parties internal documents which notably reveal that (i) in 2016, Linde sold […] tons ([…] MMscf) of crude helium to […];[1557] and that (ii) […] is Praxair's "[…]."[1558]

Moreover, the Commission notes that, contrary again to the Notifying Parties' assertion[1559], post-Transaction, the merged entity would remain the only player that does not rely on competitors for its helium sourcing since the balance of sales and purchases of helium is positive for the merged entity,[1560] which would constitute a strong competitive advantage in terms of reliability of supply and pricing (see Section 8.9.1.2);

(b) *Non-vertically integrated players (independent retailers)*, which source helium from the merged entity at wholesale level. In this respect, the fact that the Notifying Parties' sales to independent retailers are limited does not mean that Linde and Praxair are not important suppliers in this market segment, which is very narrow (see Section 8.9.1.1.2). For instance, in 2017, in the EEA, Praxair's and Linde's limited sales to only […] independent retailers[1561] represented [30-40]% of the total volumes of helium sold to independent retailers in the EEA, which would make the merged entity the second largest player (see Section 8.9.1.1.2). The Commission also notes that the joint venture agreement between Linde and Sonatrach […]. […],[1562] […].[1563]

(1193) **Fourth, the fact that helium is a by-product of natural gas production, difficult to store, and subject to high take-or-pay obligations, does not mean that reduction of supply is not possible**. As explained in Sections 7.4.1 and 8.9.2.2.a, the Notifying Parties have a privileged access to the BLM system. Post-Transaction, the merged entity would control 60% of the refining capacities connected to the BLM pipeline and own [40-60]% of the private-owned helium stored in the BLM reservoir,[1564] which would provide the merged entity considerable production flexibility, to an extent unparalleled by any competitor:[1565]

(a) The merged entity would have a lower exposure to take-or-pay commitments than most competitors (the BLM system is the "[…]");[1566]

(b) The merged entity would be able to turn up / turn down the amount of helium it sourced from the BLM. In fact, the Notifying Parties acknowledged that the merged entity would be able to limit [10-20]% of the annual worldwide

1557 Helium Paper, Annex 01-04, slides 3 and 26.
1558 Praxair, […] [ID 4599-26066].
1559 Helium Paper, footnote 25.
1560 According to the Notifying Parties' reply to RFI 57 (Annex Q13), in 2017, excluding the volumes supplied between Linde and Praxair, the Notifying Parties sold to competitors […] tons of helium and sourced from them […] tons of helium, which gives the merged entity a net excess of […] tons.
1561 In 2017, Praxair sold helium to […], whereas Linde ([…]) sold helium to […] (Notifying Parties' reply to RFI 48, question 67).
1562 Annex 87 to the Form CO, Article 16.1.4.3. Pursuant to this provision, Linde must also approve […].
1563 […] (Notifying Parties' reply to RFI 48, question 67).
1564 Notifying Parties' response to RFI 48, questions 51 and 55.
1565 Moreover, the facility used by the BLM to enrich the crude helium extracted from the reservoir (before delivering it to the refiners) is jointly owned by Linde and Praxair (together with Air Products and Kinder Morgan), through a joint venture (the Cliffside Refiners Limited Partnership) (BLM's reply to RFI Q33, question 2, ID3120; and the Notifying Parties' reply to RFI 48, question 54).
1566 Praxair's internal presentation, […] [ID 4599-26066].

capacity,[1567] which is considerable, especially in the context of the current tightening of the helium global supply;

(c) The merged entity would also be able to reinject helium sourced from other sources into the BLM storage facility.[1568]

(1194) As explained in Sections 7.4.1.3 and 8.9.2.2.a, the importance of the flexibility provided by the BLM system has been emphasized by most participants to the market investigation and is corroborated by the Notifying Parties' internal documents.[1569] Despite its depletion, the BLM system is expected to remain a key asset in the helium industry in the coming years (at least until 2021 and potentially beyond).[1570] The Notifying Parties consider internally that it is […]. [1571]

(1195) The above flexibility would enable the merged entity to refuse the conclusion of new supply contracts, without increasing the financial exposure resulting from the take-or-pay obligations included in its helium sourcing agreements.

(1196) The risk of foreclosure would also result from the ability of the merged entity to cut the supply of existing supply agreements with competitors, in case of shortages or supply shortfall, so as to favour its own retail sales. Indeed wholesale supply contracts and secondary sourcing agreements typically include a *Force Majeure* provision allowing the supplier to reduce supply in such cases. This has been corroborated by Westfalen, which indicated that "*in the event of a shortage, the merged entity would be able to use the force majeure provision included in its contracts to favour its own retail operations to the detriment of competitors sourcing helium from it*."[1572] This is confirmed by the Notifying Parties' internal documents, which reveal that, in the context of the Qatar embargo in 2017, Praxair recommended internally to "[…]"[1573], and Linde considered that […].[1574] [1575]

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1567 Helium Paper, Section 1.3.2, page 12.

1568 Form CO, Chapter D, footnote 565 and Notifying Parties' response to RFI36, question 30. Also, Helium Paper, Annex 01-02, slide 9 ("[…]") (as well as slides 15, and 17).

1569 Notably, Helium Paper, Annex 01-05, […], slide 14: "[…]."

1570 Agreed non-confidential minutes of the conference calls (i) with Air Products of 15 March 2018, ID6198, paragraph 28 ("*[Air Products] expects the BLM system to remain operational after its privatisation which is scheduled in September 2021*"), and (ii) with Air Liquide of 22 March 2018, ID6404, paragraphs 12-14. Also, Helium Paper, Annex 01-02, […], slides 67 to 72, providing BLM production forecasts for 2021-2029.

1571 Linde, […] [ID4834-38229] ("[…]"). Also, Linde, […] [ID4834-89928] ("[…]"); and Helium Paper, Annex 01-05, […], slide 15: "[…]."

1572 Agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID 6108, paragraph 12. Also, Matheson's reply to RFI Q34, question 13.8.1, ID04245: "*Direct sourcing is very important as customers believe a supplier who has direct supply agreements in place with the source will be more reliable, especially during times of shortages*."

1573 Praxair's internal email exchange […] [ID4598-53824].

1574 Linde's internal presentation, […] [ID4834-87606].

1575 Some supply contracts may include provisions limiting the ability of a supplier to favour its own retail operations (in case of shortages / supply tightening) by requiring the supplier to evenly limit supply among its downstream customers proportionately or to allocate the supply amongst its customers in a "*fair and reasonable manner*." (Notifying Parties' reply to RFI 48, question 70). However, this is not always the case, as stressed by Messer: "*not all supply agreements entered into between competitors include provision limiting the ability of the supplier to favour its own retail operations*" (agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 30). Also, agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 24: "*some supply contracts provide that helium is distributed among customers in a fair manner.*"

(1197) **Fifth, alternative wholesale suppliers are limited and face capacity constraints, which prevent them from expanding output in response to a supply restriction**. Reducing access to helium sourced upstream would thus negatively affect the overall availability of helium on the downstream markets. As explained in Section 8.9.2.2, apart from the Notifying Parties, there are only three credible players (with direct access to helium sources), that is to say (i) Air Products, which is currently short of supply, (iii) Air Liquide, which is less competitive in terms of prices and likely to be short of helium by the end of 2019, and (iii) Matheson, which is less competitive in certain regions of the world, notably in the EEA due to its modest capacity share and unbalanced sourcing portfolio. As regards the other players mentioned by the Notifying Parties, the evidence in the Commission's file does not support the Notifying Parties' assertion that PGNiG and Gazprom are "*major wholesale suppliers.*"[1576] For example, Gazprom indicated that its wholesale supply of helium in the EEA is "*very limited*" and that it "*expects this activity to slow down*"[1577] and PGNiG does not own cryogenic portable tanks.[1578] As regards Helison, it is controlled by Linde and therefore cannot be regarded as an alternative to the Notifying Parties.

(1198) The scarcity of helium and the tightening of the global supply also prevent the above competitors from expanding output in response to supply restrictions. In this regards, the fact that some competitors have BLM inventory that may be withdrawn from the reservoir is unlikely to counteract any foreclosure strategy of the Notifying Parties at least for two reasons:

(a) Apart from the Notifying Parties, and Air Product (which is currently short of supply – see Section 8.9.2.2.b), competitors have limited BLM inventory. Indeed, Linde, Praxair, and Air Products own together [80-100]% of the private-owned helium stored in the BLM reservoir, the remaining [0-20]% being shared between Air Liquide ([0-20]%), Matheson ([0-20]%), Weil ([0-20]%), Uniper ([0-20]%) and Keyes ([0-20]%). The importance of the BLM inventory is all the more crucial that, when the demand exceeds the BLM delivery capacity (for example in case of global shortage), the volumes that may be withdrawn from the reservoir are allocated by the BLM between the above companies depending on their respective percentage of private-owned helium stored in the reservoir.[1579] The above is highlighted by the Notifying Parties' internal documents which emphasize the importance of "[…]"[1580] and reveal that, […];[1581]

(b) In order to access the BLM system, competitors with no refining capacities need to conclude tolling agreements, which prevents them from having the same level of flexibility. Air Products notably pointed out that a company with no refining capacity can benefit from the flexibility of the BLM *"to a more limited extent*" and that *"the need to conclude a tolling agreement makes the BLM less attractive for companies with no refining capacity connected to the BLM pipeline than for refiners, which explains why Air Liquide decided to*

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1576 Helium Paper, Section 1.4.

1577 Notably, agreed non-confidential minutes of the conference call with Gazprom of 30 January 2018, ID 4907, paragraph 11

1578 Matheson's response to RFI Q34 to helium competitors, question 17, ID4245.

1579 Notifying Parties' reply to RFI 48, question 51 and 59 and annexes Q52.1 and Q52.2.

1580 Helium Paper, Annex 01-04, slide 11.

1581 Linde, […] [ID4834-37413]. Also, slide 7 ("[…]").

*develop its own storage facility in Germany.*"[1582] Furthermore, the conclusion of a tolling agreement may prove to be difficult given the limited number of refiners. Indeed, Air Products, Linde, and Praxair control together 96% of the refining capacities connected to the BLM.[1583] The Transaction would thus lead to the creation of a duopoly,[1584] which would further increase the merged entity's ability to hinder the expansion of its competitors.

(1199) **Finally, the ability of the Notifying Parties to foreclose access to helium has been confirmed by the market investigation**. For instance, Messer submitted that "*the merged entity would be in a position to foreclose market players' access to the wholesale supply of helium*."[1585] Matheson also expressly stated that "*the new combined entity will have the market power to dictate pricing, control helium sources, block new competitors from entering the markets, and potentially push existing competitors out of markets*."[1586]

8.9.4.2.2. Incentive to foreclose access to helium

(1200) As regards, the incentive of the Notifying Parties to foreclose access to helium, the Commission notes the following.

(1201) **First, foreclosing access to helium would be profitable, as it would allow the merged entity to increase its downstream retail sales, which are characterised by very high margins compared to upstream wholesale sales**. For instance, Linde's gross profit margin in the EEA is […]% on average at retail level (up to […]% in some countries), whereas it is ranges between […]% and […]% at wholesale level.[1587] Foreclosure would ensure high profit gain from increasing market share downstream at the expense of foreclosed rivals and would compensate the reduction in the Notifying Parties' wholesale sales to downstream competitors (which are less profitable). The lower profitability of wholesale sales compared to retail sales is illustrated by the fact that, already today, vertically integrated players tend to favour their own retail sales, which is not contested by the Notifying Parties:

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1582 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID 6198, paragraph 26.

1583 Linde (26%); Praxair (34%), Air Products (36%), IACX (1%), and Keyes (4%) (Notifying Parties' reply to RFI 48, question 55). Notably, agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 33: "*players with no refining capacities connected to the pipeline need to conclude tolling agreements with Linde, Praxair, or Air Products for the refining of their BLM inventory*."

1584 Notably, agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID 5244, paragraph 19: "*post-Transaction, there would be only two significant refiners left (i.e. the merged entity and Air Products)*". Also, agreed non-confidential minutes of the minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 32.

1585 Notably, agreed non-confidential minutes of the conference call with Messer of 24 October 2017, paragraph 27 (ID698). Also, responses to RFI Q34 to helium competitors, question 82, notably [a competitor]'s reply (ID3099).

1586 Matheson's response to RFI Q34, question 25.1, ID4245. Also, agreed non-confidential minutes of the conference calls (i) with SOL, of 16 March 2018, ID 6230, paragraph 37 ("*The reduction in the number of Tier 1 players would not only make access to helium sources even more difficult for Tier 2 companies, but also entail price increases for end-customers*"); (ii) with Uniper, of 26 February 2018, ID 5244, paragraphs 16 and 19 (expressing concerns about the Transaction regarding the "*access to global helium sources*", but also "*the access to refining capacity in the US*"); (iii) with Westfalen, of 19 March 2018, ID 6108, paragraphs 10 to 13 ("*the Transaction entails a risk of disruption of its sourcing of helium*").

1587 Notifying Parties' response to RFI 36, question 36. The same applies to Praxair, its retail gross profit margin in the EEA being up to […]% in some EEA countries.

- "[…]";[1588]
- "[…]";[1589]
- "[…]"[1590]

(1202) Moreover, the analysis of the Notifying Parties' internal documents reveals that [...], which would make the foreclosure strategy even more profitable and would thus further increase the Notifying Parties' incentive to foreclose access to helium ("[…]").[1591]

(1203) **Second, the Transaction would reduce the incentives of the Notifying Parties to enter into supply agreement with competitors.** In this respect, the Notifying Parties argued that the conclusion of secondary sourcing agreements would be in the interest of the merged entity as it would enable it to mitigate the financial exposure resulting from the high take-or-pay commitments.[1592] However, as explained in Sections 8.9.2.2 and 8.9.4.2.1, the Transaction would lower the merged entity's financial exposure to take-or-pay commitments (due to its privileged access to the BLM system), without having to conclude secondary sourcing agreements. Moreover, the current tightening of the global helium supply and the need for new capacity further mitigate the risk resulting from the existence of take-or-pay obligations, because the volumes subject to take-or-pay commitments will likely be needed by the merged entity to supply its own demand. The Notifying Parties' internal documents also reveal that Praxair considers that its "[…]"[1593], showing that […].

(1204) The Notifying Parties also claim that the conclusion of swap agreements would be in the interest of the merged entity as it would allow it to optimise transportation costs.[1594] In this regards, the Commission notes that the Transaction would significantly increase the size and diversity of the Notifying Parties' direct sourcing portfolio, with the merged entity having direct access to most of the helium sources worldwide (to the exception some limited sources) (see Section 8.9.2.2.a). Such a diversity of direct sourcing would have no equivalent on the market and would enable the merged entity to optimise its transportation costs without having to conclude swap agreements with competitors.

(1205) **Third, the evidence in the Commission's file indicates that the merged entity would have no incentive to conclude tolling agreements with competitors which have no refining capacity connected to the BLM pipeline**. The Notifying Parties contest the above arguing that refiners have incentive to conclude tolling agreements so as to sell their excess refining capacities to competitors with no refinery. However, this is contradicted by the fact that the Notifying Parties' tolling activities are marginal[1595] and by Uniper. The latter, which has recently concluded a tolling

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1588 Form CO, Chapter D, paragraph 1112.

1589 Form CO, Chapter D, paragraph 1120.

1590 Helium Paper, Section 1.4, page 13.

1591 Helium Paper, Annex 01-04, slides 3 and 4. Also, Helium Paper, Annex 01-05, slide 21 ("[…]") and Praxair's internal presentation, […] [ID4592-48145].

1592 Helium Paper, Section 1.3.1, pages 9 and 10.

1593 Praxair's internal presentation, […] [ID4591-46581].

1594 Helium Paper, Section 1.3.1, pages 9 and 10.

1595 Linde has only […] tolling agreements, with […] , and did not toll any volumes under these agreements over the past […] years. Praxair has only […] tolling agreements, including with […] and […], but only tolls ery limited volumes (between […] and […] tons a year over the last three years) (Notifying Parties' reply to RFI 48 (question 57) and RFI 57 (question 17)).

agreement with […], indicated that "*the negotiations were complex and very difficult. Indeed, only three companies have sufficient refining capacity connected to the BLM system (i.e. Linde, Praxair, and Air Products) and two of them (i.e.* […]*) were not willing to discuss the conclusion of a tolling agreement or to offer commercially reasonable terms and conditions.*" Uniper raised concerns about the fact that the only two significant refiners left post-Transaction (*i.e.* the merged entity and Air Products) *"may not be willing to enter into a commercially acceptable tolling agreement*".[1596]

(1206) **Fourth, the second phase investigation suggests that the extra costs involved by the injection in the BLM reservoir of helium sourced from other sources would not be prohibitive.** Indeed, at least, two competitors, namely Air Liquide and Matheson, have recently injected in the BLM cavern helium sourced from other sources, notably from Qatar, even though withdrawing these volumes of helium would be subject to tolling fees (which would not be the case of the merged entity).[1597] The Notifying Parties internal documents show that […]. .[1598] Besides, the Commission notes that the merged entity's economic incentive to inject helium in the BLM reservoir would increase with the current tightening of the global supply, which is highly likely to translate into higher retail prices and margins.

(1207) **Fifth, the merged entity would most likely be able to capture a high share of the demand diverted away from foreclosed rivals and benefit from higher prices** given that (i) helium is a scarce and homogeneous good, which is currently characterised by a global supply shortfall, (ii) due to the very specific characteristics of helium (e.g. inertness, low molecule weight, low boiling point, *etc*.), there is no (or limited) alternative to this gas, which would prevent end-customers from switching to other products, and (iii) the Notifying Parties have large market shares both at wholesale and retail levels, with very few credible and competitive players, which are subject to capacity constraints. The merged entity would thus likely benefit from higher price levels downstream.

(1208) **Finally, several market participants indicated that, the Notifying Parties' incentives to supply helium to downstream rivals were already low pre-Transaction and would further decrease post-Transaction**. For instance, (i) Messer expressed concerns about the fact that "*the consolidation in the market could reduce the merged entity's willingness to enter into swap or wholesale agreements*";[1599] (ii) Matheson stated that "*it is likely that Linde/Praxair will have less incentives to supply helium to competitors given their dominant market share*";[1600] and (iii) Westfalen pointed out that "*already today, Linde and Praxair are not willing to offer us competitive prices on a wholesale level, since we are*

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1596 Agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID5244, paragraph 19.

1597 Notably, Linde, […] [ID4834-38229] ("[…]"); Linde, […] [ID4834-37413] ("[…]"); Praxair, […] [ID4592-23246]; and agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID 6198, paragraph 27.

1598 Notably, Praxair's internal email dated […]. Also, Linde's internal presentation, […] [ID4834-38183].

1599 Agreed non-confidential minutes of the conference call with Messer of 24 October 2017, paragraph 27 (ID698). Also, agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraph 30)

1600 Matheson's reply to RFI Q34 to helium competitors, question 82 (ID4245).

*competing with them […]. The Situation will definitely get worse post-Transaction*."[1601]

8.9.4.2.3. Overall likely impact on effective competition

(1209) The implementation of an input foreclosure strategy would significantly impede effective competition.

(1210) First, given the scarcity of the resource at stake and the merged entity's high market shares at all levels of the helium supply chain, **prices in the wholesale and retail markets would likely increase**. This is particularly true since the proportion of rivals which could be foreclosed on the downstream markets would be high as it would not only include non-vertically integrated players sourcing helium at wholesale level, but also vertically integrated players sourcing helium through secondary sourcing arrangements.

(1211) Second, foreclosing access to helium would **raise barriers to entry to potential competitors** on the downstream markets since the merged entity would likely not supply potential downstream entrants, or only on less favourable terms than absent the Transaction, which would create a strong deterrent effect on potential entrants.

(1212) Third, the number of credible wholesale and retail competitors, whose costs are not likely to be raised, is very limited. The Notifying Parties would thus face limited constraints likely to be insufficient to prevent output prices from rising.

(1213) Fourth, most participants to the market investigation expressed strong concerns about the above risk of input foreclosure and its detrimental impact on the downstream markets for the supply of helium. For example, Messer complained about the fact that "*access to secondary suppliers will be reduced*", with "*a risk of supply disruption*", and explained that "*no competitor would be able to obtain terms of supply comparable to those enjoyed by the merged entity.*"[1602] Matheson also expressly stated that "*the new combined entity will have the market power to dictate pricing, control helium sources, block new competitors from entering the markets, and potentially push existing competitors out of markets*."[1603]

(1214) Lastly, the market investigation reveals that the vertical non-coordinated effects raised by the Transaction in the helium markets would likely affect other markets. Indeed, even if it may be sold in relatively minor quantities, helium is a "[…]" and "[…]" product, as it "[…]" (including […]).[1604] In their Reply to the Statement of Objections (paragraph 133), the Notifying Parties expressly recognised that helium retailers' competitiveness is notably driven by their "*wider industrial gas business (helium being highly integrated with a company's packaged gas business).*"

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1601 Westfalen's reply to RFI Q34 to helium competitors, question 25.1 (ID3782). Also, agreed non-confidential minutes of the conference call with Westfalen of 19 March 2018, ID 6108, paragraphs 5 and 12.

1602 Messer's reply to RFI Q34 to helium competitors, question 82 (ID4245) and agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID 6230, paragraphs 30 and 31.

1603 Matheson's response to RFI Q34, question 25.1, ID4245. Also, agreed non-confidential minutes of the conference calls (i) with SOL of 16 March 2018, ID 6230, paragraph 37 ("*The reduction in the number of Tier 1 players would not only make access to helium sources even more difficult for Tier 2 companies, but also entail price increases for end-customers*"); (ii) with Uniper of 26 February 2018, ID 5244, paragraphs 16 and 19 (expressing concerns about the Transaction regarding the "*access to global helium sources*", but also "*the access to refining capacity in the US*"); (iii) with Westfalen of 19 March 2018, ID 6108, paragraphs 10 to 13 ("*the Transaction entails a risk of disruption of its sourcing of helium*").

1604 Annex Q73 to the Notifying Parties' reply to RFI 48.

Moreover, several market participants confirmed the above spill-over effect and stressed the fact that their inability to supply helium on competitive terms would significantly affect their overall business. In particular:

– **Messer** highlighted that "*it is essential to have helium in its product portfolio as it enables to sell other products, notably industrial gases and specialty mixtures. Indeed, many customers regard helium as a key product and require it to be supplied along with other gases*";[1605]

– **SOL** stated that "*in order to be a credible and competitive player in the industrial and medical gas markets, it is crucial for a company to have helium in its portfolio of products. […] SOL would be at risk of losing a significant number of customers if it did not have helium in its portfolio. According to SOL, it is not however enough to have helium in one's portfolio; for a company it is important to be able to supply it on competitive terms. SOL roughly estimates that its inability to supply helium would translate into a loss of a substantial share of its overall sales*";[1606]

– **SIAD** explained that helium is "*highly strategic*" and that "*SIAD's inability to supply it would have a major impact on businesses other than helium. According to SIAD, such collateral damages would be particularly detrimental for its overall business*";[1607] and

– **Air Liquide** submitted that "*helium is a strategic and must-have product […] the impact of the Transaction in the helium markets would not be circumscribed to helium and would likely affect other businesses*."[1608]

8.9.4.3. Conclusion

(1215) For the reasons set out in recitals (1177)-(1214), the Commission finds that the Transaction would significantly impede effective competition in the markets for wholesale and retail supply of helium as result of vertical non-coordinated effects.

*8.9.5. Countervailing factors*

8.9.5.1. Entry

(1216) First, the market investigation revealed that the helium wholesale market is characterised by very **high barriers to entry**. Indeed, the scarcity of helium sources, the long-term duration of the sourcing agreements (up to 20 years), and the existence of high take-or-pay commitments strongly limit, in practice, the ability of small/mid-size players or newcomers to achieve direct access to helium sources.[1609] This is notably confirmed by Uniper, which explained that entering the European helium

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1605 Agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID6230, paragraph 25.

1606 Agreed non-confidential minutes of the conference call with SOL of 16 March 2018, ID 6226, paragraphs 19 to 23.

1607 Agreed non-confidential minutes of the conference call with SIAD of 21 March 2018, ID 6257, paragraph 36.

1608 Agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, ID 6404, paragraph 22.

1609 Notably, Messer's reply to RFI Q34 to helium competitors, question 69.1.1. (ID02965): "*the offered quantities are so high that smaller companies cannot participate in the bidding process*."

wholesale market is "*extremely difficult […] due to the need to secure helium sourcing and to the fact that Europe is a mature market*"[1610]

(1217) Moreover, the wholesale supply of helium also requires a fleet of cryogenic portable tanks, which also constitutes a high barrier to entry. In *Linde/BOC*[1611], the Commission found that such a fleet could only be established in the medium- to long-term and would be costly ([up to EUR 1 million] per tank according the Form CO).[1612] Indeed, the only well-established commercial supplier of such tanks is Gardner Cryogenic (a wholly owned Air Products subsidiary).[1613] There are therefore limited production capacities which may sometimes result in significant delays. The market investigation confirmed this point. For example, Air Products stated that "*helium suppliers are constrained by their fleet of ISO containers. The latter being very expensive, helium suppliers usually have relatively tight fleets.*"[1614] Similarly, Uniper explained that the "*investment required to acquire new ISO containers [is] very high*" and that it envisages to purchase second-hand containers but "*expects it to be difficult since industrial gas companies, such as Praxair and Linde, are willing to sell their ISO containers to players exerting less competitive constraints than Uniper.*"[1615] The Notifying Parties' claim that cryogenic portable tanks do not constitute a barrier to entry[1616] is furthermore contradicted by the Notifying Parties' internal documents which state, for example: "[…]"[1617] and "[…]"[1618]

(1218) Second, the Commission note that **meaningful entries are relatively infrequent** (as illustrated by the stability of global capacity shares, see Section 8.9.1.1.1). Indeed, the companies identified by some market participants as new entrants, that is to say Iwatani, Uniper, and Weil,[1619] are modest players that are not regarded as a credible competitors (see Section 8.9.2.2.b)). For instance, Matheson indicated that: "*IACX, Weil, Uniper […] are not global players and will likely struggle to compete in the wholesale marketplace.*"[1620] Moreover, the market investigation shows that no new player is expected in the next two years.[1621]

(1219) In fact, the few substantial entries observed over the past years in the helium wholesale market mostly occurred as a result of merger and acquisition and not of organic growth. For example, the expansion of Linde's sourcing portfolio in 2006 is due to the acquisition of BOC. Similarly, Matheson acquired its helium business

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1610 Agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID5244, paragraph 14.

1611 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 177.

1612 Form CO, Chapter D, paragraph 1260.

1613 Linde also manufactures cryogenic portable tanks but has very limited market share of [5-10]% worldwide. Moreover, according to the Notifying Parties, Gardner Cryogenics are considered by all industry players to be of superior quality (Form CO, Chapter D, paragraphs 1153 to 1158.

1614 Also, agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID 6198, paragraph 18.

1615 Agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID5244, paragraph 15. Responses to RFI Q34 to helium competitors, question 34.

1616 Reply to the Statement of Objections, Section 5.4, pages 33-34.

1617 Linde's internal presentation, […] [ID4834-75123].

1618 Also, Linde's internal presentation, […] [ID4834-38183].

1619 One market participant also referred to Gazprom as a new entrant. Responses to RFI Q33 to helium producers, question 21 and RFI Q34 to helium competitors, questions 18 and 74. Also, agreed non-confidential minutes of the conference call with Uniper of 26 February 2018, ID5244, paragraph 14: "*there has been no new entry in the European helium markets in the last five years*."

1620 Matheson's response to RFI Q34 to helium competitors, question 74, ID4245.

1621 Responses to RFI Q33 to helium producers, question 22 and RFI Q34 to helium competitors, questions 19 and 75.

from Linde (as part of the divestment following the acquisition of BOC), obtaining three supply contracts with ExxonMobil, PGNiG and Cryor.

(1220) It follows that new entry is difficult, the behaviour of the merged entity would thus unlikely be constrained by new entrants.

8.9.5.2. Buyer power

(1221) As regards buyer power, the Commission notes that wholesale customers would very unlikely be in a position to counter the increase in the Notifying Parties' market power resulting from the Transaction. Wholesale customers are usually small players compared to the Notifying Parties. Moreover, helium is a scarce resource, for which wholesale customers would have a very limited number of alternative suppliers. As a result, switching suppliers at wholesale level is qualified as "*difficult*" by many market participants. Moreover, customers at the wholesale level are particularly vulnerable when supply shortages occur in the event that gas suppliers would prioritise their own needs over sales to the merchant market. In such instances, buyer power is virtually absent and rationing by wholesale suppliers is likely. Depending on the volumes at stake and the location of the sources, the size of the suppliers' cryogenic portable tank fleet may also further limit the number of alternatives.[1622]

8.9.5.3. Conclusion

(1222) For the reasons set out above, the Commission finds that entry and buyer power are unlikely to countervail the anticompetitive effects potentially arising from the Transaction.

*8.9.6. Overall conclusion*

(1223) For the reasons set out above in Sections 8.9.1, 8.9.2 and 8.9.4, the Commission's assessment is that the Transaction would significantly impede effective competition as a result of (i) horizontal non-coordinated effects and (ii) vertical non-coordinated effects, in the market for the wholesale supply of helium.

## 8.10. Retail supply of helium

*8.10.1. Market structure and competitive parameters*

8.10.1.1. Market shares and concentration levels

(1224) The market share data presented in the Article 6(1)(c) Decision were based on the Notifying Parties' submissions.[1623] In the Thematic Papers, the Notifying Parties did not bring forward any additional submission as regards market shares.

(1225) During the second phase investigation, the Commission conducted a market reconstruction to verify the accurateness of the market share data submitted by the Notifying Parties. In this context, the Commission has gathered, from the Notifying Parties[1624] and their competitors[1625], confidential data on their helium retail sales (by mode of supply and purity grade), both in volume and value, at national and EEA levels, in 2016 and 2017. On the basis of the above, the Commission reconstructed

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1622 Responses to RFI Q34 to helium competitors, question 24.

1623 Form CO, Annexes 88 and 89. Retail market share data submitted by the Notifying Parties are reported in Annex I.

1624 Notifying Parties' response to RFI 57, Annex Q24.

1625 Responses to RFI 56 - Market reconstruction or helium retail of 5 April 2018. Ten competitors replied to RFI 56, namely Air Liquide, Air Products, Euro-Hel, Messer, PGNiG, Sapio, SOL, Strandmøllen, Tyczka Industrie-Gase, and Westfalen.

market shares in the helium retail markets and potential sub-markets (both in volume and value in 2016 and 2017). In this respect the Commission notes that one respondent to the market investigation provided:

(a) data aggregating helium retail sales supplied in dewars and cylinders (standard purity). For the purpose of the market reconstruction, the Commission split the above aggregated data in a proportion of (i) […]% for dewar sales and (ii) […]% standard purity cylinder sales, which reflects the average sales ratio of the Notifying Parties and the other respondents to the market investigation;

(b) data aggregating helium retail sales in some geographic areas, providing aggregated figures (i) in the Nordic countries (that is to say Denmark, Finland, Norway, and Sweden), and (ii) in Belgium and Luxembourg. For the purpose of the market reconstruction, this data was split on the basis of the population in each country in 2017;[1626]

(c) value data in USD, which was converted into EUR based on the yearly average exchange rate of the European Central Bank ('ECB') for the years 2016 and 2017.[1627]

(1226) On the basis of the data collected by the Commission, and as further detailed below, the Commission notes that the Notifying Parties appear to have (i) underestimated their position in several instances, notably for the retail supply of standard purity helium in cylinders (which represent around half of the helium sold in the EEA at retail level) and, conversely, (ii) overestimated their position in some instances, notably for the retail supply of helium in tube trailers and (high purity) cylinders.[1628]

(1227) Table 53 shows the Notifying Parties' market shares (and concentration levels) in the horizontally and vertically affected markets for the retail supply of helium at national level based on the market reconstruction. They also include market share data further broken down by purity grade and supply mode (excluding retail supply in cryogenic portable tanks).

**Table 53: Market shares for the retail supply of helium (in 2017)[1629]**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Austria | Helium (overall) | [50-60]% | [0-5]% | [50-60]% | [4000-4500] | [4000-4500] | [200-300] |

1626 Source: Eurostat. As a result, the national breakdown was (i) in the Nordic countries: Denmark (22%), Finland (21%), Norway (20%), and Sweden (38%); and (ii) in Belgium and Luxembourg: Belgium (95%) and Luxembourg (5%).

1627 In 2017 (EUR 1 = USD 1.1297) and in 2016 (EUR 1 = 1.1069 USD).

1628 Access to the data underlying the market reconstruction has been provided according to the data room procedure. In this Decision the Commission will only present ranges for the combined market shares of the Notifying Parties to preserve confidentiality of third party data.

1629 The Notifying Parties submitted that Linde sold its subsidiaries in **Croatia** and **Slovenia** on […]. As a result, they claimed that Linde will no longer sell helium at retail level in these two Member States (Form CO, footnotes 518 and 519). Thus, any horizontal overlap between the Notifying Parties' activities would cease in these two countries. Nonetheless, the Croatian and Slovenian markets for the retail supply of helium would remain vertically affected markets, since the combined market share of Linde and Praxair on the upstream global wholesale market would exceed 30%. Therefore, in this Decision, the Commission treats the Croatian and Slovenian markets for the retail supply of helium as **vertically affected markets** only.

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| | Cylinder (standard purity) | [50-60]% | [0-5]% | [50-60]% | [3500-4000] | [4000-4500] | [300-400] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [4000-4500] | [4000-4500] | 0 |
| | Dewar | [40-50]% | - | [40-50]% | [3000-3500] | [3000-3500] | 0 |
| | Tube Trailer | [90-100]% | - | [90-100]% | [9000-9500] | [9000-9500] | 0 |
| Belgium | Helium (overall) | [0-5]% | [20-30]% | [20-30]% | [2500-3000] | [2500-3000] | [100-200] |
| | Cylinder (standard purity) | [0-5]% | [40-50]% | [40-50]% | [2500-3000] | [2500-3000] | [100-200] |
| | Cylinder (high purity) | [0-5]% | [5-10]% | [5-10]% | [3500-4000] | [3500-4000] | [0-100] |
| | Dewar | [5-10]% | [10-20]% | [20-30]% | [3000-3500] | [3500-4000] | [200-300] |
| Bulgaria | Helium (overall) | [10-20]% | [20-30]% | [40-50]% | [2000-2500] | [3000-3500] | [800-900] |
| | Cylinder (standard purity) | [20-30]% | [30-40]% | [50-60]% | [2500-3000] | [4500-5000] | [1500-2000] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [4500-5000] | [4500-5000] | 0 |
| Croatia | Helium (overall) | - | [5-10]% | [5-10]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (standard purity) | - | [10-20]% | [10-20]% | [3500-4000] | [3500-4000] | 0 |
| Cyprus | Helium (overall) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (standard purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Tube Trailer | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| Czech Republic | Helium (overall) | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [5000-5500] | [1000-1500] |
| | Cylinder (standard purity) | [60-70]% | [10-20]% | [70-80]% | [4500-5000] | [6000-6500] | [1500-2000] |
| | Cylinder (high purity) | [20-30]% | - | [20-30]% | [2500-3000] | [2500-3000] | 0 |
| | Dewar | [20-30]% | [0-5]% | [30-40]% | [3000-3500] | [3000-3500] | [200-300] |
| Denmark | Helium (overall) | [40-50]% | [10-20]% | [50-60]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Cylinder (standard purity) | [40-50]% | [10-20]% | [60-70]% | [3000-3500] | [5000-5500] | [1500-2000] |
| | Cylinder (high purity) | [40-50]% | [0-5]% | [40-50]% | [3000-3500] | [3500-4000] | [300-400] |
| | Dewar | [30-40]% | - | [30-40]% | [3000-3500] | [3000-3500] | 0 |
| Estonia | Helium (overall) | [70-80]% | - | [70-80]% | [6000-6500] | [6000-6500] | 0 |
| | Cylinder (standard purity) | [80-90]% | - | [80-90]% | [7000-7500] | [7000-7500] | 0 |
| | Cylinder (high purity) | [20-30]% | - | [20-30]% | [6000-6500] | [6000-6500] | 0 |
| | Dewar | [20-30]% | - | [20-30]% | [4500-5000] | [4500-5000] | 0 |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Finland | Helium (overall) | [80-90]% | - | [80-90]% | [6500-7000] | [6500-7000] | 0 |
| | Cylinder (standard purity) | [80-90]% | - | [80-90]% | [7000-7500] | [7000-7500] | 0 |
| | Cylinder (high purity) | [30-40]% | - | [30-40]% | [5000-5500] | [5000-5500] | 0 |
| | Dewar | [80-90]% | - | [80-90]% | [6500-7000] | [6500-7000] | 0 |
| France | Helium (overall) | [5-10]% | [0-5]% | [5-10]% | [4000-4500] | [4000-4500] | [0-100] |
| | Cylinder (standard purity) | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [4000-4500] | [4000-4500] | 0 |
| | Dewar | [0-5]% | - | [0-5]% | [3500-4000] | [3500-4000] | 0 |
| Germany | Helium (overall) | [30-40]% | [10-20]% | [50-60]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Cylinder (standard purity) | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Cylinder (high purity) | [10-20]% | [5-10]% | [10-20]% | [3000-3500] | [3000-3500] | [100-200] |
| | Dewar | [30-40]% | [5-10]% | [40-50]% | [2500-3000] | [3000-3500] | [600-700] |
| | Tube Trailer | [20-30]% | [40-50]% | [70-80]% | [2500-3000] | [5000-5500] | [2000-2500] |
| Greece | Helium (overall) | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| | Cylinder (standard purity) | [60-70]% | - | [60-70]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (high purity) | [10-20]% | - | [10-20]% | [7500-8000] | [7500-8000] | 0 |
| | Dewar | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| Hungary | Helium (overall) | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5500-6000] | [2000-2500] |
| | Cylinder (standard purity) | [50-60]% | [20-30]% | [70-80]% | [3500-4000] | [6000-6500] | [2500-3000] |
| | Cylinder (high purity) | [30-40]% | - | [30-40]% | [5000-5500] | [5000-5500] | 0 |
| | Dewar | [60-70]% | - | [60-70]% | [5500-6000] | [5500-6000] | 0 |
| | Tube Trailers | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| Iceland | Helium (overall) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (standard purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (high purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Dewar | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Ireland | Helium (overall) | [30-40]% | - | [30-40]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (standard purity) | [80-90]% | - | [80-90]% | [8000-8500] | [8000-8500] | 0 |
| | Cylinder (high purity) | [10-20]% | - | [10-20]% | [7000-7500] | [7000-7500] | 0 |
| | Dewar | [70-80]% | - | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| | Tube Trailers | [0-5]% | - | [0-5]% | [9500-10000] | [9500-10000] | 0 |
| Italy | Helium (overall) | [5-10]% | [50-60]% | [50-60]% | [3000-3500] | [4000-4500] | [600-700] |
| | Cylinder (standard purity) | [10-20]% | [60-70]% | [70-80]% | [4500-5000] | [6000-6500] | [1500-2000] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [0-5]% | [4000-4500] | [4000-4500] | [0-100] |
| | Dewar | [0-5]% | [30-40]% | [30-40]% | [4000-4500] | [4000-4500] | [0-100] |
| | Tube Trailer | [0-5]% | [60-70]% | [60-70]% | [4500-5000] | [4500-5000] | [0-100] |
| Latvia | Helium (overall) | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| | Cylinder (standard purity) | [50-60]% | - | [50-60]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (high purity) | [10-20]% | - | [10-20]% | [6500-7000] | [6500-7000] | 0 |
| | Dewar | [50-60]% | - | [50-60]% | [4500-5000] | [4500-5000] | 0 |
| Lithuania | Helium (overall) | [50-60]% | - | [50-60]% | [4500-5000] | [4500-5000] | 0 |
| | Cylinder (standard purity) | [70-80]% | - | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [8500-9000] | [8500-9000] | 0 |
| | Dewar | [10-20]% | - | [10-20]% | [7000-7500] | [7000-7500] | 0 |
| Luxembourg | Helium (overall) | [0-5]% | [0-5]% | [5-10]% | [4500-5000] | [4500-5000] | [0-100] |
| | Cylinder (standard purity) | [5-10]% | [0-5]% | [5-10]% | [5000-5500] | [5000-5500] | [0-100] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [7000-7500] | [7000-7500] | 0 |
| | Dewar | [0-5]% | - | [0-5]% | [5000-5500] | [5000-5500] | 0 |
| Netherlands | Helium (overall) | [30-40]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Cylinder (standard purity) | [40-50]% | [20-30]% | [60-70]% | [2500-3000] | [5000-5500] | [2000-2500] |
| | Cylinder (high purity) | [5-10]% | [0-5]% | [10-20]% | [3500-4000] | [3500-4000] | [0-100] |
| | Dewar | [10-20]% | [10-20]% | [20-30]% | [4500-5000] | [5000-5500] | [300-400] |
| | Tube Trailer | [80-90]% | [10-20]% | [90-100]% | [7000-7500] | [8500-9000] | [1500-2000] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Norway | Helium (overall) | [50-60]% | [20-30]% | [70-80]% | [3500-4000] | [6500-7000] | [2500-3000] |
| | Cylinder (standard purity) | [50-60]% | [20-30]% | [80-90]% | [4000-4500] | [7000-7500] | [3000-3500] |
| | Cylinder (high purity) | [30-40]% | [30-40]% | [60-70]% | [3000-3500] | [5000-5500] | [2000-2500] |
| | Dewar | [20-30]% | [10-20]% | [30-40]% | [4500-5000] | [5000-5500] | [700-800] |
| Poland | Helium (overall) | [20-30]% | [0-5]% | [20-30]% | [1500-2000] | [2000-2500] | [200-300] |
| | Cylinder (standard purity) | [50-60]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [100-200] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [3000-3500] | [3000-3500] | 0 |
| | Dewar | [0-5]% | - | [0-5]% | [5000-5500] | [5000-5500] | 0 |
| | Tube Trailer | - | [70-80]% | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| Portugal | Helium (overall) | [5-10]% | [40-50]% | [50-60]% | [3000-3500] | [4000-4500] | [800-900] |
| | Cylinder (standard purity) | [10-20]% | [30-40]% | [40-50]% | [3000-3500] | [4000-4500] | [800-900] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [5-10]% | [6000-6500] | [6000-6500] | [0-100] |
| | Dewar | - | [60-70]% | [60-70]% | [5000-5500] | [5000-5500] | 0 |
| | Tube Trailer | [10-20]% | [90-100]% | [90-100]% | [8000-8500] | [9500-10000] | [1500-2000] |
| Romania | Helium (overall) | [50-60]% | [10-20]% | [70-80]% | [4000-4500] | [6000-6500] | [1500-2000] |
| | Cylinder (standard purity) | [50-60]% | [20-30]% | [80-90]% | [4000-4500] | [7000-7500] | [2500-3000] |
| | Cylinder (high purity) | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| | Dewar | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| Slovakia | Helium (overall) | [20-30]% | [10-20]% | [40-50]% | [2000-2500] | [2500-3000] | [700-800] |
| | Cylinder (standard purity) | [30-40]% | [20-30]% | [50-60]% | [2500-3000] | [4000-4500] | [1500-2000] |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [3000-3500] | [3000-3500] | 0 |
| | Dewar | [30-40]% | - | [30-40]% | [3000-3500] | [3000-3500] | 0 |
| Slovenia | Helium (overall) | - | [40-50]% | [40-50]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (standard purity) | - | [50-60]% | [50-60]% | [5000-5500] | [5000-5500] | 0 |
| | Dewar | - | [50-60]% | [50-60]% | [5000-5500] | [5000-5500] | 0 |
| Spain | Helium (overall) | [5-10]% | [30-40]% | [40-50]% | [2500-3000] | [3500-4000] | [600-700] |
| | Cylinder (standard purity) | [20-30]% | [40-50]% | [60-70]% | [3000-3500] | [5000-5500] | [1500-2000] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [5-10]% | [4000-4500] | [4000-4500] | [0-100] |

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| Geography | Product | Linde | Praxair | Comb. | HHI PRE | HHI POST | Δ HHI |
| | Dewar | [0-5]% | [30-40]% | [30-40]% | [4500-5000] | [4500-5000] | [0-100] |
| | Tube Trailer | [10-20]% | [80-90]% | [90-100]% | [7500-8000] | [9500-10000] | [2000-2500] |
| Sweden | Helium (overall) | [60-70]% | [5-10]% | [70-80]% | [5000-5500] | [5500-6000] | [800-900] |
| | Cylinder (standard purity) | [70-80]% | [5-10]% | [80-90]% | [5500-6000] | [7000-7500] | [1000-1500] |
| | Cylinder (high purity) | [20-30]% | [0-5]% | [20-30]% | [4000-4500] | [4000-4500] | [0-100] |
| | Dewar | [60-70]% | - | [60-70]% | [4500-5000] | [4500-5000] | 0 |
| UK | Helium (overall) | [50-60]% | [5-10]% | [60-70]% | [3500-4000] | [4500-5000] | [800-900] |
| | Cylinder (standard purity) | [60-70]% | [10-20]% | [70-80]% | [4000-4500] | [6000-6500] | [1500-2000] |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [4500-5000] | [4500-5000] | 0 |
| | Dewar | [70-80]% | - | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| | Tube Trailer | [50-60]% | - | [50-60]% | [4500-5000] | [4500-5000] | 0 |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| Geography | Product | Linde | Praxair | Comb. | HHI PRE | HHI POST | Δ HHI |
| Austria | Helium (overall) | [60-70]% | [0-5]% | [60-70]% | [4000-4500] | [4500-5000] | [100-200] |
| | Cylinder (standard purity) | [40-50]% | [0-5]% | [50-60]% | [3000-3500] | [3500-4000] | [200-300] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [4500-5000] | [4500-5000] | 0 |
| | Dewar | [30-40]% | - | [30-40]% | [3000-3500] | [3000-3500] | 0 |
| | Tube Trailer | [90-100]% | - | [90-100]% | [9000-9500] | [9000-9500] | 0 |
| Belgium | Helium (overall) | [0-5]% | [10-20]% | [10-20]% | [2500-3000] | [2500-3000] | [0-100] |
| | Cylinder (standard purity) | [0-5]% | [30-40]% | [30-40]% | [2500-3000] | [2500-3000] | [0-100] |
| | Cylinder (high purity) | [0-5]% | [5-10]% | [5-10]% | [3000-3500] | [3000-3500] | [0-100] |
| | Dewar | [5-10]% | [10-20]% | [10-20]% | [4500-5000] | [4500-5000] | [100-200] |
| Bulgaria | Helium (overall) | [10-20]% | [20-30]% | [30-40]% | [2500-3000] | [3000-3500] | [600-700] |
| | Cylinder (standard purity) | [20-30]% | [30-40]% | [50-60]% | [3000-3500] | [4500-5000] | [1000-1500] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [5000-5500] | [5000-5500] | 0 |
| Croatia | Helium (overall) | - | [5-10]% | [5-10]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (standard purity) | - | [10-20]% | [10-20]% | [3500-4000] | [3500-4000] | 0 |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| Geography | Product | Linde | Praxair | Comb. | HHI PRE | HHI POST | Δ HHI |
| Cyprus | Helium (overall) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (standard purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Tube Trailer | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| Czech Republic | Helium (overall) | [40-50]% | [10-20]% | [50-60]% | [3000-3500] | [4000-4500] | [1000-1500] |
| | Cylinder (standard purity) | [50-60]% | [10-20]% | [70-80]% | [3500-4000] | [5000-5500] | [1000-1500] |
| | Cylinder (high purity) | [10-20]% | - | [10-20]% | [2500-3000] | [2500-3000] | 0 |
| | Dewar | [20-30]% | [0-5]% | [20-30]% | [3000-3500] | [3000-3500] | [0-100] |
| Denmark | Helium (overall) | [20-30]% | [5-10]% | [30-40]% | [2500-3000] | [3000-3500] | [400-500] |
| | Cylinder (standard purity) | [30-40]% | [10-20]% | [40-50]% | [2500-3000] | [3500-4000] | [900-1000] |
| | Cylinder (high purity) | [10-20]% | [0-5]% | [10-20]% | [4500-5000] | [4500-5000] | [0-100] |
| | Dewar | [10-20]% | - | [10-20]% | [3000-3500] | [3000-3500] | 0 |
| Estonia | Helium (overall) | [60-70]% | - | [60-70]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (standard purity) | [70-80]% | - | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [8000-8500] | [8000-8500] | 0 |
| | Dewar | [20-30]% | - | [20-30]% | [4500-5000] | [4500-5000] | 0 |
| Finland | Helium (overall) | [60-70]% | - | [60-70]% | [5500-6000] | [5500-6000] | 0 |
| | Cylinder (standard purity) | [70-80]% | - | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [8500-9000] | [8500-9000] | 0 |
| | Dewar | [70-80]% | - | [70-80]% | [6500-7000] | [6500-7000] | 0 |
| France | Helium (overall) | [5-10]% | [0-5]% | [5-10]% | [3000-3500] | [3000-3500] | [0-100] |
| | Cylinder (standard purity) | [10-20]% | [0-5]% | [10-20]% | [3000-3500] | [3000-3500] | [0-100] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [3000-3500] | [3000-3500] | 0 |
| | Dewar | [0-5]% | - | [0-5]% | [3500-4000] | [3500-4000] | 0 |
| Germany | Helium (overall) | [30-40]% | [10-20]% | [40-50]% | [2000-2500] | [3000-3500] | [900-1000] |
| | Cylinder (standard purity) | [40-50]% | [10-20]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [5-10]% | [4000-4500] | [4000-4500] | [0-100] |
| | Dewar | [30-40]% | [5-10]% | [30-40]% | [2000-2500] | [2500-3000] | [400-500] |
| | Tube Trailer | [20-30]% | [40-50]% | [60-70]% | [2500-3000] | [5000-5500] | [2000-2500] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Greece | Helium (overall) | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| | Cylinder (standard purity) | [60-70]% | - | [60-70]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [8000-8500] | [8000-8500] | 0 |
| | Dewar | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| Hungary | Helium (overall) | [40-50]% | [20-30]% | [60-70]% | [3500-4000] | [5500-6000] | [2000-2500] |
| | Cylinder (standard purity) | [40-50]% | [20-30]% | [70-80]% | [3500-4000] | [6000-6500] | [2000-2500] |
| | Cylinder (high purity) | [10-20]% | - | [10-20]% | [6500-7000] | [6500-7000] | 0 |
| | Dewar | [50-60]% | - | [50-60]% | [5000-5500] | [5000-5500] | 0 |
| | Tube Trailer | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| Iceland | Helium (overall) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (standard purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (high purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Dewar | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| Ireland | Helium (overall) | [60-70]% | - | [60-70]% | [5500-6000] | [5500-6000] | 0 |
| | Cylinder (standard purity) | [90-100]% | - | [90-100]% | [9500-10000] | [9500-10000] | 0 |
| | Cylinder (high purity) | [10-20]% | - | [10-20]% | [6500-7000] | [6500-7000] | 0 |
| | Dewar | [90-100]% | - | [90-100]% | [8500-9000] | [8500-9000] | 0 |
| | Tube Trailer | [0-5]% | - | [0-5]% | [9500-10000] | [9500-10000] | 0 |
| Italy | Helium (overall) | [5-10]% | [40-50]% | [50-60]% | [3000-3500] | [3500-4000] | [500-600] |
| | Cylinder (standard purity) | [10-20]% | [60-70]% | [70-80]% | [4000-4500] | [6000-6500] | [1500-2000] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [0-5]% | [4000-4500] | [4000-4500] | [0-100] |
| | Dewar | [0-5]% | [20-30]% | [20-30]% | [4500-5000] | [4500-5000] | [0-100] |
| | Tube Trailer | [0-5]% | [60-70]% | [60-70]% | [4000-4500] | [4000-4500] | [0-100] |
| Latvia | Helium (overall) | [40-50]% | - | [40-50]% | [4000-4500] | [4000-4500] | 0 |
| | Cylinder (standard purity) | [40-50]% | - | [40-50]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (high purity) | [5-10]% | - | [5-10]% | [8500-9000] | [8500-9000] | 0 |
| | Dewar | [40-50]% | - | [40-50]% | [5000-5500] | [5000-5500] | 0 |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Lithuania | Helium (overall) | [40-50]% | - | [40-50]% | [4000-4500] | [4000-4500] | 0 |
| | Cylinder (standard purity) | [50-60]% | - | [50-60]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [9500-10000] | [9500-10000] | 0 |
| | Dewar | [5-10]% | - | [5-10]% | [8000-8500] | [8000-8500] | 0 |
| Luxembourg | Helium (overall) | [0-5]% | [0-5]% | [0-5]% | [5500-6000] | [5500-6000] | [0-100] |
| | Cylinder (standard purity) | [0-5]% | [0-5]% | [0-5]% | [6500-7000] | [6500-7000] | [0-100] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [6500-7000] | [6500-7000] | 0 |
| | Dewar | [0-5]% | - | [0-5]% | [5500-6000] | [5500-6000] | 0 |
| Netherlands | Helium (overall) | [20-30]% | [10-20]% | [30-40]% | [3000-3500] | [3500-4000] | [500-600] |
| | Cylinder (standard purity) | [30-40]% | [20-30]% | [50-60]% | [2000-2500] | [3500-4000] | [1000-1500] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [0-5]% | [4500-5000] | [4500-5000] | [0-100] |
| | Dewar | [5-10]% | [5-10]% | [10-20]% | [6000-6500] | [6500-7000] | [100-200] |
| | Tube Trailer | [80-90]% | [10-20]% | [90-100]% | [7000-7500] | [9000-9500] | [1500-2000] |
| Norway | Helium (overall) | [30-40]% | [10-20]% | [50-60]% | [3500-4000] | [5000-5500] | [1000-1500] |
| | Cylinder (standard purity) | [40-50]% | [10-20]% | [60-70]% | [3500-4000] | [5000-5500] | [1500-2000] |
| | Cylinder (high purity) | [10-20]% | [10-20]% | [20-30]% | [6000-6500] | [6500-7000] | [200-300] |
| | Dewar | [10-20]% | [10-20]% | [20-30]% | [5500-6000] | [6000-6500] | [300-400] |
| Poland | Helium (overall) | [10-20]% | [5-10]% | [20-30]% | [1500-2000] | [2000-2500] | [100-200] |
| | Cylinder (standard purity) | [40-50]% | [0-5]% | [40-50]% | [3000-3500] | [3000-3500] | [100-200] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [3500-4000] | [3500-4000] | 0 |
| | Dewar | [0-5]% | - | [0-5]% | [2500-3000] | [2500-3000] | 0 |
| | Tube Trailer | - | [70-80]% | [70-80]% | [6000-6500] | [6000-6500] | 0 |
| Portugal | Helium (overall) | [5-10]% | [50-60]% | [50-60]% | [3500-4000] | [4500-5000] | [800-900] |
| | Cylinder (standard purity) | [5-10]% | [20-30]% | [30-40]% | [4000-4500] | [4500-5000] | [400-500] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [0-5]% | [6000-6500] | [6000-6500] | [0-100] |
| | Dewar | - | [60-70]% | [60-70]% | [4500-5000] | [4500-5000] | 0 |
| | Tube Trailer | [5-10]% | [90-100]% | [90-100]% | [8000-8500] | [9500-10000] | [1500-2000] |

| | | VOLUME | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Product** | **Linde** | **Praxair** | **Comb.** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Romania | Helium (overall) | [50-60]% | [10-20]% | [60-70]% | [3000-3500] | [5000-5500] | [1500-2000] |
| | Cylinder (standard purity) | [50-60]% | [20-30]% | [70-80]% | [3500-4000] | [6500-7000] | [2500-3000] |
| | Cylinder (high purity) | [40-50]% | - | [40-50]% | [3500-4000] | [3500-4000] | 0 |
| | Dewar | [40-50]% | - | [40-50]% | [3000-3500] | [3000-3500] | 0 |
| Slovakia | Helium (overall) | [10-20]% | [5-10]% | [20-30]% | [2000-2500] | [2500-3000] | [300-400] |
| | Cylinder (standard purity) | [20-30]% | [10-20]% | [40-50]% | [2500-3000] | [3000-3500] | [900-1000] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [3500-4000] | [3500-4000] | 0 |
| | Dewar | [20-30]% | - | [20-30]% | [3000-3500] | [3000-3500] | 0 |
| Slovenia | Helium (overall) | - | [50-60]% | [50-60]% | [5000-5500] | [5000-5500] | 0 |
| | Cylinder (standard purity) | - | [70-80]% | [70-80]% | [5500-6000] | [5500-6000] | 0 |
| | Dewar | - | [40-50]% | [40-50]% | [5000-5500] | [5000-5500] | 0 |
| Spain | Helium (overall) | [5-10]% | [20-30]% | [30-40]% | [3000-3500] | [3500-4000] | [500-600] |
| | Cylinder (standard purity) | [10-20]% | [40-50]% | [60-70]% | [3000-3500] | [4500-5000] | [1500-2000] |
| | Cylinder (high purity) | [0-5]% | [0-5]% | [0-5]% | [4000-4500] | [4000-4500] | [0-100] |
| | Dewar | [0-5]% | [20-30]% | [20-30]% | [5000-5500] | [5000-5500] | [0-100] |
| | Tube Trailer | [10-20]% | [80-90]% | 100% | [7500-8000] | [9500-10000] | [2000-2500] |
| Sweden | Helium (overall) | [40-50]% | [0-5]% | [50-60]% | [3500-4000] | [4000-4500] | [300-400] |
| | Cylinder (standard purity) | [50-60]% | [5-10]% | [50-60]% | [4000-4500] | [4500-5000] | [600-700] |
| | Cylinder (high purity) | [5-10]% | [0-5]% | [5-10]% | [6000-6500] | [6000-6500] | [0-100] |
| | Dewar | [50-60]% | - | [50-60]% | [4000-4500] | [4000-4500] | 0 |
| UK | Helium (overall) | [40-50]% | [5-10]% | [50-60]% | [3000-3500] | [4000-4500] | [600-700] |
| | Cylinder (standard purity) | [50-60]% | [10-20]% | [70-80]% | [4000-4500] | [5500-6000] | [1500-2000] |
| | Cylinder (high purity) | [0-5]% | - | [0-5]% | [5000-5500] | [5000-5500] | 0 |
| | Dewar | [50-60]% | - | [50-60]% | [4500-5000] | [4500-5000] | 0 |
| | Tube Trailer | [50-60]% | - | [50-60]% | [4500-5000] | [4500-5000] | 0 |

*Source: market reconstruction based on replies to RFI 56 and 57*

(1228) As regards the global market for the retail supply of helium in cryogenic portable tanks, the Notifying Parties' market shares (and concentration levels) are based on the Notifying Parties' submissions and detailed in Table 54.[1630]

**Table 54: Market shares for the retail supply of helium in cryogenic portable tanks (in 2016)**

| | | VALUE | | | HHI | | |
|---|---|---|---|---|---|---|---|
| **Geography** | **Year** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Global | 2016 | [5-10]% | [40-50]% | [40-50]% | [3000-3500] | [3500-4000] | [400-500] |
| | | **VOLUME** | | | **HHI** | | |
| **Geography** | **Year** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| Global | 2016 | [5-10]% | [30-40]% | [30-40]% | [3500-4000] | [3500-4000] | [300-400] |

*Source: Annex 88 to the Form CO*

8.10.1.2. Competitive parameters and general market conditions

(1229) As a preliminary remark, it should be noted that, unless otherwise specified, the findings set out in this Section 8.10, and in particular the results of the market investigation, do not materially differ depending on the mode of supply and purity grade.[1631] As regards possible differences depending on the analysed EEA country, although national specificities exist, the overall structure and the main characteristics of supply and demand in the markets for the retail supply of helium (and potential sub-markets) do not appear to vary significantly across countries. Therefore, unless otherwise specified, the findings of Section 8.10 do not materially differ depending on the geographic market at stake.

(1230) Without prejudice of the foregoing, the market investigation revealed that, at retail level, competition is also driven by the access to sources. Indeed, many end-customers explained having experienced shortage(s) of helium in the past ten years, leading to price increases and supply disruption.[1632] Recently, in 2017, the Qatar embargo entailed, at retail level, (i) the application of price "*surcharges*" (notably by Linde in Scandinavia)[1633] and (ii) the allocation of deliveries amongst end-customers.[1634] As a result of the "*lack of volumes available*", most retail customers implement multi-sourcing strategies so as to mitigate the risk of supply disruption.[1635] For instance, […] stated that "*risk mitigation in terms of security of supply is of utmost importance. Since helium is a scarce resource […], ensuring diversified sourcing is necessary.*"[1636]

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1630 The Notifying Parties also submitted market share data at EEA level. The market reconstruction conducted by the Commission, during the second phase investigation, revealed that competitors' sales in this market segment have been underestimated by the Notifying Parties. Indeed, according to the market reconstruction, the merged entity would represent [10-20]% of the retail supply in cryogenic portable tanks in the EEA (*vs.* [40-50]% according to Annex 88 to the Form CO).

1631 Responses to (i) RFI Q22 to helium retail customers and (ii) RFI Q34 to helium competitors (questions 30 to 63).

1632 Responses to RFI Q22 to helium retail customers, question 15. Notably, […]'s reply (ID02906): "*in past years we had shortage of material a lot of times. The supplier need to import outside Europe and increase price based on that shortage.*"

1633 Praxair's internal email dated […] [ID4599-31721].

1634 Helium Paper, Annex 01-05, dated 3 November 2017, slide 5.

1635 Responses to RFI Q22 to helium retail customers, question 7. Notably, […]'s reply (ID03995): "*due to supply shortages in previous years, security of supply is the main reason for diversification of sources*".

1636 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraphs 30 and 31.

(1231) Hence, the Commission's findings in Section 8.9.1.2, regarding access to helium sources, are fully relevant to assess the competitive dynamics in the markets for the retail supply of helium (and potential sub-markets), in particular, the fact that:

(a) the number of players competing for direct sourcing of helium is limited, small and mid-size players being *de-facto* excluded from most tenders;

(b) suppliers mostly relying on secondary sourcing are less competitive, in terms of supply reliability and pricing, which has been expressly confirmed by several retail customers;[1637] and

(c) the competitiveness of a retail supplier is closely related to the size and diversity of its sourcing portfolio, as illustrated by the fact that Linde and Praxair highlight and promote their diverse helium sourcing when prospecting for new end-customers.[1638]

(1232) The **general market conditions** in the helium retail markets reflect the importance of the sourcing. Many end-customers have indicated that they do not consider these markets to be very competitive and complained about the limited number of suppliers. Scandinavian customers are particularly concerned by the low level of competitiveness of the helium retail markets.[1639] One retail customer also stressed the fact that the retail supply of helium is already, pre-Transaction, much less competitive in Europe than in the USA *"where helium is supplied at much lower prices already today thanks to a more competitive market.*"[1640] This is corroborated by the Notifying Parties' internal documents which show, for example, that […].[1641] In particular, they reveal that […].[1642] Linde's internal documents also suggest that the lack of competition, in the EEA […].[1643] [1644]

(1233) As regards **parameters of competition** for the retail supply of helium,[1645] customers that responded to the market investigation indicated that the most important criterion when selecting retailers is the security of supply (rating it 4.83 on a 5-point scale),[1646] which again merely reflects the scarcity of helium and the unstable nature of the market, which is regularly subject to shortages. Furthermore, the Commission notes that all retail customers responding to the market investigation (with no exception) stressed the importance of the security of supply, rating it either 4 or 5 on a scale of 5

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1637 Notably, agreed non-confidential minutes of the conference calls (i) with […] of 20 March 2018, ID6082, paragraphs 18-19; and (iii) with […] of 19 March 2018, ID6233, paragraph 33.

1638 Notably, Praxair's draft email to be addressed to […] , of […] [ID4591-44341]: "[…]." Also, Praxair's internal email exchange dated […] [ID4598-65603] regarding a sales pitch addressed to a French retail customer ([…]).

1639 Responses to RFI Q22 to helium retail customers, questions 14 and 30.

1640 […]'s reply to RFI Q22 to helium retail customers, question 36 (ID3614).

1641 For instance, Linde's top ten countries in terms of average selling prices, at worldwide level, are mostly EEA countries (namely […]) (Linde's internal presentation, […] [ID4834-87606]). Also, Helium Paper, Annex 01-05, dated […], slide 27 and Linde, […], slide 7.

1642 Linde's internal presentation, […] [ID4834-87606].

1643 Linde, […] [ID4834-87606].

1644 Also, Helium Paper, Annex 01-05, dated […], which suggests that […] (slide 21).

1645 Responses to RFI Q22 to helium retail customers, question 16.

1646 Contrary to the Notifying Parties' allegation (Reply to the Statement of Objections, Section 5.1, pages 29-30), retail customers rated price (including transport costs) and timely delivery lower than security of supply (respectively 4.05 and 4.46 *vs*. 4.83). The Notifying Parties themselves stated that transportation costs, timely deliveries, and more generally the strength of the retail distribution network are the most important parameters of competition "*provided that the business has access to sufficient (and economical) sources to meet its demand*" (see Reply to the Statement of Objections, paragraph 132-133).

points (the vast majority of respondents rating it 5), which contradicts the Notifying Parties' assertion that security of supply is "*only an important factor for customers with large helium demand.*"[1647] Retail-customers interviewed during the second phase investigation, such as […], also confirmed that "*it is in fact important that providers have direct access to more than one helium source*" so as to "*guarantee the delivery of the product to customers*."[1648] Timely deliveries and service level are respectively the second and third most important competition parameters for retail customers. Other key parameters are prices, reputation, vertical integration (such as the direct access to helium sources and the ownership of the transfill centres and delivery assets), product range (helium is often procured together with other gases),[1649] as well as the location of the supplier's helium transfill centre(s). This ranking is also largely corroborated by retail competitors.[1650] However, the Commission notes that most of the retail competitors indicated that, the importance of the location of the helium transfill centre(s) may vary depending on the mode of supply. [1651] Messer notably pointed out that the proximity of transfill centres is very important for helium supplied in dewars.[1652]

*8.10.2. Horizontal non-coordinated effects*

(1234) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive effects in the affected markets for the retail supply of helium identified in Section 8.10.1.

8.10.2.1. Notifying Parties' view

(1235) As regards retail supply of helium in dewars, cylinders, and tube trailers, the Notifying Parties acknowledged, in the Form CO, that the Transaction may raise competition concerns in many EEA countries given the significant combined market shares and/or non-negligible market share increment. In the other EEA countries giving rise to horizontally affected markets, they did not take a view as to whether the Transaction would impede effective competition except in Italy[1653] where it is argued that the Transaction would not hinder effective competition, the merged entity having a moderate market share (with a minor increment) and facing several strong competitors (such as Air Liquide, Air Products, and SOL), as well as many small retailers (such as SICO or MedicAir).

(1236) As regards the retail supply of helium in cryogenic portable tanks, the Notifying Parties argued, in the Form CO, that no competition concern arises as a result of the Transaction. They claimed in particular that their combined market share ([40-50]%) should be considered with caution since (i) their competitors' sales might be underestimated and (ii) the market segment is so small that market shares are highly

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1647 Reply to the Statement of Objections, Section 5.1, paragraph 134.

1648 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990, paragraph 5. Also, agreed non-confidential minutes of the conference call with […] of 20 March 2018, ID6082, paragraphs 18-19.

1649 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, ID6082, paragraphs 18-19: […] indicated that "*larger players […] are more competitive in terms […] in terms of product portfolio […]*".As already indicated, the Notifying Parties' Reply to the Statement of Objections (paragraph 133) recognises that helium retailers' competitiveness is notably driven by their "*wider industrial gas business (helium being highly integrated with a company's packaged gas business).*"

1650 Replies to RFI Q34 to helium competitors, question 47.

1651 Replies to RFI Q34 to helium competitors, question 47.4.

1652 Messer's reply to RFI Q34 to helium competitors, question 47.4.4 (ID2965).

1653 Form CO, Section 6, Chapter D, paragraphs 1057 to 1069.

volatile and of limited reliability to assess the Notifying Parties' market power. They also allege that barriers to entry barely exist and that any helium supplier may at any time supply its customers with cryogenic portable tanks.[1654]

(1237) Moreover, in the Thematic Papers, the Notifying Parties contested several findings of the Article 6(1)(c) Decision.

(1238) The Notifying Parties claimed that direct access to sources is not a material requirement to be a strong player at retail level for several reasons. First, it is argued that the primary factor to be competitive in these markets is the quality of the retail distribution network, which explains why (i) independent retailers, with no direct access to helium sources, can be strong players locally (such as Oy Woikoski in Finland and Westfalen in Germany) and (ii) Matheson does not have retail activities in the EEA despite having direct sourcing of helium. Second, the Notifying Parties asserted that secondary sourcing is sufficient to be a strong competitor at retail level on the ground that (i) it is in the interest of the large players with direct access to helium sources to conclude secondary sourcing agreements so as to share the financial risk; and (ii) with the exception of Linde, all major helium suppliers rely on secondary sourcing arrangements (including Praxair). Lastly, Linde and Praxair claimed that direct sourcing is not required by retail customers, which are "[…]".[1655]

(1239) Also, in their Reply to the Statement of Objections, the Notifying Parties disputed several findings of the Statement of Objections. The Commission notes that the claims and arguments raised by the Notifying Parties with respect to the wholesale supply of helium (see Section 8.9.2.1), also apply to the retail supply.[1656]

8.10.2.2. Results of the market investigation and Commission's assessment

**a. Assessment of competitive constraints exercised by the Notifying Parties**

(1240) As explained in this Section, the Notifying Parties appear to exert important competitive constraints in the helium retail markets (and potential sub-markets), on each other, as well as on the remaining competitors, which would be removed by the Transaction. This is true both in light of (i) their large market shares, (ii) the degree of closeness of competition (between each other and vis-à-vis the remaining Tier 1 players), but also in view of (iii) their market performance, (iv) their diversified helium sourcing portfolio, and (v) their high degree of vertical integration, including their large fleets of cryogenic portable tanks.

i. Market shares

(1241) First, as regards the retail supply of helium in dewars, cylinders, and tube trailers, based on the results of the market reconstruction, [1657] the Commission notes that the Transaction leads to large or very large combined market shares in a number of affected markets (see Table 53).[1658] Although market shares are only a useful first

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1654 Form CO, Chapter D, paragraphs 1070 to 1073.

1655 Helium Paper, Section 1.5, pages 14 and 15.

1656 The Reply to the Statement of Objections, Section 5 (pages 29-35) stated that it "*covers both the wholesale supply of helium and the retail supply of helium*" (paragraph 131).

1657 Access to the data underlying the market reconstruction was provided according to the data room procedure. In this Decision the Commission will only present ranges for the combined market shares of the Notifying Parties to preserve confidentiality of third party data.

1658 The Commission notes that, in relation to the markets for the retail supply of helium (and potential sub-markets) which are not specified in recital (1242), that is to say (i) Austria, in relation to the potential

indication of the market structure and of the respective positions of the Notifying Parties, the Commission considers that these high market shares, combined with the significant concentration levels of the affected markets, would lead to a significant increase of market power of the merged entity post-Transaction.

(1242) More specifically:

(a) in **Austria**: post-Transaction, the merged entity would reach very high market shares in (i) the **overall retail** market ([50-60]% in value and [60-70]% in volume, with a [0-5]% increment), and (ii) the potential market for **standard purity cylinders** ([50-60]% both in value and volume, with a [0-5]% increment). According to settled case law, such high market shares may in themselves be evidence of the existence of a dominant position. Moreover, the number of significant competitors is limited to two players, namely Messer and Air Liquide, whose market shares are significantly lower. Lastly, the markets

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sub-markets for the supply of high purity cylinders, dewars, and tube trailers, (ii) Belgium, in relation to the helium retail market and the potential sub-markets for the supply of high purity cylinders and dewars, (iii) Bulgaria, in relation to the potential sub-market for the supply of high purity cylinders, (iv) Croatia, in relation to the helium retail market and the potential sub-market for the supply of standard purity cylinders, (v) Cyprus, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders and tube trailers, (vi) Czech Republic, in relation to the potential sub-markets for the supply of high purity cylinders, and dewars, (vii) Denmark, in relation to the potential sub-market for the supply of dewars, (viii) Estonia, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (ix) Finland, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (x) France, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (xi) Germany, in relation to the potential sub-market for the supply of high purity cylinders, (xii) Greece, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (xiii) Hungary, in relation to the potential sub-markets for the supply of high purity cylinders, dewars, and tube trainers, (xiv) Iceland, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (xv) Ireland, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, dewars, and tube trailers, (xvi) Italy, in relation to the potential sub-markets for the supply of high purity cylinders and dewars, (xvii) Latvia, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (xviii) Lithuania, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (xix) Luxembourg, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars, (xx) the Netherlands, in relation to the potential sub-markets for the supply of high purity cylinders and dewars, (xxi) Poland, in relation to the helium retail market and the potential sub-market for the supply of high purity cylinders, dewars, and tube trailers, (xxii) Portugal, in relation to the potential sub-markets for the supply of high purity cylinders and dewars, (xxiii) Romania, in relation to the potential sub-markets for the supply of high purity cylinders, and dewars, (xxiv) Slovakia, in relation to the potential sub-markets for the supply of high purity cylinders and dewars, (xxv) Slovenia, in relation to the helium retail market and the potential sub-markets for the supply of standard purity cylinders and dewars, (xxvi) Spain, in relation to the potential sub-markets for the supply of high purity cylinders and dewars, (xxvii) Sweden, in relation to potential sub-markets for the supply of high purity cylinders and dewars, (xxviii) the UK, in relation to the potential sub-markets for the supply of high purity cylinders, dewars, and tube trailers, the Notifying Parties' combined market shares and/or the concentration levels in the markets concerned are relatively low. The Commission considers that the Transaction would not lead to a significant impediment of effective competition in these markets. In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal and vertical non-coordinated effects of the Transaction in other markets would also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects in those markets. Indeed, those commitments will fully remove the overlap between Linde's and Praxair's helium retail activities in the EEA.

in question are highly concentrated with post-Transaction HHIs ranging from [3500-4000] to [4500-5000] and deltas well above 150 at least in terms of sales value (up to [300-400]);

(b) in **Belgium**: post-Transaction, the merged entity would enjoy a high market share in the potential market for **standard purity cylinders** ([40-50]% in value and [30-40]% in volume, with a [0-5]% increment). The number of significant competitors would be limited to two players, namely Air Products and Air Liquide, whose market shares are significantly lower (at least in terms of sales value) and, therefore, are unlikely to represent a strong competition vis-à-vis the merged entity. The market would be highly concentrated with post-Transaction HHIs exceeding [2500-3000] and a delta above 150 (at least in terms of sales value);

(c) in **Bulgaria**: post-Transaction, the merged entity would have high market shares in (i) the **overall retail** market ([40-50]% in value and [30-40]% in volume, with a [10-20]% increment), and (ii) the potential market for **standard purity cylinders** ([50-60]% both in value and volume, with a large increment of [20-30]%). The merged entity would become the market leader (in terms of sales value) in both markets, most likely enjoying dominance in the retail market for standard purity cylinders. It would face mainly just one competitor, Messer, with similar market shares, as well as, to a more limited extent, SOL (whose market shares are much lower). The very high post-Transaction HHIs (which range between about [3000-3500] and above [4500-5000]) and the significant HHI deltas (up to [1500-2000]) confirm the oligopolistic nature of both markets;

(d) in the **Czech Republic**: pre-Transaction, Linde is already dominant in (i) the **overall retail** market and (ii) the potential market for **standard purity cylinders,** with market shares above 50%. Post-Transaction, on these two markets, the merged entity would have very high (value and volume) market shares ranging from 50% to 80%, with substantial increments (up to [10-20]%). The merged entity would only face two meaningful rivals, Messer and Air Products, with market shares several times lower than the merged entity's and, therefore, unlikely to represent a strong competition vis-à-vis the merged entity. Both markets would be highly concentrated with post-Transaction HHIs above [4000-4500] and up to [6000-6500] and significant HHI deltas (above [1000-1500]);

(e) in **Denmark**: post-Transaction, the merged entity would have very high value market shares above 50% in (i) the **overall retail** market ([50-60]%, with a [10-20]% increment) and (ii) the potential market for **standard purity cylinders** ([60-70]%, with a [10-20]% increment). It would also enjoy a high value market share in the potential market for **high purity cylinders** ([40-50]%, with a [0-5]% increment). The merged entity would mainly face one competitor (Air Liquide), with substantially lower market shares, as well as, to a much more limited extent, Strandmollen and Air Products. As a result of the Transaction, HHI levels would be very high (above [3000-3500] and up to [5000-5500]), with significant deltas (ranging from [300-400] to [1500-2000] in terms of sales value);

(f) in **Germany**: post-Transaction, the merged entity would enjoy very high value market shares in (i) the **overall retail** market ([50-60]%, with a [10-20]% increment), as well as in the potential markets for (ii) **standard purity cylinders** ([50-60]%, with a [10-20] increment), (iii) **tube trailers** ([70-80]%,

with a [20-30] increment), and (iv) **dewars** (close to [50-60]%, with a [5-10]% increment). The number of significant competitors would be limited to one or two depending on the market, namely Air Liquide, Air Products, and/or Westfalen, which would have much lower market shares and, therefore, are unlikely to represent a strong competition vis-à-vis the merged entity. The markets in question would be highly concentrated, with high post-transaction HHIs (comprised between [2500-3000] and [5500-6000]) and significant deltas (above [400-500] and up to [2500-3000]);

(g) in **Hungary**: post-Transaction, the merged entity's (volume and value) market shares would be comprised between 60% and 80%, with large increment (above [10-20]%) in (i) the **overall retail** market, and (ii) the potential market for **standard purity cylinders**. Only one meaningful competitor would remain post-Transaction (*i.e.* Messer). The Transaction would significantly increase the degree of concentration of the markets in question, with high post-Transaction HHIs (above [5500-6000]) and significant deltas (above [2000-2500]);

(h) in **Italy**: contrary to the Notifying Parties' assertion, the merged entity would enjoy very high (volume and value) market shares comprised which will exceed 50% in (i) the **overall retail** market ([50-60%], with a [5-10]% increment), as well as in the potential markets for (ii) **standard purity cylinders** ([70-80%], with a [10-20]% increment) and (iii) **tube trailers** ([60-70%], with a [0-5]% increment). The number of significant competitors would be limited to one or two depending on the market, namely Sapio, Air Liquide and/or SOL, with much lower market shares. As a result of the Transaction, the markets in question would be highly concentrated with high HHI levels (above [3500-4000] and up to [6000-6500]) and significant deltas in the overall retail market and the potential sub-market for standard purity cylinders (above [500-600] and up to [1500-2000]);

(i) in **the Netherlands**: post-Transaction, the merged entity's (value) market shares would exceed 50% (with substantial increments) in (i) the **overall retail** market ([50-60]%, with a [10-20]% increment), as well as in the potential markets for (ii) **standard purity cylinders** ([60-70]%, with a [20-30]% increment) and (iii) **tube trailers** ([90-100]%, with a [10-20]% increment). The merged entity would only face one or two credible competitors depending on the market, namely Air Liquide and Air Products, with much lower market shares, and therefore, not representing a strong competitive constraint vis-à-vis the merged entity. Post-Transaction the markets in question would be highly concentrated with high HHI levels post-Transaction (above [3500-4000] and up to [9000-9500]) and significant deltas (ranging from [600-700] to [2000-2500]);

(j) in **Norway**: the Transaction would lead to the creation of a duopoly at national level. The merged entity would have (value) market shares exceeding 60% in (i) the **overall retail** market ([70-80]%, with a [20-30]% increment), as well as in the potential markets for (ii) **standard purity cylinders** ([80-90]%, with a [20-30]% increment) and (iii) **high purity cylinders** ([60-70]%, with a [30-40]% increment). The merged entity would also reach a high (value) market share with respect to **dewars** ([30-40]%, with a large increment of [10-20]%). Post-Transaction, only one significant competitor would be left (Air Liquide), and the HHI levels would exceed [5000-5500] (up to [7500-8000]), with significant deltas (above [300-400] and up to [3000-3500]);

(k) in **Poland**: post-Transaction, the merged entity would have a high market share in the potential market for **standard purity cylinders** ([50-60]% in value and [40-50]% in volume, with a [0-5]% increment). The number of significant competitors would be limited to two players, namely Messer and Air Liquide, whose market shares are significantly lower, and, therefore, not representing a strong competitive constraint vis-à-vis the merged entity. The oligopolistic nature of the market is illustrated by a high post-Transaction HHIs (above [3000-3500]), with a significant delta (above 150);

(l) in **Portugal**: post-Transaction, the merged entity would reach high (value) market shares in (i) the **overall retail** market ([50-60]%, with a [5-10]% increment) and (ii) the potential market for **standard purity cylinders** ([40-50]%, with a [10-20]% increment). Only one or two significant competitors would remain post-Transaction, namely Messer and Air Liquide, with much lower market shares than the merged entity and, therefore, not representing a strong competitive constraint vis-à-vis the merged entity. The HHI levels post-Transaction would also be very high (above [4000-4500]), with large deltas (above [800-900] in terms of sales value). In addition, the Transaction would also lead to the creation of a monopoly in the potential market for the supply of helium in **tube trailers**, with a significant increment of [10-20%];

(m) in **Romania**: post-Transaction, the merged entity would enjoy (value and volume) market shares comprised 60% and 90%, with large increment (up to [20-30]%) in the **overall retail** market and in the potential market for **standard purity cylinders**, giving rise to a presumption of dominance. The merged entity would only face one competitor (Air Liquide), with much lower market shares, and, therefore, not representing a strong competitive constraint vis-à-vis the merged entity. As a result of the Transaction, those markets would be highly concentrated, with high HHI levels (above [5000-5500]) and significant deltas (ranging from [1500-2000] to [2500-3000]);

(n) in **Slovakia**: post-Transaction, the merged entity would reach high (value) market shares in the **overall retail** market ([40-50]%, with a [10-20]% increment) and would be presumed dominant in the potential market for **standard purity cylinders** where its (value) market share would exceed 50% ([50-60]%, with a [20-30]% increment). The merged entity would only face one or two credible competitors depending on the market, namely Air Products, and Messer, with much lower market shares, and, therefore, not representing a strong competitive constraint vis-à-vis the merged entity. Post Transaction, the HHIs levels would be very high (from [2500-3000] to [4000-4500]), with significant deltas (above [300-400] and up to [1500-2000]);

(o) in **Spain**: post-Transaction, the merged entity would enjoy very high (value) market shares in (i) the **overall retail** market ([40-50]%, with a [5-10]% increment) and (ii) the potential market for **standard purity cylinders** ([60-70]%, with a [20-30]% increment). As a result of the Transaction, the merged entity would face only one or two significant competitors depending on the market, namely Air Products and Air Liquide, with much lower market shares than the merged entity, and, therefore, not representing a strong competitive constraint vis-à-vis the merged entity. In addition, the market would be highly concentrated with high HHI levels (above [3500-4000] and up to [5000-5500]), and significant deltas (ranging from [500-600] to [1500-2000]). The Transaction would also lead to the creation of a monopoly with respect to the retail supply of helium in **tube trailers** at national level, with a significant increment of [10-20]%;

(p) in **Sweden**: post-Transaction, the merged entity would be presumed dominant with (value) market shares comprised between 70% and 90% (with a [5-10]% increment) in the **overall retail** market, as well as in the potential market for **standard purity cylinders**. Only one competitor would be left (Air Liquide). As a result of the Transaction the HHI levels in the above markets would be well above [5500-6000] (in terms of sales value), with significant deltas (above [800-900]);

(q) in the **United Kingdom**: post-Transaction, the merged entity would enjoy (value and volume) market share exceeding 50% in (i) the **overall retail** market ([60-70]% in value and [50-60]% in volume, with a [5-10]% increment), and (ii) the potential market for **standard purity cylinders** ([70-80]% (in value and volume), with a significant increment of [10-20]%). The merged entity, which would be presumed dominant, would only face two meaningful competitors, namely Air Liquide and Air Products, with much lower market share, and, therefore, not representing a strong competitive constraint vis-à-vis the merged entity. As a result of the Transaction, those markets would be highly concentrated, with HHI levels ranging from [4000-4500]to [6000-6500], with significant deltas (above [600-700] and up to [1500-2000]).

(1243) In light of the analysis in recitals (1241)-(1242), the Commission considers that the Notifying Parties have large or very large combined market shares particularly as regards a number of helium retail markets in Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, and the UK. These market shares, combined with the high concentration levels and HHI deltas, are likely to lead to a significant increase in market power post-Transaction.

(1244) Second, as regards retail supply of helium in cryogenic portable tanks, according to the data submitted by the Notifying Parties, Linde's and Praxair's combined market share is close to [50-60]% at global level, with an increment in market share ([5-10]%). Post-Transaction, the merged entity would only face two competitors at global level (that is to say Air Products ([40-50]%) and Air Liquide ([10-20]%)). However, the Commission notes that the Notifying Parties' claim according to which the sales of their competitors might be underestimated is corroborated by the market reconstruction conducted during the second phase investigation at EEA level (see Section 8.10.1.1). Nonetheless, the Notifying Parties' market shares in the global market for the retail supply of helium in cryogenic portable tanks may not reflect fully their strength on this market notably due to the existence of very high barriers to entry related to the acquisition of cryogenic portable tanks. In this respect, the market investigation revealed that, post-Transaction, the merged entity's fleet would have no equivalent on the market, which would constitute a considerable competitive advantage (see Section 8.9.2.2.a). In light of the above, the Commission considers that the evidence in the Commission's file suggests that a significant increase of market power of the merged entity is likely to occur post-Transaction in the global market for the retail supply of helium in cryogenic portable tanks.

ii. Closeness of competition

(1245) As regards closeness of competition, the market investigation confirmed that the Notifying Parties are close competitors at retail level. Both customers and

competitors generally consider that Praxair is Linde's second closest competitor, and that Linde is Praxair's closest competitor.[1659]

(1246) Moreover, as previously explained in Section 8.10.1.2, the market investigation also revealed that only Tier 1 players compete closely with each other due to their direct access to helium sources, whereas small or mid-size players mostly source helium from competitors which affect their competitiveness.

(1247) In light of the above, the Commission considers that the Notifying Parties are close competitors to a significant degree so that the Transaction could potentially give rise to significant price effects by removing the constraint pre-Transaction extended by the Notifying Parties on each other and on the retail markets.

iii. Specific competitive constraints exerted by the Notifying Parties

(1248) The Commission found that the Notifying Parties exert important competitive constraints in the helium retail markets (and potential sub-markets), which is not only due to their high capacity/market shares and closeness of competition, but also to (i) their market performance with respect to the main parameters of competition, (ii) their large and diversified helium sourcing portfolio, (iii) their high degree of vertical integration, and (iv) their large network of helium transfill centres in the EEA. As a result of the Transaction, such important competitive constraints would be eliminated.

(1249) When looking at the parameters of competition discussed in Section 8.10.1.2, the market investigation has shown that the four Tier 1 players (namely Linde, Praxair, Air Liquide, and Air Products) are perceived as the most competitive players with respect to all criteria considered by customers to be very important when selecting a retail supplier of helium. More specifically, retail customers generally consider that Linde and Praxair are the two most competitive players with respect to (i) security of supply, (ii) service level, (iii) reputation, (iv) vertical integration (such as direct access to helium sources and ownership of transfill centres and delivery assets), (v) product range, and (vi) geographic footprint of the transfill centres. Praxair is also perceived by customers as the most competitive player in terms of timely deliveries and the second most competitive player in terms of prices.[1660]

(1250) Moreover, as explained in Section 8.9.2.2.a, the Notifying Parties have a large and diversified helium sourcing portfolio and are highly vertically integrated, with strong positions at all levels of the helium supply chain, enabling them to credibly compete on the helium retail markets and to exert important competitive pressure on each other and on other market participants.[1661] For instance, a retail customer explained that "*the merged entity would have a dominant position in relation to access to helium sources, with the largest and most diversified sourcing portfolio. Their combined position, notably at the US BLM, would allow them to control a great part of the market.*"[1662] The Commission also notes that, post-Transaction, the merged entity would have a fleet of approximately […] cryogenic portable tanks, which

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1659 Responses to RFI Q22 to helium retail customers, questions 24 and 25, and RFI Q34 to helium competitors, questions 55 and 56.

1660 Responses to RFI Q22 to helium retail customers, questions 19 and 20. Also, RFI Q34 to helium competitors, questions 50 and 51.

1661 Notably, agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraph 32 ("*Linde is the most diversified the most diversified player in terms of available sources*").

1662 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990 paragraph 6.

would have no equivalent on the market. This constitutes a strong competitive advantage in the market for the retail supply of helium in cryogenic portable tanks given that competitors are "*constrained by their fleet of ISO containers*", which are "*usually have relatively tight fleets.*"[1663]

(1251) Furthermore, the Commission found that the combination of Praxair's and Linde's helium transfill centres in the EEA would enable the merged entity to have […] helium transfill centres in the EEA. Such a large network would have no equivalent on the market[1664] and would constitute a strong competitive advantage. As indicated in Section 8.10.1.2, the geographic proximity of the transfill is an important parameter of competition. […] explained in this respect that potential suppliers that are "*geographically further away […] have extra delivery costs that make them not be competitive as well as not being as reliable in global delivery terms.*"[1665]

iv. Conclusion

(1252) On the basis of the above considerations, the Commission considers that the Notifying Parties exert important competitive constraints, on each other, as well as on the remaining competitors, which would be removed by the Transaction, in the markets for the retail supply of helium in the EEA countries identified in Section 8.10.2.2.a.i.

**b. Assessment of the other competitive constraints in the markets**

(1253) As explained in this Section, the Notifying Parties' competitors and customers do not appear to have the ability to counteract the loss of competition deriving from the Transaction in the helium retail markets.

i. Competitors

(1254) As a preliminary remark, the Commission notes that the market investigation revealed that the EEA retail markets (and potential sub-markets) are not, pre-Transaction, very competitive (Section 8.10.1.2) and many end-customers complained about the **limited number of suppliers.** For example:

– **[…]** (Norway) stated that "*Praxair and Linde [are] the two sole suppliers of helium […] in Norway*";[1666]

– **[…]** (Sweden) indicated that "*only a few companies can compete to [supply]*[…]";[1667]

– **[…]** (Sweden) considers that "*there are too few suppliers*";[1668]

– **[…]** (Portugal) indicated that "*there are so few and small competitors*";[1669]

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1663 Agreed non-confidential minutes of the conference call with Air Products of 15 March 2018, ID6198, paragraph 18.

1664 Annex 93 to the Form CO. In the EEA, Air Liquide and Air Products have respectively 7 and 8 helium transfill centres.

1665 […]' reply to RFI Q22, question 37 (ID1679).

1666 […]'s reply to RFI Q22, question 14 (ID1656). Also, question 31 ("*Post-transaction, there would […] be a monopolist situation in Norway for us*") and question 35 ("*there will be no competitor left*").

1667 […]'s reply to RFI Q22, question 14 (ID2996)

1668 […]'s reply to RFI Q22, question 17 (ID2538). Also, question 14 ("*there are very limited amount of helium sources and suppliers on the market*").

1669 […]'s reply to RFI Q22, question 34 (ID2906).

– **[…]** (Portugal) complained about the lack of "*reliable alternative to [its] actual suppliers*", the other potential suppliers being "*not competitive*" and *"not as reliable in global delivery terms*";[1670]

– **[…]** (Germany) stressed the "*limited number of large suppliers with direct access to helium sources and the high degree of concentration on the helium market existing pre-merger*"; [1671]

– **[…]** (Netherlands) pointed out the fact that, pre-Transaction, the number of alternative suppliers "*is already too limited!*"[1672]

(1255) The limited number of retail suppliers in the EEA is also illustrated by the market reconstruction conducted during the second phase investigation, which shows that the four largest players (*i.e.* Linde, Praxair, Air Liquide, and Air Products) accounted, in 2017, for almost [90-100]% of the helium retail sales achieved in the EEA, the proportion is even higher in some sub-markets, notably in the market for the retail supply of helium in cryogenic portable tanks (where barriers to entry are particularly high) (see Section 8.10.1).[1673]

(1256) The market investigation also shows that Linde and Praxair compete closely with the two other Tier 1 players, namely **Air Liquide** and **Air Products**. The latter are perceived as credible and competitive players with respect to most criteria considered by end-customers when selecting helium retail suppliers.[1674] In particular, Air Liquide and Air Products have direct access to helium source, several helium transfill centres in the EEA, and a large product portfolio allowing them to offer a broad range of gases at competitive terms. Nonetheless, the market investigation revealed that the competitive constraints exerted by Air Liquide and Air Products on the Notifying Parties are reduced for several reasons: (i) their sourcing is less competitive as it is less diversified,[1675] less flexible and more costly; (ii) these two players are currently (or will be soon) short of supply; (iv) they have "*tight*" fleets of cryogenic portable tanks (contrary to the merged entity) (see Section 8.9.2.2.b).[1676] Besides, Air Liquide and Air Products do not necessarily constitute an alternative to the Notifying Parties in all countries as they do not have the same geographic footprint. For example, […] stated that in Norway, "*Praxair and Linde [are] the two sole suppliers of helium*"[1677] and […] highlighted the fact that "*Air Products is considered a credible source of supply in certain countries (e.g. Spain) but has a more limited footprint in the EEA*."[1678] The Transaction would further compound this issue as it would enable the merged entity to have a network of […] helium transfill

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1670 […]' reply to RFI Q22, question 37 (ID1679).

1671 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, ID6082, paragraph 20.

1672 […]' reply to RFI Q22 to helium retail customers, question 38 (ID1579). Also, question 31 and 32 ("*clearly, we lose a major global player in the European market going from 4 to just 3*").

1673 According to the market reconstruction, in 2017, the Tier 1 players accounted for more than [90-100]% of the retail sales supplied in cryogenic portable tanks in the EEA. Only two other players were active on this market-segment (*i.e.* Messer and Westfalen), with very modest sales.

1674 Replies to RFI Q22 to helium customers, question 18.

1675 For instance, […] considers that "*Air Products very much relies on US sources and is therefore not diversified enough, especially if compared to players like Linde*." (agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraph 32 and 33).

1676 Form CO, Chapter D, paragraph 1260. Also, Linde's internal presentation, […] [ID4834-75123]: "[…]." Also, Linde's internal presentation, […] [ID4834-38183]: "[…]."

1677 […]'s reply to RFI Q22, question 14 (ID01656).

1678 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990, paragraph 4.

centres in the EEA, which would be much larger than Air Products's and Air Liquide's, which respectively have […] and […] helium transfill centres at EEA level.[1679]

(1257) As regards **Tier 2 competitors** (such as Messer, SOL, Westfalen, and Oy Woikoski), the market investigation confirmed that these small or mid-size Tier 2 competitors are less credible and less competitive than the Notifying Parties due to several reasons:

– First, Tier 2 players must rely on competitors for all (or most of) their helium sourcing and this affects their competitiveness (see Section 8.9.1.2, 8.9.2.2.b, and 8.10.1.2). This is confirmed by most market participants, including end-customers. For example, **[…]** indicated that it "*may consider procuring helium from smaller suppliers*" but "*does not regard these suppliers as being credible as large companies (such as the Parties, Air Liquide or Air Products). Indeed, according to* […]*, these smaller players have no (or limited) direct access to helium sources, which forces them to procure helium from the large players and thus make them less competitive in terms of pricing and supply reliability.*"[1680] The above clearly contradicts the Notifying Parties' assertion that direct sourcing is not a material requirement for the helium retail supply;

– Second, several customers explained that Tier 2 players do not have the capacity to supply large volumes of helium. For instance, […] indicated that "*only a few companies can compete to [supply]* […] *since the amounts we order are too big for small companies.*"[1681] […] also stated that small or mid-size players, such as Messer and SOL, "*do not generally supply large volumes to the market*";[1682]

– Third, Tier 2 players have modest cryogenic portable tank fleet which limits their ability to exert competitive constraints on the market for the retail supply of helium in cryogenic portable tanks. This is corroborated by the market reconstruction conducted during the second phase investigation, which shows that, at EEA level, only two Tier 2 players, namely Messer and Westfalen, are active on this market, with very modest sales accounting together for less than [5-10]% of the total EEA sales in 2017 (in value);

– Lastly, Tier 2 players are national or regional players, with a much more limited geographic footprint than the Notifying Parties'. For instance, […] explained that players other than Linde, Praxair, Air Liquide and Air Products, "*such as Messer are mostly active on a regional basis and thus are not able to compete worldwide with the main Tier 1 providers.*"[1683] As a matter of fact, the Commission notes that Tier 2 players typically have only […] transfill centre at EEA level (to the exception of Messer, which has […] facilities), while the

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1679 Form CO, Annex 93.

1680 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, ID6082, paragraphs 18-19. Also, agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraph 32 and 33.

1681 […]'s reply to RFI Q22, question 14 (ID2996).

1682 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraph 32 and 33.

1683 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990, paragraph 4.

merged entity would have, post-Transaction, a network of […] helium transfill centres in the EEA.[1684]

ii. Buyer power

(1258) As explained in Section 8.10.3, buyer power does not appear to be likely and/or sufficient to off-set the potential adverse effects of the Transaction in the helium retail markets and potential sub-markets. In particular, the Commission notes that the limited number of suppliers affect the end-customers' bargaining power[1685] and that switching retail suppliers is qualified by several end-customers market as difficult, especially in period of shortages.[1686]

iii. Conclusion

(1259) On the basis of the above considerations, the Commission considers that, post-Transaction, any other competitive constraints in the national markets for the retail supply of helium (and potential sub-markets) are unlikely to off-set the likely anti-competitive effects of the Transaction.

**c. Likely effects of the Transaction**

(1260) On the basis of the considerations expressed in Sections 8.10.1 to 8.10.2.2.b.iii, the Transaction would lead to significant horizontal non-coordinated effects in the form of price increases. This is because the merged entity would have fewer incentives to compete than the Notifying Parties separately in a pre-Transaction scenario.

(1261) This view is shared by the participants to the market investigation. A large number of end-customers consider that the Transaction would have a negative overall impact on the retail supply of helium, complaining about the reduction in the number of suppliers, and the risk of price increase. [1687] For example:

– **[…]** considers that "*the Transaction would increase the bargaining power of helium suppliers and would thus likely lead to price increases*";[1688]

– **[…]** explained that "*the merged entity would have a dominant position in relation to access to helium sources, […] Their combined position […] would allow them to control a great part of the market, with likely negative consequences for customers in terms of increased prices*";[1689]

– **[…]** stated that "*the combined entity will act less aggressively on prices in the average*" and highlighted the "*risk for higher prices in the medium-long term, with an overall disadvantage for the EEA economy*";[1690]

– **[…]** indicated that "*price increases from a combined Praxair/Linde entity will in my opinion lead to a global increase in prices from other providers. Having*

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1684 Form CO, Annex 93.

1685 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, ID6082, paragraph 20.

1686 Responses to RFI Q34 to helium competitors, question 24.

1687 Responses to RFI Q22 to helium retail customers, question 36. The majority of retail customers also indicated that price increases by the merged entity would be followed by others which confirm the ability of the Notifying Parties to dictate market prices post-Transaction (responses to RFI Q22 to helium retail customers, question 34).

1688 Agreed non-confidential minutes of the conference call with […] of 20 March 2018, ID6082, paragraph 20.

1689 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990, paragraph 6.

1690 […]'s reply to RFI Q22 to helium retail customers, questions 33 and 36 (ID3614).

*Linde and Praxair as separate entities helps control prices in the European market.*"[1691]

(1262) The fact that helium is a scarce of product, currently characterised by a tightening of the global supply, would further limit the ability of the Notifying Parties' competitors to increase their supply in case of prices increase by the Notifying Parties.

(1263) Lastly, the market investigation revealed that the horizontal non-coordinated effects raised by the Transaction in the helium retail markets would likely affect other markets. As explained in Section 8.9.4.2.3, even if it may be sold in relatively minor quantities, helium is a "*highly strategic*" and "*must-have*" product, as it "*enables to sell other gases*" (including industrial, medical, and specialty gases).[1692] Several end-customers confirmed the above, such as […] which explained that "*if Praxair/Linde increase the price for helium [post-Transaction], the other competitors could also increase their price for helium but it could affect also the other technical gases they have in their portfolio.*"[1693]

**d. Conclusion**

(1264) For the reasons set out above in Sections 8.9.4 and 8.10, the Commission's assessment is that the Transaction would significantly impede effective competition as a result of horizontal non-coordinated effects in the following markets for retail supply of helium and potential sub-markets:

(a) in Austria: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(b) in Belgium: the potential sub-market for the supply of standard purity cylinders;

(c) in Bulgaria: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(d) in the Czech Republic: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(e) in Denmark: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and high purity cylinders;

(f) in Germany: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders, tube trailers, and dewars;

(g) in Hungary: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(h) in Italy: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(i) in the Netherlands: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

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1691 […]' reply RFI Q22 to helium retail customers, question 34 (ID1679).

1692 Annex Q73 to the Notifying Parties' reply to RFI 48. Also, agreed non-confidential minutes of the conference call with Messer of 15 March 2018, ID6230, paragraph 25: "*it is essential to have helium in its product portfolio as it enables to sell other products, notably industrial gases and specialty mixtures. Indeed, many customers regard helium as a key product and require it to be supplied along with other gases.*"

1693 […]'s reply to RFI Q22 to helium retail customers, question 34 (ID3564).

(j) in Norway: the helium retail market, as well as in the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars;

(k) in Poland: the potential sub-market for the supply of standard purity cylinders;

(l) in Portugal: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(m) in Romania: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(n) in Slovakia: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(o) in Spain: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(p) in Sweden: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(q) in the United Kingdom: the helium retail market and the potential sub-market for the supply of standard purity cylinders; and

(r) in the global market for the retail supply of helium in cryogenic portable tanks.

(1265) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[1694] and, at least, in the removal of a significant competitive constraint on some others.[1695]

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1694 The merged entity will hold a market share above 50% in the following helium retail markets (and potential sub-markets): (i) in Austria: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (ii) in Bulgaria: the potential sub-market for the supply of standard purity cylinders; (iii) in the Czech Republic: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (iv) in Denmark: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (v) in Germany: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (vi) in Hungary: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (vii) in Italy: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (viii) in the Netherlands: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (ix) in Norway: the helium retail market, as well as in the potential sub-markets for the supply of standard purity cylinders and high purity cylinders; (x) in Poland: the potential sub-market for the supply of standard purity cylinders; (xi) in Portugal: the helium retail market and the potential sub-market for the supply of tube trailers; (xii) in Romania: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (xiii) in Slovakia: the potential sub-market for the supply of standard purity cylinders; (xiv) in Spain: the potential sub-markets for the supply of standard purity cylinders and tube trailers; (xv) in Sweden: the helium retail market and the potential sub-market for the supply of standard purity cylinders; and (xvi) in the United Kingdom: the helium retail market and the potential sub-market for the supply of standard purity cylinders.

1695 That is to say the following markets (and potential sub-markets): (i) in Belgium: the potential sub-market for the supply of standard purity cylinders; (ii) in Bulgaria: the helium retail market; (iii) in Denmark: the potential sub-market for the supply of high purity cylinders; (iv) in Germany: the potential sub-market for the supply of dewars; (v) in Norway: the potential sub-market for the supply of dewars; (vi) in Portugal: the potential sub-market for the supply of standard purity cylinders; (vii) in Slovakia: the helium retail market; (viii) in Spain: the helium retail market; and (ix) in the global market for the retail supply of helium in cryogenic portable tanks.

*8.10.3. Countervailing factors*

8.10.3.1. Entry

(1266) The Commission notes that, in the retail markets, new meaningful entries are difficult due to high barriers to entry, the main one being (again) the sourcing of helium. Indeed, direct access to helium sources is required to be a strong player at retail level: retail sales are mostly captured by vertically integrated players with direct access to helium, while non-vertically integrated retailers are much modest players. More specifically, as regards the retail supply in cryogenic portable tanks, the market investigation has shown that the acquisition of such a tank takes a long time ([up to 12] months, notably due to the fact that production capacities worldwide are limited which may sometimes result in significant delay) and is costly ([up to EUR 1 million])[1696], which is also confirmed by the Commission's finding in case M.4141 – *Linde/BOC*.[1697] The market investigation has also shown that retail customers are not aware of any new helium retailers in the EEA in the past five years, except for one customer which referred to Uniper, which is not active at retail level. Competitors referred to Basi in Germany, which seems to be a minor player.[1698]

(1267) The importance of the barriers to entry in the retail helium business (besides the helium sourcing) is also stressed in the Notifying Parties' internal documents, which state that […][1699] The Notifying Parties' internal documents also highlight the fact that "[…]".[1700]

8.10.3.2. Buyer power

(1268) First, the Commission notes that (i) at retail level, the customer structure is generally characterised by a high degree of dispersion, both in terms of size and geography and that (ii) a majority of retail customers do not enjoy bargaining power vis-à-vis retail suppliers and many of them expect their bargaining power to decrease post-Transaction.[1701]

(1269) Second, a majority of customers consider that switching is "*easy*" or "*relatively easy*" but many customers consider that switching is "*difficult*" or "*very difficult.*"[1702] For example:

– **[…]** stated that switching retail supplier of helium is "*a long and very difficult process*": "*First, there are technical barriers to switching. Introducing a new helium supplier requires the stipulation of new rental agreements for cylinders, new arrangements for the delivery of the product, etc.; these changes take time to be implemented and entail risks in relation to the security of the supply chain. […] Second, customers of* […] *may need to approve the new supplier*

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1696 Responses to RFI Q34 to helium competitors, question 34. [up to EUR 1 million] per tank according the Form CO, paragraph 1260.

1697 Commission's decision of 6 June 2006 in Case M.4141 – *Linde/BOC*, paragraph 177.

1698 Responses to RFI Q22 to helium retail customers, question 21 and RFI Q34 to helium competitors, question 57.

1699 Linde's internal presentation, […] [ID4834-38229].

1700 Linde's internal presentation, […] [ID4834-38183].

1701 Responses to RFI Q22 to helium retail customers of 12 January 2018, questions 29 and 32. Notably, […]'s reply (ID03409): "*No much bargaining power with the current market condition*."

1702 Responses to RFI Q22 to helium retail customers, question 27. Notably, […]'s reply (ID2538): "*changing the helium supplier is more complicated that changing the supplier of other cylindered gases, as there are not so many suppliers providing helium*" and RFI Q34 to helium competitors, question 58.

*and to re-qualify the products sourced. This is the case, in particular, for customers which have extremely high quality standards, such as the automotive industry. In relation to these customers, switching may take up to 12-18 months*";[1703]

– **[…]** indicated that "*switching may require either the purchase or the rental of static containers used for the storage of helium at […]'s facilities. This would require a significant investment*." [1704]

(1270) The Commission notes that in practice, a large majority of end-customers did not switch retailers in the last three years.[1705] The number of suppliers is indeed limited and customers are not aware of new entrants in this space in the EEA in the past five years (as pointed out in Section 8.10.3.1, competitors refer to Basi in Germany, which seems to be a minor player).[1706] Consequently, many customers consider that there would be no sufficient alternative suppliers post-Transaction.[1707]

8.10.3.3. Conclusion

(1271) For the reasons set out above, the Commission's assessment is that new entrants and buyer power are unlikely to countervail the anticompetitive effects potentially arising from the Transaction.

*8.10.4. Overall conclusion*

(1272) For the reasons set out above in Sections 8.10 and 8.9, the Commission's assessment is that the Transaction would significantly impede effective competition as a result of:

– **horizontal non-coordinated effects** in the following markets for retail supply of helium and potential sub-markets:

(a) in Austria: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(b) in Belgium: the potential sub-market for the supply of standard purity cylinders;

(c) in Bulgaria: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(d) in the Czech Republic: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(e) in Denmark: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and high purity cylinders;

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1703 Agreed non-confidential minutes of the conference call with […] of 22 March 2018, ID5990, paragraph 7.

1704 Agreed non-confidential minutes of the conference call with […] of 19 March 2018, ID6233, paragraph 29.

1705 Responses to RFI Q22 to helium retail customers, questions 26 and 27 and RFI Q34 to helium competitors, question 58.

1706 Responses to RFI Q22 to helium retail customers, question 21 and RFI Q34 to helium competitors, question 57.

1707 Responses to RFI Q22 to helium retail customers, questions 31 and 32. Notably, […]' reply (ID1579): highlighting the fact that, pre-Transaction, the number of alternative suppliers "*is already too limited!*".

(f) in Germany: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders, tube trailers, and dewars;

(g) in Hungary: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(h) in Italy: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(i) in the Netherlands: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(j) in Norway: the helium retail market, as well as in the potential sub-markets for the supply of standard purity cylinders, high purity cylinders, and dewars;

(k) in Poland: the potential sub-market for the supply of standard purity cylinders;

(l) in Portugal: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(m) in Romania: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(n) in Slovakia: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(o) in Spain: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers;

(p) in Sweden: the helium retail market and the potential sub-market for the supply of standard purity cylinders;

(q) in the United Kingdom: the helium retail market and the potential sub-market for the supply of standard purity cylinders; and

(r) in the global market for the retail supply of helium in cryogenic portable tanks.

In particular, in relation to the markets mentioned above, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of these markets[1708] and, at least, in the removal of a significant competitive constraint in the other above-mentioned markets;[1709]

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1708 The merged entity will hold a market share above 50% in the following helium retail markets (and potential sub-markets): (i) in Austria: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (ii) in Bulgaria: the potential sub-market for the supply of standard purity cylinders; (iii) in the Czech Republic: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (iv) in Denmark: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (v) in Germany: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (vi) in Hungary: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (vii) in Italy: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (viii) in the Netherlands: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (ix) in Norway: the helium retail market, as well as in the potential sub-markets for the supply of standard purity cylinders and high purity cylinders; (x) in Poland: the potential sub-market for the supply of standard purity cylinders; (xi) in Portugal: the helium retail market and the potential sub-market for the supply of tube trailers; (xii) in

– **vertical non-coordinated effects** in all vertically affected markets for the retail supply of helium and potential sub-markets identified in Section 8.10.1.1.

## 8.11. Supply of process plants and process plant components

### *8.11.1. Market shares*

(1273) Table 55 shows the Notifying Parties' and their competitors' 2016 market shares based on sales in value in the horizontally and vertically affected markets for the supply of process plants and process plant components.

**Table 55: Market shares for process plants and process plant components (2016)**

| Supplier | Sale value ('000 EUR) | | | | | |
|---|---|---|---|---|---|---|
| Supplier | Process plants | | | | Process plant components | |
| | EEA | | | Global | Global/EEA* | |
| | ASU | Air separation adsorption | HCS adsorption | Automated filling stations | Pumps | Turbines |
| **Linde** | [20-30]% | [20-30]% | [10-20]% | [30-40]% | [50-60]% | [30-40]% |
| **Praxair (SIAD)** | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% | [0-5]% |
| **Combined** | **[30-40]%** | **[20-30]%** | **[20-30]%** | **[30-40]%** | **[50-60]%** | **[30-40]%** |
| **Competitor 1** | […][1710] | […] | […] | […] | […] | […] |
| **Competitor 2** | -- | […] | […] | […] | […] | […] |
| **Competitor 3** | -- | […] | […] | […] | -- | -- |

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Romania: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (xiii) in Slovakia: the potential sub-market for the supply of standard purity cylinders; (xiv) in Spain: the potential sub-markets for the supply of standard purity cylinders and tube trailers; (xv) in Sweden: the helium retail market and the potential sub-market for the supply of standard purity cylinders; and (xvi) in the United Kingdom: the helium retail market and the potential sub-market for the supply of standard purity cylinders.

1709 That is to say the following markets (and potential sub-markets): (i) in Belgium: the potential sub-market for the supply of standard purity cylinders; (ii) in Bulgaria: the helium retail market; (iii) in Denmark: the potential sub-market for the supply of high purity cylinders; (iv) in Germany: the potential sub-market for the supply of dewars; (v) in Norway: the potential sub-market for the supply of dewars; (vi) in Portugal: the potential sub-market for the supply of standard purity cylinders; (vii) in Slovakia: the helium retail market; (viii) in Spain: the helium retail market; and (ix) in the global market for the retail supply of helium in cryogenic portable tanks.

1710 Messer's engineering capabilities appear to be limited despite the high market share in sale of ASUs, estimated by the Notifying Parties. Indeed, in its reply to RFI Q20 to engineering companies, questions 2 and 5, Messer indicated to have in-house engineering capabilities only for ASUs, hydrogen plants, carbon dioxide liquefaction plants and coldboxes and not to be able to start producing in-house other process plants and process plants components, if not after incurring in significant investments. Also, agreed minutes of the conference call with Messer of 24 October 2017, section c (ID698). This is not comparable with the engineering capabilities of the Notifying Parties, in particular Linde's. In this respect see also Section 8.2.

| Supplier | Sale value ('000 EUR) | | | | | |
|---|---|---|---|---|---|---|
| Supplier | Process plants | | | | Process plant components | |
| | EEA | | | Global | Global/EEA* | |
| | ASU | Air separation adsorption | HCS adsorption | Automated filling stations | Pumps | Turbines |
| Competitor 4 | -- | […] | -- | […] | -- | -- |
| Competitor 5 | -- | […] | -- | […]] | -- | -- |
| Others | [20-30]% | [10-20]% | [30-40]% | […] | [10-20]% | [30-40]% |

*Source: Form CO, Tables 173 and 174.*

* *The Notifying Parties were not in a position to provide precise estimates of their supply shares for plant components at an EEA-wide level; however they submitted that their EEA shares should be in the same order of magnitude as, or somewhat larger, than at the global level.*

(1274) On the basis of Table 55, the Commission notes that:

(a) SIAD and Linde's combined market shares are above 20% in the EEA markets for the supply of ASUs, air separation adsorption plants and HCS adsorption plants, with increment brought by SIAD around [0-5]%;

(b) SIAD and Linde's combined market shares are above [30-40] at least in the EEA market for the supply of ASUs;

(c) already pre-Transaction Linde alone enjoys a market share above [30-40]% in the global markets for automated filling stations, pumps and turbines, as well as in the EEA markets for pumps and turbines, where SIAD is not active.

*8.11.2. Horizontal non-coordinated effects*

(1275) Based on the market shares data presented in Table 55, the Transaction gives rise to horizontally affected markets in the EEA markets for the supply of ASUs, air separation adsorption plants and HCS adsorption plants.

(1276) During the second phase investigation a concern was raised as to the combination of Linde's and Praxair (SIAD)'s activities in the supply of process plants (i.e. engineering businesses) in the EEA.

(1277) However, on the basis of the overall evidence in the Commission's file, the Commission considers that the Transaction is unlikely to significantly impede effective competition as a result of horizontal effects in the EEA markets for the supply of process plants, and notably of ASUs, adsorption plants and HCS adsorption plants. Indeed, at least for the range of ASUs, adsorption plants and HCS adsorption plants for which Linde and SIAD's activities overlap, the results of the market investigation have indicated that alternative credible providers would remain in the market, such as Mahler, Messer, Sumitomo, Air Liquide, Air Products among others, as listed in Table 55.[1711] In particular, in the EEA market for the supply of ASUs where the number of alternative large suppliers, post-Transaction, would be

[1711] Responses to RFI Q20 to engineering companies, question 6, and to RFI Q31 to competitors of industrial and medical gases, question 8.

limited to Messer with a [50-60]% market share and the merged entity with [30-40]%, there is a significant amount of other players, representing [20-30]% which are in a position to supply this type of plants as has been reflected by the market investigation.

(1278) In any event, the Commission notes that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in relation to industrial, medical and specialty gases and helium would also exclude the possibility that the Transaction would lead to horizontal effects in the EEA and global markets for supply of process plants and process plant components. Indeed, those commitments would fully remove the overlap between Linde's and SIAD's activities in those markets.

(1279) It is therefore not necessary to consider further the horizontal effects of the Transaction in the supply of process plants and process plant components.

(1280) That conclusion is without prejudice to the importance of in-house engineering capabilities for the viability of the competitive constraint exerted by a player in the supply of industrial gases, in particular in the tonnage markets (in this respect, see Section 8.2.1.2.2).

*8.11.3. Vertical non-coordinated effects*

(1281) As explained in Section 8.1.2, vertically affected markets arise in relation to the links between the upstream EEA/global markets for the supply of some process plants and process plant components and, at downstream level, some EEA/national/Benelux markets for industrial gases, some national markets for medical gases, some EEA/national markets for specialty gases, the global wholesale market for supply helium and the retail markets for the supply of helium (and potential sub-markets).

(1282) Specifically, based on the market shares data presented in Table 55, the Transaction gives rise to vertically affected markets in the EEA market for the supply of ASUs, the global markets for automated filling stations, pumps and turbines, as well as the EEA markets for pumps and turbines.

(1283) The ASUs offered by the Notifying Parties are used for the production of air gases (oxygen, nitrogen, argon, krypton, neon, and xenon), which can be both for industrial and medical applications or used as input for the production of specialty gases.

(1284) Automated filling stations are used for transfilling into cylinders of all gases: in particular, Linde (through its subsidiary Cryostar) offers automated filling stations for industrial, medical and specialty gases.[1712]

(1285) Pumps and turbines are used as components in ASUs.

(1286) No customer foreclosure concern has been raised in the market investigation in regard to these links.

(1287) In the Article 6(1)(c) Decision the Commission raised serious doubts as a result of possible vertical input foreclosure effects in relation to access to process plants and process plant components belonging to markets where the merged entity would have a share of more than 30% (regardless of the increment brought by Praxair).

(1288) During the second phase investigation a concern was raised relating to the combination of Linde's and Praxair (SIAD)'s engineering business. Notably,

[1712] Form CO, Chapter F, Section 6, Table 163.

Westfalen expressed a concern that its competitive position post-Transaction could deteriorate with respect to access to engineering services, as the Transaction, by merging Linde Engineering with SIAD (which has been offering engineering services to third parties), would lead to a reduction of engineering services suppliers.[1713]

(1289) In this respect, on the basis of the overall evidence in its file, the Commission considers that the Transaction would not significantly impede effective competition as a result of input foreclosure effects.

(1290) The Commission notes that the specific complaint regarding the reduction of engineering services suppliers has not been further substantiated by Westfalen. Moreover, at least for the range of process plants and process plant components where Linde and SIAD overlap, alternative providers would remain in the market, such as Mahler, Messer, Sumitomo, Air Liquide, Air Products among others, as listed in Table 55, which indicates that the merged entity would not have the ability to engage in input foreclosure. In this vein, for example, SOL stated that "*there are several suppliers of process plants in the market, including Linde Engineering, SIAD as well as several other Chinese and American companies, such as AMCS Corp based in Bedminster, NJ (USA). SOL stated that the scarcity of the number of plants engineering and construction players, so far, has not been an issue, especially for small and medium size plants*." [1714] Further, the Commission did not find compelling evidence pointing to a possible change of incentives of the merged entity with respect to the strategy today pursued by Linde and SIAD separately with respect to the provision of engineering services to competitors, in particular in the tonnage markets. Therefore, also considering the limited ability to compete that characterises Tier 2 players other than Messer already pre-Transaction with respect to engineering (see Sections 8.2.1.2.2 and 8.2.2.2.1), the Commission cannot conclude that a significant impediment to effective competition would arise on the EEA tonnage markets as a result of vertical non-coordinated effects in relation to the supply of process plants and process plant components.

(1291) This is without prejudice to the importance of in-house engineering capabilities for the viability of the competitive constraint exerted by a player in the supply of industrial gases, in particular in the tonnage markets (in this respect, see Section 8.2.2).

(1292) In any event, the Commission notes that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in relation to industrial, medical and specialty gases and helium would also exclude the possibility that the Transaction would lead to vertical effects in the EEA and global markets for the supply of process plants and process plant components. Indeed, those commitments would fully remove the overlap between Linde's and Praxair/SIAD's activities both upstream (in the supply of process plants and process plant components) and downstream (in the supply of industrial, medical and specialty gases and helium).

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1713 Agreed minutes of the conference call with Westfalen of 19 March 2018, paragraph 10-12; ID 6109.

1714 Agreed minutes of the conference call with SOL of 23 March 2018, paragraph 7 [ID6243].

## 8.12. Respiratory Homecare services

### *8.12.1. Market structure and competitive parameters*

#### 8.12.1.1. Spain

(1293) The market for respiratory homecare services in Spain is a tender-based market. Providers of respiratory homecare services gain access to the market through tenders organised by the healthcare administration of the 17 Spanish regional authorities[1715] and in some cases by groups of hospitals.[1716] The selected suppliers are usually granted exclusivity in a specific (sub-) region for the duration of the contract and for the provision of the full spectrum of respiratory homecare services.

(1294) Regional authorities can issue a single public tender for the whole spectrum of respiratory therapies for one region (a "single-lot tender")[1717] or several sub-regions or groups of hospitals (a "multi-lot tender").[1718]

(1295) The reimbursement system is organized at regional level by the different healthcare administrations. There are three types of contracts based on different types of payment, namely: (i) payment per therapy whereby the reimbursement is made based on a price per therapy and the number of patients for a certain therapy; (ii) flat fee payment, including an initial calculation based on price per therapies and patients of each therapy; based on this calculation, the reimbursement is made via a monthly flat fee and independent from the actual type of therapy provided and number of patients, and (iii) "capitative" payment, whereby the calculation is related to the total population covered and the prevalence of the diseases to be treated; as in the previous model, a respiratory homecare service provider receives a fixed monthly payment which does not depend on the number of therapies or the number of patients but the price is based on the evolution of the population and total prevalence, thus to the growth of patients in total for a certain region.[1719] In all Spanish regions, reimbursement is always made directly by the regional health authority, which decides on the reimbursement method.

(1296) Respiratory homecare services can also be provided by some private medical insurance companies through bilateral negotiations.[1720]

(1297) Finally, two EU directives have recently led to a change in the general structure of tenders in Spain by increasing the number of multi-lot tenders. The aim of this change is to split tenders into smaller lots thereby enabling smaller companies to successfully bid against larger rivals for certain lots. In addition, the directives

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1715 Tenders in the following administrative regions in Spain are organized by the regional health authorities: Andalucía, Extremadura, Murcia, Galicia, Navarra, La Rioja, Catalonia, Basque Country, Madrid, Castilla y León, Castilla-La Mancha, Valencia, Baleares, Aragon, Canary Islands, Asturias, and Cantabria. The regions of Ceuta and Melilla in Spain do not have any regional health authorities, Form CO, Chapter E, Section 8, paragraph 1617.

1716 Andalucía is the only region in Spain where tenders are organized at the hospital group level. However, tenders in Andalucía are similar in the sense that they grant exclusivity to the supplier for the relevant territory, Form CO, Chapter E, Section 8, paragraph 1547.

1717 Tenders in the following administrative regions in Spain are structured as single-lot tenders: Canarias, Cantabria, Navarra, Form CO, Chapter E, Section 8, paragraph 1545.

1718 Tenders in the following administrative regions in Spain are structured as multi-lot tenders: Andalucía, Aragon, Asturias, Castilla-La Mancha, Castilla y León, Catalonia, Valencia , Extremadura, Galicia, La Rioja, Madrid, Murcia, País Vasco, Form CO, Chapter E, Section 8, paragraph 1545.

1719 Form CO, Chapter E, Section 8, paragraph 1529.

1720 Form CO, Chapter E, Section 8, paragraph 1624 to 1629.

promote that tenders should not only be awarded on the criteria of price but also based on related services, quality and technology.[1721]

8.12.1.1.1. Market shares and concentration levels

(1298) The Notifying Parties overlap in all therapies in Spain, and are present simultaneously in four regions, namely Andalucía, Valencia, Catalonia and Castilla-La Mancha. In the latter region only the Notifying Parties are present and consequently no other competitor has been awarded a tender.

(1299) Table 56 shows the Notifying Parties' 2016 market shares (and concentration levels) in the respiratory homecare services market at national level in Spain. Detailed market share tables, including information on the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

**Table 56: Market shares for respiratory homecare services (in value) in Spain (2016)[1722]**

| | SALES | | | HHI[1723] | | |
|---|---|---|---|---|---|---|
| **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| **Respiratory HC services overall** | **[20-30]%** | **[20-30]%** | **[50-60]%** | **[2500-3000]** | **[3500-4000]** | **[1000-1500]** |
| Oxygen based | [20-30]% | [20-30]% | [40-50]% | [2500-3000] | [3500-4000] | [1000-1500] |
| *GOX* | *[40-50]%* | *[10-20]%* | *[50-60]%* | *[2500-3000]* | *[4000-4500]* | *[1000-1500]* |
| *LOX* | *[10-20]%* | *[10-20]%* | *[30-40]%* | *[3000-3500]* | *[3500-4000]* | *[700-800]* |
| *COX* | *[20-30]%* | *[20-30]%* | *[50-60]%* | *[2500-3000]* | *[3500-4000]* | *[1000-1500]* |
| Non-oxygen based | [20-30]% | [30-40]% | [50-60]% | [2500-3000] | [3500-4000] | [1000-1500] |
| *Sleep* | *[20-30]%* | *[30-40]%* | *[50-60]%* | *[2500-3000]* | *[3500-4000]* | *[1000-1500]* |
| *Ventilation* | *[20-30]%* | *[20-30]%* | *[40-50]%* | *[2500-3000]* | *[3500-4000]* | *[1000-1500]* |

1721 Directive 2014/23/EU of 26 February 2014 on the award of concession contracts and Directive 2014/24/EU of 26 February 2014 on public procurement and repealing Directive 2004/18/EU – Form CO paragraph 1533-1353.

1722 The fact that the sum of the individual market shares of the Notifying Parties and the combined market share indicated in the table may not coincide is due to rounding.

1723 The Notifying Parties have provided their competitors' market shares in ranges. For the purposes of the calculation of the HHI, the mean value (within a given interval) has been considered.

| | SALES | | | HHI[1723] | | |
|---|---|---|---|---|---|---|
| **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| *Aerosol* | *[10-20]%* | *[30-40]%* | *[40-50]%* | *[2500-3000]* | *[3500-4000]* | *[900-1000]* |

*Source: Commission's computation based on Annex 121 to the Form CO*

(1300) In the overall market of respiratory homecare services, the Notifying Parties have a combined market share of [50-60]%. In Spain, tenders usually cover all respiratory homecare therapies and, consequently, as can be observed from Table 56, the Notifying Parties' combined market shares are rather similar across the different segments. The only competitor with a meaningful market share is Air Liquide, ranging from [30-40]% to [30-40]% depending on the specific market. Other competitors have a significantly lower market share: Esteve Teijin [5-10]%, Vivisol [0-5]%, Oxigen Salud [0-5]% and Contse [0-5]%.

8.12.1.1.2. Competitive parameters and general market conditions

(1301) As regards the general market conditions, the market investigation indicated an average level of competitiveness of the market.[1724] When asked to rate the current market conditions for the supply of respiratory homecare services in Spain on a scale from one to five, the majority of customers that responded to the market investigation indicated a rating of three.[1725] In particular, one customer explained that the reason of this average level of competition in the respiratory homecare services markets in Spain is mainly due to the level of asymmetry between suppliers, which will even increase post-Transaction.[1726]

(1302) The market investigation confirmed that all suppliers are obliged to provide all respiratory homecare therapies in the regions where they are selected as the winning bidder. In terms of parameters that determine the success of a supplier of respiratory homecare services in Spain, customers that responded to the market investigation while indicating that providers are generally selected on the basis of (i) price and (ii) service level, they also listed (iii) the ability to provide the full range of respiratory homecare services products and (iv) the maintenance and continuous home service availability, including nursing care, as important parameters.[1727] On the other hand, respondents do not consider vertical integration in the production of medical oxygen to be an important parameter.[1728]

(1303) Similarly, competitors also consider (i) geographic footprint as a very important parameter of competition, together with (ii) price, (iii) overall service level, including training to patients for the operation of devices and technical qualification of staff

1724 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals – Spain), question 13.

1725 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 13.

1726 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/Hospitals - Spain, question 32.

1727 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 14.

1728 Responses to RFI Q32 to competitors of respiratory homecare services, question 11.

and (iv) product range (i.e. ability to provide the full range of respiratory homecare services).[1729]

8.12.1.2. Portugal

(1304) In Portugal, respiratory homecare service providers contract mainly with the Portuguese National Health Service which provides universal coverage to the majority of the population.[1730] The policies of the Portuguese National Health Service are implemented through five regional health administrations (Administrações Regionais de Saúde -"ARS"). (i) North, (ii) Centre, (iii) Alentejo, (iv) Algarve and (v) Lisbon and Vale do Tejo.[1731]

(1305) In the past, the procurement of respiratory homecare services in Portugal was characterised by large tenders set up by the ARSs or individual hospitals. Some of them granted exclusivity in a given territory to the selected bidder, while others granted semi-exclusivity to two companies allowing them to compete for individual patients (this "hunt for prescriptions" model is described in more detail below).

(1306) The tender process for healthcare services, including respiratory homecare services was recently reformed. A nationwide tender system was introduced in Portugal in 2013 and fully implemented in 2014. The new tender system aims at achieving a single price for the entire country for the type of goods and services provided to patients.[1732]

(1307) In Portugal, providers of respiratory homecare services access the markets and compete for patients through a two-step process, namely (i) the Qualification Phase and (ii) Hunting for Prescriptions Phase.

(1308) As regards the Qualification Phase, first, providers of respiratory homecare services have to participate in a nationwide tender organised by the National Health Service. The last nationwide tender took place in 2013 (the final results were published in 2014) and the next tender is ongoing and is expected to be finalised in the course of 2018. The call for tender specifies the reimbursement levels and the criteria that need to be satisfied by the bidders in order to be qualified as accredited providers.[1733] Notably, in order to be qualified, suppliers do not need to offer the full range of respiratory homecare services (they can be qualified only for certain therapies), but are required to reach patients everywhere in Portugal (with the exception of overseas territories).[1734] Prices for the different respiratory homecare services are also set as a result of the tender procedure.[1735] The successful bidders enter into a framework agreement with the National Health Service that sets out the prices for each therapy

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1729 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 17.5

1730 Respiratory Homecare services are also provided in a much smaller scale to patients not covered by the National Health Service. These are patients covered by sub-national health insurance systems (for instance Army/Navy/Police/Private companies) and by the Assistência na Doença aos Servidores do Estado which covers civil servants or state owned companies that have a 'dedicated' sub-system. Form CO, Chapter E, Section 8, paragraph 1675.

1731 Form CO, Chapter E, Section 8, paragraph 1674.

1732 Form CO, Chapter E, Section 8, paragraphs 1678 to 1679.

1733 Agreed non-confidential minutes of the conference call with National Programme for Respiratory Diseases ("PNDR") of 23 November 2017, paragraph 5, ID 4588.

1734 Agreed non-confidential minutes of the conference call with National Programme for Respiratory Diseases ("PNDR") of 23 November 2017, paragraph 6, ID 4588.

1735 Agreed non-confidential minutes of the conference call with National Programme for Respiratory Diseases ("PNDR") of 23 November 2017, paragraph 7, ID 4588.

(that each accredited provider is required to charge) and other terms under which companies procure these services.[1736] Providers of respiratory homecare services in Portugal are granted no territorial exclusivity.

(1309) As regards the Hunting for Prescriptions Phase, based on the framework agreement, doctors in Portuguese National Health Service prescribe respiratory homecare services to patients, and then the services are supplied by the provider of respiratory homecare services, who in turn receives payment according to the terms of the framework agreement. Patients do not pay for these services and all respiratory homecare therapies are reimbursed in Portugal.[1737] As a result, while providers "hunt for prescriptions" and compete for patients once they are accredited, in practice, they compete by trying to convince physicians to prescribe their products and services to patients.[1738]

8.12.1.2.1. Market shares and concentration levels

(1310) Table 57 shows the Notifying Parties' 2016 market shares (and concentration levels) in the respiratory homecare services market at national level in Portugal. Detailed market share tables, including information on the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

**Table 57: Market shares for respiratory homecare services (in value) in Portugal (2016)[1739]**

| | SALES | | | HHI[1740] | | |
|---|---|---|---|---|---|---|
| **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| **Respiratory HC services overall** | **[40-50]%** | **[5-10]%** | **[50-60]%** | **[3500-4000]** | **[4000-4500]** | **[400-500]** |
| Oxygen based | [40-50]% | [5-10]% | [50-60]% | [4500-5000] | [4500-5000] | [400-500] |
| *GOX* | *[40-50]%* | *[5-10]%* | *[50-60]%* | *[4000-4500]* | *[4500-5000]* | *[400-500]* |
| *LOX* | *[30-40]%* | *[5-10]%* | *[30-40]%* | *[4500-5000]* | *[5000-5500]* | *[400-500]* |
| *COX* | *[50-60]%* | *[0-5]%* | *[50-60]%* | *[4500-5000]* | *[5000-5500]* | *[300-400]* |
| Non-oxygen based | [40-50]% | [5-10]% | [50-60]% | [3500-4000] | [4000-4500] | [500-600] |

1736 Form CO, Chapter E, Section 8, paragraphs 1730 to 1732.

1737 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 8, ID 3156.

1738 Form CO, Chapter E, Section 8, paragraphs 1730 to 1732.

1739 It is noted that the fact that the sum of the individual market shares of the Notifying Parties and the combined market share indicated in the table, in some instances, do not coincide is due to rounding.

1740 The Notifying Parties have provided their competitors' market shares in ranges. For the purposes of the calculation of the HHI, the mean value (within a given interval) has been considered.

| | SALES | | | HHI[1740] | | |
|---|---|---|---|---|---|---|
| **Product** | **Linde** | **Praxair** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| *Sleep* | *[40-50]%* | *[5-10]%* | *[50-60]%* | *[3000-3500]* | *[3500-4000]* | *[400-500]* |
| *Ventilation* | *[50-60]%* | *[5-10]%* | *[60-70]%* | *[4000-4500]* | *[4500-5000]* | *[800-900]* |
| *Aerosol* | *[20-30]%* | *[0-5]%* | *[20-30]%* | *[6000-6500]* | *[6000-6500]* | *[100-200]* |

*Source: Commission's computation based on Annex 121*

(1311) The Notifying Parties' combined market shares post-Transaction would amount to [50-60]%, with an increment brought by Praxair of [5-10]% irrespective of whether an overall market comprising all respiratory homecare services or separate markets for each oxygen-therapies and non-oxygen therapies are considered. The Notifying Parties' combined market shares and relative increment would not vary significantly if narrower markets are considered, with the exception of aerosol (where the combined market share of the Notifying Parties would amount to [20-30]%, with an increment of [0-5]%), LOX therapy (where the combined market share of the Notifying Parties would be [30-40]% with an increment of [5-10]%) and ventilation (where the combined market share of the Notifying Parties would [60-70]% with an increment of [5-10]%). The only competitor with a meaningful market presence (ranging from approximately [30-40]% to [70-80]%) in the market would be Air Liquide.[1741] Other providers, namely SOL (SonoCare/Vivisol), Acail Gas Medicare and D'Ar Saude, have a limited presence in the market (with market shares as low as <[0-5]% in some affected markets) and some of these players are not active in all therapies (D'Ar Saude is only active in non-oxygen therapy and SOL (Sonocare/Vivisol) is active in non-oxygen therapy and in COX, but not in GOX and LOX).

8.12.1.2.2. Competitive parameters and general market conditions

(1312) The market investigation indicated that the level of competitiveness in the respiratory homecare services markets) in Portugal is low. When asked to rate the current market conditions for the supply of respiratory homecare services in Portugal on a scale from one to five, customers that responded to the market investigation indicated a rating between one and two.[1742] In particular, one customer explained that the reason of this lack of competition in the respiratory homecare services markets in Portugal is mainly due to the high level of concentration, notably emphasizing that "*in the area of respiratory homecare service, we have seven providers but two of them have [80-90]% of market share*".[1743]

(1313) In terms of parameters of competition that determine the success of an accredited provider of respiratory homecare services in Portugal, customers that responded to the market investigation (i.e. the authorities of the Portuguese National Health

1741 In Portugal, Air Liquide trades through its two subsidiaries VitalAire and Gasoxmed. For the purpose of Sections 7.12.1.2, 7.12.2.2., 7.12.3. and 7.12.4.2. (to the extent related to Portugal), the two companies will be referred together as Air Liquide.

1742 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 15.

1743 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 27.

Service) indicated as the most important factors (i) geographic footprint, including proximity to patients and physicians, distribution network and ability to serve a certain geographic area, (ii) quality of medical devices/identity of manufacturers of the devices and (iii) existence of supply agreements with multiple manufacturers of medical devices. Respondents do not consider vertical integration of the providers into the production of medical oxygen to be a particularly important parameter.[1744]

(1314) Similarly, competitors also consider (i) geographic footprint as a very important parameter of competition, together with (ii) price, (iii) overall service level, including training to patients for the operation of devices and technical qualification of staff and (iv) product range (i.e. ability to provide the full range of respiratory homecare services). In this respect, one competitor confirmed that "*it is very helpful to have a broad portfolio and to be able to answer to different kinds of services a client would require*".[1745]

8.12.1.3. Italy

(1315) The healthcare system in Italy is organised at national, regional and local levels. The Italian National Health Service, Servizio Sanitario Nazionale provides universal coverage of the essential medical services for the whole population.[1746] In addition, healthcare is provided by a limited number of private health insurance operators on the market.[1747] Healthcare is further divided into 20 separate regions (including two provinces with an autonomous statute). Each region develops guidelines and protocols and supervises the provision of healthcare services in the respective region and can operate either through the local public health agencies (Azienda Sanitaria Locale, "ASL") or through the A.O (Azienda Ospedaliera). The A.O. are, however, not involved in the provision of respiratory homecare services.[1748]

(1316) The ASLs award respiratory homecare services through tenders for a period of four to five years.[1749] However, providers of respiratory homecare services are granted no territorial exclusivity.[1750]

(1317) The ASLs independently and directly manage and award the homecare tenders and contracts. For this reason, as indicated in Section 6.6, the market for respiratory homecare services in Italy is heterogeneous and different regions organise the procurement of these services on the basis of an array of different systems. In particular, regional authorities assign different lots to different suppliers, while others require a technical accreditation after which patients can select their medical oxygen supplier.[1751] Public tenders are either awarded strictly based on price or on a balanced evaluation between service, quality and price.[1752] Tenders can further be divided into: (i) regional tenders organized as a single lot or multi-lot tenders and (ii) aggregated tenders, where one lot extends over one or more provinces or several public entities in the same regions.[1753] In terms of patient density, regional tenders based on multiple

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1744 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 16.
1745 Responses to RFI Q32 to competitors of respiratory homecare services, question 11.
1746 Form CO, Chapter E, Section 8, paragraph 1778.
1747 For example, Europa Assistance, Filo Diretto, Pronto Assistance or Sanicard, Form CO, Chapter E, Section 8, paragraph 1778.
1748 Form CO, Chapter E, Section 8, paragraph 1781 to 1782.
1749 Form CO, Chapter E, Section 8, paragraph 1787.
1750 Form CO, Chapter E, Section 8, paragraph 1837.
1751 Puglia, Calabria, Sicily. Form CO, Chapter E, Section 8, paragraph 1841.
1752 Form CO, Chapter E, Section 8, paragraph 1788.
1753 Form CO, Chapter E, Section 8, paragraph 1789.

lots account for […]%, provincial tenders – […]%; and technical accreditation – […]%.[1754]

(1318) The prices for respiratory homecare services are either based on the price for the oxygen including ancillary services or based on an oxygen therapy service fee, calculated on a daily, weekly or monthly basis.[1755] All products and services employed in respiratory homecare therapies are reimbursable.[1756]

(1319) Furthermore, providers of respiratory homecare services in Italy form consortia in order to reduce the costs of obtaining the mandatory authorisation for commercialisation of new drugs by the Agenzia Italiana del Farmaco and/or to participate in specific tender procedures.[1757]

8.12.1.3.1. Market shares and concentration levels

(1320) Table 58 shows the Notifying Parties' 2016 market shares (and concentration levels) in the respiratory homecare services market at national level in Italy. Detailed market share tables, including information on the Notifying Parties' competitors, for the years 2014, 2015 and 2016 are included in Annex I, which forms an integral part of this Decision.

**Table 58: Market shares for respiratory homecare services (in value) in Italy (2016)[1758]**

| | SALES | | | HHI | | |
|---|---|---|---|---|---|---|
| **Product** | **Linde** | **Praxair+SIAD** | **Combined** | **HHI PRE** | **HHI POST** | **Δ HHI** |
| **Respiratory HC services overall** | **[5-10]%** | **[5-10]%** | **[10-20]%** | **[1000-1500]** | **[1500-2000]** | **[100-200]** |
| Oxygen based | [5-10]% | [10-20]% | [20-30]% | [1000-1500] | [1500-2000] | [200-300] |
| *GOX* | *[5-10]%* | *[10-20]%* | *[20-30]%* | *[900-1000]* | *[1000-1500]* | *[200-300]* |
| *LOX* | *[5-10]%* | *[10-20]%* | *[20-30]%* | *[1000-1500]* | *[1500-2000]* | *[200-300]* |
| *COX* | *[0-5]%* | *[10-20]%* | *[10-20]%* | *[1500-2000]* | *[1500-2000]* | *[0-100]* |
| Non-oxygen based | [5-10]% | [5-10]% | [10-20]% | [1500-2000] | [1500-2000] | [0-100] |
| *Sleep* | *[0-5]%* | *[0-5]%* | *[5-10]%* | *[1500-2000]* | *[1500-2000]* | *[0-100]* |

1754 Form CO, Chapter E, Section 8, paragraph 1794.
1755 Form CO, Chapter E, Section 8, paragraph 1795.
1756 Form CO, Chapter E, Section 8, paragraph 1780.
1757 Form CO, Chapter E, Section 8, paragraph 1785 to 1786.
1758 It is noted that the fact that the sum of the individual market shares of the Notifying Parties and the combined market share indicated in the table, in some instances, do not coincide is due to rounding.

| | SALES | | | HHI | | |
|---|---|---|---|---|---|---|
| *Ventilation* | *[5-10]%* | *[5-10]%* | *[10-20]%* | *[1500-2000]* | *[1500-2000]* | *[100-200]* |
| *Aerosol* | *[0-5]%* | *[10-20]%* | *[10-20]%* | *[1500-2000]* | *[1500-2000]* | *[0-100]* |

*Source: Commission's computation based on Annex 121 to the Form CO*

(1321) In Italy, the Transaction would give rise to horizontally affected markets only in a possible market comprising all oxygen therapies and in two of its sub-segments, namely GOX and LOX. In these potential markets, the combined market shares of the Notifying Parties post-Transaction would be [20-30]% with an increment brought by Linde of [5-10]% in all three scenarios. Air Liquide[1759], Sapio Life, SOL (ViviSol) and MedicAir Italia would remain in the market with similar shares ([10-20]%). The concentration levels in the affected markets pre-Transaction are approximately [1500-200]. In terms of increase in concentration levels in these markets as a result of the Transaction, the delta would be in all instances below 250.

8.12.1.3.2. Competitive parameters and general market conditions

(1322) As regards the **general conditions of the market**, the market investigation indicated an average level of competitiveness of the market.[1760]

(1323) In terms of **parameters of competition**, respondents to the market investigation (mostly regional health authorities in charge of the procurement of these services) indicated overall service level and quality of medical devices as the most important factors considered in the evaluation of respiratory homecare providers. Vertical integration, on the contrary, was considered as the least important.[1761]

*8.12.2. Horizontal non-coordinated effects*

(1324) In this Section, the Commission assesses the likelihood that the Transaction may result in anticompetitive horizontal non-coordinated effects in the affected markets for respiratory homecare services identified in Section 8.12.1. In general, respondents to the market investigation indicated that their replies would not differ depending on the therapy considered, namely GOX, LOX, COX, ventilation, aerosol and sleep. Therefore, the considerations expressed in this Section apply to all types of therapies affected by the Transaction unless otherwise specified.

8.12.2.1. Spain

8.12.2.1.1. Notifying Parties' view

(1325) In the Form CO, the Notifying Parties argued that the Transaction would not lead to an impediment of effective competition in the markets for respiratory homecare services in Spain, for the following reasons: (a) Spain is a tender market and market shares based on past sales are of limited relevance as they only reflect past success in tender awards, (b) the market will remain competitive due to the presence of a number of viable competitors, (c) barriers to entry are low and a number of participants have recently entered the Spanish market or expanded their existing

1759 In Italy, Air Liquide trades as VitalAire. For the purposes of Sections 8.12.2.3 and 8.12.3 (to the extent they are applicable to Italy) the company will be referred to as Air Liquide.

1760 Responses to RFI Q30 to customers of respiratory homecare services in Italy, question 12.

1761 Responses to RFI Q30 to customers of respiratory homecare services in Italy, question 13.

presence into new regions, (d) purchasers exert significant buyer power and (e) entry is attractive as exclusive awards guarantee return on investment.

(1326) The Notifying Parties did not contest the Commission's findings in the Article 6(1)(c) Decision nor did they comment on the Commission's objections in relation to respiratory homecare services in Spain in their Thematic Papers or in their Reply to the Statement of Objections.

8.12.2.1.2. Results of the market investigation and Commission's assessment

**a. Assessment of competitive constraint exercised by the Notifying Parties**

i. Market shares

(1327) It is settled case law that very large market shares may in themselves be evidence of the existence of a dominant position, in particular where the other operators on the market hold only much smaller shares.[1762]

(1328) The Notifying Parties claim that the market for respiratory homecare services in Spain will remain competitive due to the presence of a number of viable competitors including Air Liquide, Esteve Teijin, Oxigen Salud, Contse, SOL, Oxipharma.

(1329) The combined market shares of the Notifying Parties would be comprised between [45-55]% in an overall market for respiratory homecare services as well as in oxygen therapies and non-oxygen therapies separately. In these three potential markets, the combined entity would be the market leader, followed by Air Liquide, with a market share of [30-40]-[40-50]% in all respiratory homecare services, [30-40]% in oxygen therapies and [30-40]% in non-oxygen therapies.

(1330) If each therapy is considered separately, the combined entity would become the market leader in (i) GOX (with a combined market share of [50-60]% and an increment brought by Praxair of [10-20]%), (ii) COX (with a combined market share of [50-60]% and an increment brought by Linde of [20-30]%), (iii) sleep (with a combined market share of [50-60]% and an increment brought by Linde of [20-30]%) (iv) ventilation (with a combined market share of [40-50]% and an increment brought by Linde of [20-30]%) and (v) aerosol (with a combined market share of [40-50]% and an increment brought by Linde of [10-20]%). In these potential markets, the only other sizable competitor would be Air Liquide, with markets shares ranging from [20-30]-[30-40]% in GOX to approximately [40-50]-[50-60]% in LOX. In the potential sub-market for LOX, the combined entity would be by far the second largest player (with a combined market share of [30-40]%) after Air Liquide.

(1331) Contrary to the Notifying Parties' claim, the remaining competitors (namely, Esteve Teijin, Vivisol, Oxigen Salud and Contse) would all only have a minor market share in all potential markets. For instance, Esteve Teijin (with a market share between [5-10]%), Vivisol (with a market share between [0-5]%), Oxigen Salud (with a market share between [0-5]%) and Contse (with a market share of [0-5]%).

(1332) As a result, the Transaction would reduce the number of significant players from three to two, leaving Air Liquide as the only credible alternative to the merged entity post-merger.

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[1762] See Horizontal Merger Guidelines, para. 17; see also Case T-282/02 Cementbouw v. Commission, ECLI:T:2006:64, para 201; see also: Case 85/76 Hoffmann-La Roche v. Commission ECLI:C:1979:36, paragraph 39 et seq.

ii. Closeness of competition

(1333) Contrary to the Notifying Parties' claims, the market investigation revealed that Praxair and Linde are closely competing in the markets for respiratory homecare services in Spain.

(1334) Customers consider that Linde closely competes with Air Liquide and Praxair, and that, in turn, Praxair closely competes with Linde and Air Liquide.[1763] In particular, when asked to rate how closely competitors in the markets for the provision of respiratory homecare services compete with Linde, customers consider Praxair and Air Liquide at the same level, namely as suitable alternative to which they would likely turn if they were to switch from Linde.

(1335) In particular, Praxair is considered as comparable to Linde and Air Liquide in terms of (i) geographic footprint, (ii) product range and (iii) quality of medical devices, while all other providers are not considered to be as competitive.[1764]

(1336) This is also generally confirmed by competitors responding to the market investigation.[1765]

(1337) A very similar picture arises when customers were asked to rate how closely competitors compete with Praxair in the markets for the provision of respiratory homecare services on a scale from one to five. In this respect, the large majority of respondents rated both Air Liquide and Linde as the closest competitors to Praxair (with a rating of 4.5 and 5, respectively, out of 5). The same applies to Linde, where the majority of respondents indicated Air Liquide and Praxair as the closest competitors to Linde (with an average rating of 4.60 and 4.25, respectively, out of 5).[1766]

(1338) The Commission further notes that internal documents submitted by the Notifying Parties at the Commission's request also confirm the views of market participants, notably that Praxair and Linde are indeed close competitors together with Air Liquide. For example, in a presentation submitted by Linde, Linde together with Praxair and Air Liquide are considered the main players in terms of tender allocation. While other smaller players, such as Vivisol and Esteve Teijin are also included, they have only a limited presence which is restricted to a few regions only.[1767] Similarly, in a presentation submitted by Praxair, […].[1768]

(1339) In light of the results of the market investigation and the other information and evidence available to it, the Commission considers Praxair and Linde to be close competitors on the markets for respiratory homecare services.

(1340) The analysis also shows that Air Liquide is a close competitor to the Notifying Parties.

(1341) The question of who among Praxair, Linde and Air Liquide are the closest competitors is less relevant since all three companies offer a comparable service and

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1763 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), questions 21 and 22.

1764 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 17.

1765 Responses to RFI Q32 to competitors of respiratory homecare services, questions 18 and 19.

1766 Responses to RFI Q32 to competitors of respiratory homecare services, questions 21 and 22.

1767 Linde's internal document, […].

1768 Praxair's internal document, […].

are considered as close competitors by their customers as opposed to the other smaller companies.

iii. Removal of a significant competitive constraint

(1342) The market investigation also provided evidence that the Transaction would eliminate an important competitive constraint from the market. In this respect, in line with the respective market shares, most respondents list as credible suppliers: Air Liquide, Linde and Praxair. Linde is rated as the most aggressive player in terms of pricing. In addition, the vast majority of customers indicate that the Notifying Parties and Air Liquide are the top suppliers in terms of geographic footprint, overall service, product range and reputation while the remaining smaller suppliers are not able to reach comparable terms.[1769]

(1343) The tender data provided by the Notifying Parties also show that there is a high level of market concentration in the respiratory homecare services market in Spain.[1770] As a result, it is important to maintain the significant competitive pressure that is still exercised by large market players, namely the Notifying Parties and Air Liquide.

(1344) In particular, with regard to the tender data, the Commission notes that while the number of bidders varies largely depending on the region, the average number of participants in a tender is close to […]. Praxair, Linde and Air Liquide participated in the majority of tenders ([…] tenders out of […]) organised in all the regions in Spain. Out of the […] tenders in total organised in the different regions Air Liquide participated in […] and won […], Praxair participated in […] and won […] and Linde was present in […] and won […] times. Furthermore, for the tenders won since 2011, Linde, Praxair and Air Liquide were the previous incumbent in […]%, […]% and […]% of the cases respectively.

(1345) On the other hand, the Commission notes that other suppliers follow at distance and their presence is limited to a few regions only. While Esteve Teijin and Oxigen Salud have participated in a large number of tenders, they have managed to win in a minority of cases and in a few regions only. In particular, Esteve Teijin was present in […] tenders in […] regions and won only […] tenders. Oxigen Salud participated in […] tenders in […] different regions and won only […]. Moreover, both Esteve Teijin and Oxigen Salud won the majority of tenders in the same region (Cataluña).

(1346) Smaller suppliers such as Contse and SOL (Vivisol) have been awarded only [...] tender each. Contse participated in [...] tenders in [...] different regions and Vivisol in [...] tenders in [...] regions.

(1347) Based on these elements, the Commission concludes that the proposed Transaction would remove a significant competitive constraint on the markets for respiratory homecare services in Spain.

**b. Countervailing factors**

i. Barriers to entry

(1348) The Notifying Parties claim that the barriers to entry for the respiratory homecare service market are low as a number of participants have entered the Spanish market or expanded their existing presence into new regions.[1771]

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1769 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), questions 15-17.

1770 Form CO, Annex 127.

1771 Form CO, Chapter E, Section 8, paragraph 1592.

(1349) The entry of new players in a market as well as the expansion of existing ones acts as a competitive constraint on the merged entity. However, for entry to be considered a sufficient competitive constraint on the merging parties, it must be shown that entry is likely, timely and sufficient to deter or defeat any potential anti-competitive effects of the merger.[1772]

(1350) In the Article 6(1)(c) Decision, the Commission has already highlighted a number of significant barriers to entry.[1773] The first phase investigation revealed that, contrary to the Notifying Parties' claim, entry in the markets for the supply of respiratory homecare services in Spain has been very limited. Only one customer and a few competitors mentioned that SOL (Vivisol) recently started submitting offers in some regions in Spain.[1774] None of the customers (regional health authorities) indicated that they are aware of any company planning to enter or expand its activities in Spain in the next two years.[1775]

(1351) One competitor indicated that a provider may be planning to enter the market. However, the timing and the likelihood of success of this potential entry remains unclear. Notably, another competitor emphasized the difficulties in entering the market given the high degree of concentration.[1776]

(1352) The second phase investigation, contrary to the Notifying Parties' view, confirmed the existence of such barriers to entry, which were identified in the Commission's Article 6(1)(c) Decision.

(1353) In this respect, competitors involved in the Commission's second phase market investigation confirmed that the market for respiratory homecare services in Spain has not experienced significant entries in the recent past.[1777] In particular, one competitor emphasised that "*generally competitors are not accommodating entry of new players in the respiratory homecare market and on the contrary they react aggressively trying to stop newcomers […]*" and that " *the Spanish market is very difficult to enter because of the 100% public tender system: as tenders are large and with long durations, it's very challenging for any newcomer to enter the market*".[1778]

(1354) Critical factors for success in the respiratory homecare services market, as identified by respondents, include mainly (i) the cost of the investments and (ii) technical capabilities.[1779]

(1355) Finally, internal documents provided by the Notifying Parties on the Commission's request also confirm the results of the market investigation and the existence of high barriers to entry in the market for respiratory homecare services in Spain. For

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1772 Horizontal Merger Guidelines, paragraph 68.

1773 Commission's Article 6(1)(c) Decision, paragraph 768.

1774 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 18.

1775 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 19 and 20.

1776 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 18, 19 and 20 and RFI Q32 to competitors of respiratory homecare services, question 24.4.

1777 Agreed non-confidential minutes of the conference call with Air Liquide of 23 March 2018, paragraph 34; ID 6404.

1778 Agreed non-confidential minutes of the conference call with SOL of 23 March 2018, paragraph 28, ID 6243.

1779 Agreed non-confidential minutes of the conference call with SOL of 23 March 2018, paragraph 29, ID 6243.

example, one internal document provided by Linde indicates that Iberia is considered as [...].[1780]

(1356) Based on the above, the Commission concludes that the market for respiratory homecare services in Spain is characterized by significant barriers to entry which render entry of new suppliers unlikely within a time-frame relevant for the assessment of the competitive impact of the Transaction.

ii. Lack of countervailing buyer power

(1357) The market investigation did not provide any indication of customers' enjoying significant buyer power when purchasing respiratory homecare services. In particular, while one customer considers that the Transaction will not affect its bargaining position, two other customers believe that the Transaction will decrease their bargaining power vis-à-vis their suppliers in the negotiation process.[1781]

(1358) In addition, as demonstrated in Section 8.12.2.1.2.b.i, barriers to entry are also particularly high in the markets for the provision of respiratory homecare services and it is therefore unlikely that customers would be able to sponsor new entry or expansion and use such strategy to increase their bargaining power.

(1359) Another strategy of exercising buyer power that customers can employ is to switch to other existing suppliers. However, as has been set out in the Article 6(1)(c) Decision, the first phase investigation confirmed that, post-Transaction, customers located in Spain lack sufficient supply alternatives in case they would like to switch to alternative suppliers.

(1360) In particular, the market investigation explicitly asked whether and to which extent the different suppliers are considered as a viable alternative to Praxair/Linde for the supply of respiratory homecare services. For each supplier, respondents were asked to rate a number of important parameters, such as (i) overall service level, (ii) geographic footprint, (iii) quality of the product, (iv) reputation, (v) product range. The only supplier which is considered by the respondents to the market investigation as a viable alternative to the merged entity is Air Liquide.[1782]

(1361) The results of the second phase investigation confirmed the findings of the Article 6(1)(c) Decision rejecting the Notifying Parties' assertion that customers still would have a range of strong alternative suppliers in case of a price increase made by the Notifying Parties post-Transaction.

(1362) Since the Transaction essentially combines two of the three leading suppliers for respiratory homecare services, the choice of the customers would in practice be limited to the merged entity and Air Liquide.

(1363) Similarly, competitors indicated that post-Transaction the market concentration will be very high, with only two players covering the near totality of the market.[1783] As a result, possibilities of switching to other existing suppliers remain very limited and also it cannot be excluded that post-Transaction the general price level would rise limiting customers' incentive to switch to the only alternative supplier Air Liquide.

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1780 Linde's internal document, [...].

1781 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 28.

1782 Responses to RFI Q19 to customers of respiratory homecare services (Regional Health Authorities/ Hospitals- Spain), question 17.

1783 Responses to RFI Q32 to competitors of respiratory homecare services, question 24.4.

(1364) On this basis, the Commission concludes that customers active in the market for respiratory homecare services do not have strong bargaining power vis-à-vis suppliers, notably due to the lack of alternative suppliers.

iii. Conclusion

(1365) For the reasons set out in recitals (1348)-(1364), the Commission's assessment is that entry and buyer power are unlikely to countervail the anticompetitive effects arising from the Transaction in the markets for the provision of respiratory homecare services in Spain.

8.12.2.1.3. Conclusion

(1366) For the reasons set out in recitals (1348)-(1365), the Commission's assessment is that the Transaction would significantly impede effective competition with regard to horizontal non-coordinated effects in the markets for the provision of respiratory homecare services in Spain, including oxygen and non-oxygen therapies as well as the other potential sub-markets.

8.12.2.2. Portugal

8.12.2.2.1. Notifying Parties' view

(1367) The Notifying Parties argue that the Transaction would not significantly impede effective competition in the markets for respiratory homecare services in Portugal.

(1368) First, they claim that the respiratory homecare services market in Portugal is highly competitive, since competition, after the accreditation through the nationwide tender, occurs when providers "hunt" for prescriptions. Second, they argue that the increment in market share as a result of the Transaction would only be of approximately [5-10]% for all respiratory homecare services.[1784] Hence, according to the Notifying Parties, the Transaction would not eliminate an important competitive force from the market. In any event, the Notifying Parties claim that market shares are not a good proxy of the market as they are the results of old tenders and are expected to change due to the nationwide tender in 2018.[1785] Third, the Notifying Parties claim that several significant competitors will remain active in the market, including Air Liquide, Acail Gas Medicare, D'Ar Saude and SOL (Sonocare/Vivisol). Fourth, the Notifying Parties argue that barriers to entry are low and that there are no capacity constraints preventing the expansion of rivals since the main prerequisite is the ability to run an efficient distribution business. Fifth, according to the Notifying Parties, purchasers of respiratory homecare services are large institutions that are in a position to exert significant countervailing buyer power as regards price and service standards in tenders.[1786] Finally, the Notifying Parties claim that Linde and Praxair are not each other's closest competitors, since Praxair is a small competitor in the market and Linde often competes directly with larger competitors like Air Liquide and Acail Gas Medicare.[1787]

(1369) The Notifying Parties did not contest the Commission's findings in the Article 6(1)(c) Decision nor did they comment on the Commission's objections in relation to respiratory homecare services in Portugal in their Thematic Papers or in their Reply to the Statement of Objections.

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1784 Form CO, Chapter E, Section 8, paragraph 1681.
1785 Form CO, Chapter E, Section 8, paragraph 1699.
1786 Form CO, Chapter E, Section 8, paragraph 1710.
1787 Form CO, Chapter E, Section 8, paragraphs 1682 and 1712 to 1714.

8.12.2.2.2. Results of the market investigation and Commission's assessment

**a. Assessment of competitive constraint exercised by the Notifying Parties**

i. Market shares

(1370) It is settled case law that very large market shares may in themselves be evidence of the existence of a dominant position, in particular where the other operators on the market hold only much smaller shares.[1788]

(1371) In this case, the merged entity would have a very strong position in the market, irrespective of the segments considered. The combined market shares of the Notifying Parties would be comprised between [50-60]% and [50-60]% with an increment (brought by Praxair) of [0-5]% in an overall market for respiratory homecare services as well as in oxygen therapies and non-oxygen therapies separately. In these three potential markets, the combined entity would be the market leader, followed by Air Liquide, with a market share of [30-40]%-[40-50]%[1789] in all respiratory homecare services, [50-60]% in oxygen therapies and [20-30]%-[40-50]% in non-oxygen therapies.

(1372) If each therapy is considered separately, the combined entity would become the market leader in (i) GOX (with a combined market share of [50-60]% and an increment brought by Praxair of [5-10]%), (ii) COX (with a combined market share of [50-60]% and an increment brought by Praxair of [0-5]%), (iii) sleep (with a combined market share of [50-60]% and an increment brought by Praxair of [5-10]%) and (iv) ventilation (with a combined market share of [60-70]% and an increment brought by Praxair of [5-10]%). In these potential markets, the only other sizable competitor would be Air Liquide, with markets shares ranging from [20-30]-[30-40]% in ventilation to approximately [40-50]% in GOX. In the other potential sub-markets, the combined entity would be by far the second largest player in (i) LOX (with a combined market share of [30-40]% and an increment brought by Praxair of [5-10]%) and (ii) aerosol (with a combined market share of [20-30]% and an increment of [0-5]%), after Air Liquide (holding a market share of [60-70]% in LOX and [70-80]% in aerosol).

(1373) The remaining competitors (namely, Acail Gas Medicare, D'Ar Saude and SOL (Vivisol/Sonocare)) would all only have a minor market share in all potential markets (for instance, their individual market shares would be comprised between [0-5]% in the overall market for respiratory homecare services, close to [0-5]% in oxygen therapies and comprised between [0-5]-[5-10]% in non-oxygen therapies). As indicated in Section 8.12.1.2.1 above, some of these players are also not active in all therapies.

(1374) As a result, the Transaction would reduce the number of significant players from three to two, leaving Air Liquide as the only credible alternative to the merged entity post-merger.

(1375) As regards the Notifying Parties' argument that market shares are not a good proxy for the market as they are the results of old tenders and they are deemed to change as a result of the new nationwide tender in 2018, the Commission notes that, as also

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[1788] See Horizontal Merger Guidelines, para. 17; see also Case T-282/02 Cementbouw v. Commission, ECLI:T:2006:64, para 201; see also: Case 85/76 Hoffmann-La Roche v. Commission ECLI:C:1979:36, paragraph 39 et seq.

[1789] In some instances, the Notifying Parties provided market share in ranges for their competitors (Form CO, Annex 121).

acknowledged by the Notifying Parties and confirmed by the market investigation, after they are accredited, providers compete for patients directly in the market. Hence, the market shares of the Notifying Parties and their competitors should not in principle be influenced by the results of the next tender, which will only determine the qualified suppliers (especially in light of the fact that, as discussed below, the likelihood of new entries appears at the very least uncertain).

(1376) Finally, both the Authorities of the Portuguese National Health Service and one of the Notifying Parties' competitors in Portugal expressed concerns that the Transaction would have a negative impact on the markets. In particular, the Authorities of the Portuguese National Health Service confirmed that the Transaction would reduce the number of credible competitors in the markets to two (the merged entity and Air Liquide).[1790]

ii. Closeness of competition

(1377) Contrary to the Notifying Parties' claims, the market investigation revealed that Praxair and Linde are closely competing in the markets for respiratory homecare services in Portugal.

(1378) While Air Liquide is identified as the closest competitor to Linde, Praxair is also considered to be a close competitor, with the other providers considered as very distant competitors. In particular, when asked to rate how closely competitors in the markets for the provision of respiratory homecare services compete with Linde, customers considered Praxair and Air Liquide at the same level, namely as suitable alternatives to which they would likely turn if they were to switch from Linde.[1791]

(1379) In particular, Praxair is considered as comparable to the market leaders Linde and Air Liquide in terms of (i) geographic footprint, (ii) product range and (iii) quality of medical devices, while all other providers are not considered to be as competitive.[1792]

(1380) A very similar picture arises when customers were asked to rate how closely competitors compete with Praxair in the markets for the provision of respiratory homecare services on a scale from one to five. In this respect, respondents rated both Linde and Air Liquide as the closest competitors to Praxair (with a rating of 5 out of 5). On the other hand, other providers are not considered to compete closely with Linde.[1793]

(1381) The Commission further notes that internal documents submitted by the Notifying Parties also confirm the views of market participants, notably that Praxair and Linde are indeed close competitors together with Air Liquide. In particular, in a presentation submitted by Linde, Praxair is considered as [...]and also defined as "[…]".[1794] Similarly, in a presentation provided by Praxair in relation to the competitive landscape in the respiratory homecare market in Portugal, reference is made to the existence of only […] competitors active in this market, namely […].[1795] In addition, when considering "[...]" in the respiratory homecare markets in Portugal (and Spain), Praxair refers to […][1796]

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1790 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 27.
1791 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 23.
1792 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 23.
1793 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 24.
1794 Linde's internal document, [...].
1795 Praxair's internal document, "[...]".
1796 Praxair's internal document, [...].

(1382) In light of the results of the market investigation and the other information and evidence available to it, the Commission considers Praxair and Linde to be close competitors on the markets for respiratory homecare services.

(1383) The analysis also shows that Air Liquide is a close competitor to the Notifying Parties.

(1384) The question of who among Praxair, Linde and Air Liquide are the closest competitors is less relevant since all three companies offer a comparable service and are considered as close competitors by their customers as opposed to the other smaller companies.

iii. Removal of a significant competitive constraint

(1385) The market investigation also provided evidence that the Transaction would eliminate an important competitive force from the market. In this respect, Praxair appears to be a more important competitor than its market share would suggest. In this respect, the market investigation revealed that while Linde serves the majority of patients in Portugal, Praxair has been constantly growing since 2014 becoming the third player in the market.[1797] Other players appear to be significantly smaller than the three major players (Linde, Praxair and Air Liquide). The market investigation indicates that the main reason why Praxair managed to expand its activities and become an important competitor in Portugal, while other players still struggle to increase market shares, lies mainly in Praxair's access to financial resources[1798] that allows it to actively compete in the market and "hunt" for patients.

(1386) The significant competitive pressure exerted by Praxair on Linde is further evidenced by several internal documents submitted by the Notifying Parties at the Commission's request. In particular, in a presentation of Linde in relation to [...] when assessing [...], it is mentioned that […]. As a result, […].[1799] Similarly, when defining strategic priorities in the respiratory homecare services market, also Praxair refers to […][1800] and […].[1801] in order to […]

(1387) Finally, the fact that Praxair pre-merger exerts effective competitive pressure on Linde is further reflected in the replies to the market investigation. In this respect, respondents clearly ranked Praxair as belonging to the three leading suppliers of respiratory homecare services in Portugal, giving Praxair a lead over the remaining smaller competitors.[1802]

(1388) Based on these elements, the Commission concludes that the proposed Transaction would remove a significant competitive constraint on Linde in the markets for respiratory homecare services in Portugal, including oxygen and non-oxygen therapies as well as the other potential sub-markets.

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1797 Agreed non-confidential minutes of the conference call with [...] of 23 November 2017, paragraph 9, ID 4588.

1798 Agreed non-confidential minutes of the conference call with [...] of 23 November 2017, paragraph 9, ID 4588.

1799 Linde's internal document, [...] (ID4762-40224).

1800 Praxair's internal document, [...].

1801 Praxair's internal document "[...]", page 6 (ID 4596-66670).

1802 Responses to RFI Q32 to competitors of respiratory homecare services, questions 12-14. Responses to RFI 21 to the Authorities of the Portuguese National Health Service, questions 17-19.

**b. Countervailing factors**

i. Barriers to entry

(1389) The Notifying Parties claim that the barriers to entry for the respiratory homecare service markets are relatively low.

(1390) The entry of new players in a market as well as the expansion of existing ones acts as a competitive constraint on the merged entity. However, for entry to be considered a sufficient competitive constraint on the merging parties, it must be shown that entry is likely, timely and sufficient to deter or defeat any potential anti-competitive effects of the merger.[1803]

(1391) In the Article 6(1)(c) Decision, the Commission has already highlighted a number of significant barriers to entry.[1804] The second phase investigation, contrary to the Notifying Parties' view, confirmed the existence of such barriers to entry.

(1392) In particular, critical factors for success in the respiratory homecare services markets, as identified by respondents, include (i) the cost of the investments, (ii) the accreditation by the national health authority as well as (iii) technical capabilities in order to be able to deal with technical requests and logistics and (iv) sanitary skills. In this respect, competitors involved in the Commission's second phase investigation clearly indicated that the technical capabilities of a supplier are crucial for successful market entry and that the acquisition of these capabilities also requires significant investments and time. This result is in line with the results of the first phase market investigation, in the course of which a majority of customers indicated product quality as well as technical capabilities to be the most important parameters of competition that determine the success of an accredited provider of respiratory homecare services in Portugal in serving patients.[1805]

(1393) In addition, contrary to the Notifying Parties' claims, the Authorities of the Portuguese National Health Service indicated during the market investigation that they are not aware of any planned entry or expansion of respiratory homecare services providers in the markets in the next two years.

(1394) Similarly, the majority of the respondents are also not aware of any new player having entered the markets for the provision of respiratory homecare services in Portugal in the past five years. One of the Notifying Parties' competitors in Portugal indicated that SOL (Vivisol/Sonocare) entered the markets in 2014. However, the Commission notes that SOL (Vivisol/Sonocare), despite having entered four years ago, has not so far gained a meaningful position and market share in the relevant segments in which it is active (SOL (Vivisol/Sonocare) is not active in GOX and LOX). The same respondent indicated that a company has shown interest to enter the markets (for aerosol therapy) in Portugal, without however specifying the identity of this company and commenting on the timing or likelihood of this potential entry.[1806]

(1395) Internal documents provided by the Notifying Parties at the Commission's request also confirm the results of the market investigation. For example, in the presentation

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1803 Horizontal Merger Guidelines, paragraph 68.

1804 Commission's Article 6(1)(c) Decision, paragraph 772.

1805 Agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, paragraph 30, ID6404. Agreed non-confidential minutes of the conference call with SOL of 23 March 2018, paragraph 28-29, ID 6243.

1806 Responses to RFI Q32 to competitors of respiratory homecare services, question 15-17.

of Praxair regarding "[...]", it is referred to the existence of "[...]", including "[...]" as well as "[...]".[1807]

(1396) Based on the above, the Commission concludes that in Portugal the markets for respiratory homecare services is characterized by significant barriers to entry which render entry of new suppliers to be unlikely within a time-frame relevant for the assessment of the competitive impact of the Transaction.

ii. Lack of countervailing buyer power

(1397) The Notifying Parties claim that the demand side in Portugal as represented by the Portuguese National Health Service is highly concentrated leading to an increased ability to dictate the terms of supply. The Portuguese National Health Service as well as the individual health care insurance systems and the "Instituto de Proteção e Assistência na Doença" that covers civil servants are sufficiently large institutions which are all in a position to exert significant countervailing buyer power in the tendering process, both as regards price and service standards.[1808]

(1398) The Commission first notes that, even if the demand is concentrated (one nationwide tender held by the National Health Service), it cannot be concluded that the Portuguese National Health Service enjoys a strong bargaining position vis-à-vis suppliers. Notably, the results of the market investigation confirmed that suppliers are generally selected on the basis of quality and price of the products and in particular that the National Health Service is bound to select the (lowest) price offered by the providers during the public tender procedure as a reference price.[1809] In this respect, during the market investigation, the National Health Service explained that one of the main reasons why the new tender has been organised is indeed to obtain more favourable pricing and emphasized that such result will be however difficult to reach "given the market concentration and the market power held by the suppliers."[1810]

(1399) In addition, as demonstrated in Section 8.12.2.2.2.b.i, barriers to entry are also particularly high in the markets for the provision of respiratory homecare services and it is therefore unlikely that customers would be able to sponsor new entry or expansion.

(1400) Another strategy of exercising buyer power that customers can employ is to switch to other existing suppliers. However, as has been set out in the Article 6(1)(c) Decision, the first phase market investigation has shown a lack of sufficient supply alternatives, post-merger, in Portugal for customers which would like to switch to alternative suppliers.

(1401) In particular, the market investigation explicitly asked whether and to what extent the different suppliers are considered as viable alternative to Praxair/Linde for the supply of respiratory homecare services. For each supplier, respondents were asked to rate a number of parameters, such as (i) overall service level, (ii) geographic footprint, (iii) quality of the product, (iv) reputation, (v) product range. The only supplier which is considered by the respondents to the market investigation as a viable alternative to the merged entity is Air Liquide. In this respect, the market investigation also

1807 Praxair's internal document, [...].

1808 Form CO, Chapter E, Section 8, paragraph 1711.

1809 Responses to RFI Q21 to the Authorities of the Portuguese National Health Service, question 12.

1810 Agreed non-confidential minutes of the conference call with National Programme for Respiratory Diseases ("PNDR") of 23 November 2017, paragraph 10, ID 4588.

showed the importance of having alternative suppliers. In particular, one respondent indicated that it is "*important to offer a broad product portfolio with multiple suppliers and that all market participants have a relatively broad portfolio of contracts with manufacturers […] and have access to other devices from other manufacturers*".[1811]

(1402) The results of the second phase investigation confirmed the findings of the Article 6(1)(c) Decision rejecting the Notifying Parties' assertion that customers still would have a range of strong alternative suppliers in case of a price increase made by the Notifying Parties post-Transaction.[1812]

(1403) Since the Transaction essentially combines two of the three leading suppliers for respiratory homecare services, the choice of the customers would in practice be limited to the merged entity and Air Liquide. A number of respondents have confirmed these concerns in the second phase investigation.

(1404) As a result, switching opportunities to other existing suppliers remain very limited and also it cannot be excluded post-Transaction the general price level would rise limiting customers' incentive to switch to the only alternative supplier Air Liquide.

(1405) On this basis, the Commission concludes that customers active in the markets for respiratory homecare services do not have strong bargaining power vis-à-vis suppliers, notably due to the structure of the legal framework as well as the lack of alternative suppliers.

iii. Conclusion

(1406) For the reasons set out in recitals (1389)-(1405), the Commission's assessment is that entry and buyer power are unlikely to countervail the anticompetitive effects arising from the Transaction in the markets for the provision of respiratory homecare services in Portugal.

8.12.2.2.3. Conclusion

(1407) For the reasons set out in recitals (1370)-(1406), the Commission's assessment is that the Transaction would significantly impede effective competition with regard to horizontal non-coordinated effects in the markets for the provision of respiratory homecare services in Portugal, including oxygen and non-oxygen therapies as well as the other potential sub-markets.

8.12.2.3. Italy

(1408) In the Article 6(1)(c) Decision, the Commission left open the question as to whether horizontal non-coordinated anti-competitive effects would arise as a result of the Transaction in the markets for the provision of respiratory homecare services in Italy. On the one hand, the Commission noted that the Notifying Parties' combined market shares post-Transaction would be moderate in all possible markets where affected markets arise and that concentration levels would be contained (below 2000 with a delta of 250 in all possible markets). On the other hand, the Commission preliminarily considered that, due to the high level of complexity of the Italian system (with different regions having different systems of procurement of these

[1811] Responses to RFI Q32 to competitors of respiratory homecare services, questions 11 and 14. Responses to RFI Q21 to the authorities of the Portugal Health Service, question 16.

[1812] Agreed non-confidential minutes of the conference call with Air Liquide of 22 March 2018, paragraph 38, ID 6404. Agreed non-confidential minutes of the conference call with SOL of 23 March 2018, paragraph 25, ID 6243.

services and suppliers sometimes forming consortia to participate in specific tenders) market shares might not have been fully indicative of the Notifying Parties' and their competitors' competitive strength in the market. Finally, the Commission found that the results of the first phase investigation were not fully conclusive as to whether or not the Transaction would give rise to horizontal non-coordinated effects in Italy.

(1409) During the second phase investigation, the Commission undertook a more detailed assessment of the competitive situation in the markets for the provision of respiratory homecare services in Italy. The Commission notes that affected markets arise as a result of the Transaction only if potential markets for the provision of oxygen-based therapies (and sub-segments GOX and LOX) are considered. In those markets the Notifying Parties' combined market shares would be moderate, i.e. [20-30]% with an increment of [5-10]% brought by Linde. The merged entity would continue to face competition from a number of credible suppliers, namely Air Liquide, Sapio, Vivisol and Medicair, all with market shares ranging between [10-20]-[20-30]% in the three possible affected markets. The first and second phase market investigation also did not provide any compelling evidence that the competitive strength of these players and their ability to compete in tenders would materially differ depending on the Italian region and would be in any event different from what the market shares provided by the Notifying Parties would suggest. On the contrary, the market investigation did provide indications, in line with the Notifying Parties' arguments, that the markets for respiratory homecare services in Italy are generally competitive and that the Transaction would have limited impact due to the limited position of the Notifying Parties in these markets. In this respect, for example, [a competitor] stated that: "*There are a number of competitors with a strong experience. Neither Linde nor Praxair seem to have strong/dominant market shares in the Italian home care market for respiratory services. Therefore, in such market we do not expect a great impact of the transaction on competition*"[1813]

(1410) Therefore, the Commission considers that the Transaction would not significantly impede effective competition in the markets for the provision of respiratory homecare services in Italy. In any event, the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in relation to industrial, medical and specialty gases and helium would also exclude the possibility that the Transaction would lead to horizontal non-coordinated effects in the provision of respiratory homecare services in Italy. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

*8.12.3. Horizontal coordinated effects*

(1411) In the Article 6(1)(c) Decision the Commission considered that the Transaction raised serious doubts as to its compatibility with the internal market and the EEA Agreement with regard to horizontal coordinated effects with respect to respiratory homecare services in Spain, Portugal and Italy.

(1412) In the second phase investigation, the Commission did not find compelling evidence pointing to a material change of the incentives to coordinate of the merged entity and the remaining players post-Transaction. Thus, the Commission considers that the Transaction would not significantly impede effective competition with respect to the provision of respiratory homecare services in Spain, Portugal and Italy as a result of

[1813] [A competitor]'s response to RFI Q32 to competitors of respiratory homecare services, question 25 [ID 5902].

horizontal coordinated effects. The Commission notes in any event that the commitments submitted by the Notifying Parties on 10 July 2018 to remedy the horizontal non-coordinated effects of the Transaction in those and other gas markets would also exclude the possibility that the Transaction would lead to horizontal coordinated effects in those markets. Indeed, those commitments would fully remove the overlap between Linde's and Praxair's activities in those markets.

*8.12.4. Overall conclusion*

(1413) For the reasons set out in Section 8.12.2, the Commission's assessment is that the Transaction would significantly impede effective competition with regard to horizontal non-coordinated effects in the markets for the provision of respiratory homecare services in Spain and Portugal, including oxygen and non-oxygen therapies as well as the other potential sub-markets.

**8.13. Efficiencies**

(1414) The Notifying Parties have not put forward any claim that the Transaction would bring about efficiencies that would counteract the significant impediment of effective competition identified in the preceding recitals in Section 8.

**8.14. Conclusion on significant impediment of effective competition**

(1415) For the reasons set out in the preceding recitals in Section 8, the Commission considers that the Transaction would significantly impede effective competition as a result of **horizontal non-coordinated effects** in:

(a) the EEA tonnage markets for carbon monoxide, nitrogen and oxygen;

(b) the EEA small on-site plant markets for oxygen and nitrogen;

(c) the EEA bulk market for the supply of argon;

(d) the bulk markets for the supply of: argon in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Finland, Germany, Hungary, Italy, Norway, Portugal, Romania, Slovakia, Spain and Sweden; carbon dioxide in Austria, Benelux, Bulgaria, Cyprus, the Czech Republic, Denmark, Finland, Germany, Hungary, Ireland, Italy, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom; hydrogen in Germany; nitrogen in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom; and oxygen in Austria, Benelux, Bulgaria, the Czech Republic, Denmark, France, Germany, Hungary, Italy, Norway, Poland, Portugal, Romania, Slovakia, Spain and Sweden;

(e) the cylinder markets for the supply of: acetylene in Austria (all purity grades, high purity grades, standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Lithuania (all purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades),

Sweden (all purity grades, high purity grades and standard purity grades), the United Kingdom (all purity grades and standard purity grades); argon in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Finland (all purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); carbon dioxide (excluding dry ice) in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades and standard purity grades), France (all purity grades, high purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades, high purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); carbon monoxide in the Czech Republic (standard purity grades), Germany (standard purity grades), and Norway (standard purity grades); hydrogen in Austria (all purity grades and standard purity grades), Benelux (all purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades, high purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades and high purity grades), Slovakia (all purity grades and high purity grades), Spain (all purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); nitrogen in Austria (all

purity grades, high purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), Finland (all purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Portugal (all purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades); nitrous oxide in Portugal (standard purity grades), and Spain (standard purity grades); oxygen in Austria (all purity grades, high purity grades and standard purity grades), Benelux (all purity grades and standard purity grades), Bulgaria (all purity grades and standard purity grades), the Czech Republic (all purity grades, high purity grades and standard purity grades), Denmark (all purity grades, high purity grades and standard purity grades), France (all purity grades and standard purity grades), Germany (all purity grades, high purity grades and standard purity grades), Hungary (all purity grades, high purity grades and standard purity grades), Ireland (all purity grades and standard purity grades), Italy (all purity grades, high purity grades and standard purity grades), Norway (all purity grades, high purity grades and standard purity grades), Poland (all purity grades and standard purity grades), Portugal (all purity grades, high purity grades and standard purity grades), Romania (all purity grades, high purity grades and standard purity grades), Slovakia (all purity grades, high purity grades and standard purity grades), Spain (all purity grades, high purity grades and standard purity grades), Sweden (all purity grades, high purity grades and standard purity grades), and the United Kingdom (all purity grades and standard purity grades);

(f) the EEA cylinder markets for the supply of high purity grades of acetylene, argon, carbon dioxide excluding dry ice, hydrogen, nitrogen and oxygen;

(g) the markets for the supply of dry ice in Austria, Benelux, the Czech Republic, Denmark, Germany, Hungary, Ireland, Italy, Norway, Portugal, Romania, Spain, Sweden and the United Kingdom;

(h) the bulk markets for the supply of: medical nitrogen in Hungary, Germany, Italy, Norway, Portugal, Spain and Sweden; medical nitrous oxide in Spain; and medical oxygen in the Czech Republic, Germany, Hungary, Portugal, Romania, Slovakia and Spain;

(i) the cylinder markets for the supply of: medical argon in Spain and Portugal; medical carbon dioxide in the Czech Republic, Denmark, Germany, Hungary, Italy, Norway, Portugal, Slovakia, Spain and Sweden; medical nitric oxide in Germany, Italy, Norway and Spain; medical nitrogen in the Czech Republic, Denmark, Germany, Hungary, Norway, Portugal, Slovakia and Spain; medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia and Sweden; medical oxygen in Austria, the Czech Republic, Denmark, Germany, Italy, Norway, Portugal, Romania, Slovakia, Spain and Sweden;

(j) the EEA cylinder markets for the supply of (i) krypton, (ii) xenon, (iii) neon, (iv) brominated compound gas mixtures, (v) fluorine noble gas mixtures, (vi) hydrogen chloride noble gas mixtures, (vii) inert noble gas mixtures;

(k) the EEA bulk market for the supply of nitrogen trifluoride;

(l) the EEA cylinder markets for supply of the following ESGs: (i) ammonia, (ii) boron trichloride, (iii) chlorine, (iv) deuterium, (v) diborane and mixtures, (vi) dichlorosilane, (vii) germane and mixtures, (viii) halocarbon 116, (ix) halocarbon 23, (x) halocarbon 318, (xi) halocarbon 41, (xii) high purity nitrous oxide, (xiii) hydrogen bromide, (xiv) hydrogen chloride, (xv) hydrogen fluoride, (xvi) nitrogen trifluoride, (xvii) phosphine and mixtures, (xviii) silane and mixtures, (xix) silicon tetrachloride, (xx) silicon tetrafluoride, (xxi) sulphur hexafluoride, (xxii) tetrafluoromethane, (xxiii) trichlorosilane;

(m) the cylinder market for the supply of chemical gases in the following countries: (i) Austria, in relation to ethylene and sulphur dioxide; (ii) the Czech Republic, in relation to chlorine, ethane, ethylene, hydrogen sulphide, nitric oxide, sulphur dioxide and sulphur hexafluoride; (iii) Denmark, in relation to ammonia, butene, methane and nitric oxide; (iv) Germany, in relation to ethylene, carbon monoxide, methane and nitric oxide; (v) Italy, in relation to ethylene oxide and iso-butane; (vi) the Netherlands, in relation to butane, carbon monoxide, methane and propane; (vii) Norway, in relation to ammonia, butane, ethane and methane; (viii) Portugal, in relation to methane; (ix) Romania, in relation to ethylene, methane and propane; (x) Slovakia, in relation to methane; (xi) Slovenia, in relation to sulphur dioxide and sulphur hexafluoride; (xii) Spain, in relation to methane; (xiii) Sweden, in relation to methane; and (xiv) the United Kingdom, in relation to methane and propane;

(n) the cylinder market for the supply of calibration gases and other mixtures in the following countries: (i) Austria, in relation to environmental and special application mixtures; (ii) Bulgaria, in relation to environmental and special application mixtures; (iii) the Czech Republic, in relation to environmental, other calibration and special application mixtures; (iv) Denmark, in relation to environmental and special application mixtures; (v) Germany, in relation to environmental, other calibration and special application mixtures; (vi) Hungary, in relation to environmental, other calibration and special application mixtures; (vii) Italy, in relation to environmental mixtures; (viii) the Netherlands, in relation to environmental, other calibration and special application mixtures; (ix) Norway in relation to environmental and special application mixtures; (x) Poland, in relation to special application mixtures; (xi) Portugal, in relation to environmental and special application mixtures; (xii) Romania, in relation to special application mixtures; (xiii) Slovakia, in relation to other calibration and special application mixtures; (xiv) Slovenia, in relation to environmental, other calibration and special application mixtures; (xv) Spain, in relation to environmental and other calibration mixtures; (xvi) Sweden, in relation to environmental and special application mixtures; and (xvii) the United Kingdom, in relation to special application mixtures.

(o) the global market for the wholesale supply of helium;

(p) the global market for the retail supply of helium in cryogenic portable tanks;

(q) the markets for retail supply of helium in Austria, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, the Netherlands, Norway, Portugal, Romania, Slovakia, Spain, Sweden and the UK;

(r) the potential sub-markets for retail supply of standard purity helium in cylinders in Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Germany, Hungary, Italy, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the UK;

(s) the potential sub-markets for retail supply of high purity helium in cylinders in Denmark and Norway;

(t) the potential sub-markets for retail supply of helium in dewars in Germany and Norway;

(u) the potential sub-markets for retail supply of helium in tube trailers in Germany, Italy, the Netherlands, Portugal and Spain;

(v) the markets for the provision of respiratory homecare services in Spain and Portugal, including oxygen and non-oxygen therapies as well as the other potential sub-markets.

(1416) In particular, in relation to the markets mentioned in the previous recital, the Commission is of the view that the Transaction would result in the creation or strengthening of a dominant position in some of those markets[1814] and, at least, in the removal of a significant competitive constraint on all the other markets.

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1814 That is, with respect to **bulk supply of industrial gases**, the markets for the supply of carbon dioxide in Ireland and Norway, oxygen in Norway and argon in Norway, as well as the bulk markets for the supply of argon in Austria, Czech Republic, Finland, Spain, Sweden, Italy, Germany, Hungary, Romania, Bulgaria and Denmark and at EEA level; carbon dioxide in Cyprus, Czech Republic, Denmark, Finland, Germany, Sweden, Hungary and Romania; nitrogen in Austria, Czech Republic, Portugal, Romania, Sweden, United Kingdom and Hungary; and oxygen in Sweden, Germany, Romania and Slovakia.
With respect to **cylinders supply of industrial gases**, the markets for the supply of carbon monoxide (standard purity) and nitrogen (high purity) in the Czech Republic and for the supply of carbon dioxide excluding dry ice (high purity), hydrogen (high purity) and nitrogen (high purity) in Norway, Austria (for the supply of carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice); Bulgaria (for the supply of acetylene (standard purity), argon (all purity grades), argon (standard purity), hydrogen (all purity grades), oxygen (all purity grades), oxygen (standard purity)); Czech Republic (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity),carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Denmark (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice (all purity grades), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (high purity), nitrogen (high purity), oxygen (all purity grades), oxygen (standard purity)); Finland (for the supply of argon (all purity grades), argon (standard purity), nitrogen (all purity grades), nitrogen (standard purity)); Germany (for the supply of acetylene (all purity grades), acetylene (standard purity), dry ice, hydrogen (all purity grades), hydrogen (high purity), hydrogen (standard purity)); Hungary (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (standard purity)); Ireland (for the supply of argon (all purity grades), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, oxygen (all purity grades), oxygen (standard purity)); Italy (for the supply of carbon dioxide excluding dry ice (high purity)); Norway (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (standard purity),

oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Romania (for supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), hydrogen (all purity grades), hydrogen (high purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); Slovakia (for the supply of argon (high purity), hydrogen (high purity)); Sweden (for the supply of acetylene (all purity grades), acetylene (high purity), acetylene (standard purity), argon (all purity grades), argon (high purity), argon (standard purity), carbon dioxide excluding dry ice, carbon dioxide excluding dry ice (high purity), carbon dioxide excluding dry ice (standard purity), dry ice, hydrogen (all purity grades), hydrogen (standard purity), nitrogen (all purity grades), nitrogen (high purity), nitrogen (standard purity), oxygen (all purity grades), oxygen (high purity), oxygen (standard purity)); the United Kingdom (for the supply of acetylene (all purity grades), acetylene (standard purity), argon (all purity grades), argon (standard purity), oxygen (all purity grades), oxygen (standard purity)).

With respect to **medical gases**, the markets for the bulk supply of medical nitrogen in Hungary, Norway, and Sweden; medical oxygen in the Czech Republic, Hungary, Romania, and Slovakia; and the cylinder supply of medical carbon dioxide in the Czech Republic, Hungary, Norway, and Sweden; the markets for the cylinder supply of medical carbon dioxide in the Czech Republic, Hungary, Norway and Sweden; medical nitric oxide in Norway and Spain; medical nitrogen in the Czech Republic, Hungary, Norway, and Slovakia; medical nitrous oxide in the Czech Republic, Denmark, Germany, Hungary, Norway, Slovakia and Sweden; medical oxygen in the Czech Republic, Norway, Romania, Slovakia, and Sweden .

With respect to **noble gases and noble gas mixtures**, the EEA markets for the cylinder supply of brominated compound gas mixtures, fluorine noble gas mixtures and hydrogen chloride noble gas mixtures.

With respect to **ESGs**, the EEA markets for the cylinder supply of chlorine, deuterium, hydrogen bromide, hydrogen chloride, hydrogen fluoride, phosphine and mixtures, silane and mixtures, silicon tetrafluoride, sulphur hexafluoride, and trichlorosilane.

With respect to **chemical gases**, (i) Czech Republic, in relation to chlorine, ethane, ethylene and sulphur dioxide; (ii) Denmark, in relation to butene, methane and nitric oxide; (iii) Germany, in relation to nitric oxide; (iv) Italy, in relation to ethylene oxide; (v) the Netherlands, in relation to methane, (vi) Norway, in relation to ammonia, ethane and methane, (vii) Romania, in relation to ethylene and propane, (viii) Slovakia, in relation to methane; (ix) Slovenia, in relation to sulphur dioxide; and (x) Sweden, in relation to methane.

With respect to **calibration gases and other gas mixtures**, (i) Bulgaria, in relation to special application mixtures; (ii) Czech Republic, in relation to environmental, other calibration and special application mixtures; (iii) Denmark, in relation to special application mixtures; (iv) Hungary, in relation to other calibration and special application mixtures; (v) Norway, in relation to special application mixtures; (vi) Slovakia, in relation to other calibration and special application mixtures; (vii) Slovenia, in relation to other calibration and special application mixtures; and (viii) Sweden, in relation to environmental and special application mixtures.

With respect to the **global wholesale supply of helium**.

With respect to the **helium retail supply,** in the following markets (and potential sub-markets) (i) in Austria: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (ii) in Bulgaria: the potential sub-market for the supply of standard purity cylinders; (iii) in the Czech Republic: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (iv) in Denmark: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (v) in Germany: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (vi) in Hungary: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (vii) in Italy: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (viii) in the Netherlands: the helium retail market, as well as the potential sub-markets for the supply of standard purity cylinders and tube trailers; (ix) in Norway: the helium retail market, as well as in the potential sub-markets for the supply of standard purity cylinders and high purity cylinders; (x) in Poland: the potential sub-market for the supply of standard purity cylinders; (xi) in Portugal: the helium retail market and the potential sub-market for the supply of tube trailers; (xii) in Romania: the helium retail market and the potential sub-market for the supply of standard purity cylinders; (xiii) in Slovakia: the potential sub-market for the supply of standard purity cylinders; (xiv) in Spain: the potential sub-markets for the supply of standard purity cylinders and tube trailers; (xv) in Sweden: the helium retail

(1417) Further, for the reasons set out in Sections 8.9 and 8.10 the Commission considers that the Transaction would significantly impede effective competition as a result of **vertical non-coordinated effects** in relation to the vertical links between the upstream global market for the wholesale supply of helium (including access to helium sources) and the downstream markets for the retail supply of helium (and potential sub-markets) identified in Tables 51, 53 and 54.

(1418) In conclusion, the Commission finds that the Transaction would significantly impede effective competition in the internal market or a substantial part of it, within the meaning of Article 2(3) of the Merger Regulation, and within the territory covered by the EEA Agreement or a substantial part of it, within the meaning of Article 57(1) of that Agreement.

## 9. COMMITMENTS

### 9.1. Introduction

(1419) In order to address the competition concerns identified by the Commission, the Notifying Parties submitted a first set of commitments on 20 June 2018 (“the Initial Commitments") pursuant to Article 8(2) of the Merger Regulation. The Commission launched a market test of the Initial Commitment on 22 June 2018 (the "Market Test").

(1420) Based on the results of the Market Test, the Commission gave the Notifying Parties its feedback on the Initial Commitments on 4 July 2017. Overall, the Commission considered that the scope of the Initial Commitments was capable of eliminating the competition concerns entirely in all markets where concerns had been identified, subject to a number of improvements.

(1421) Following the feedback from the Commission, the Notifying Parties submitted an amended set of commitments on 4 July 2018 ("the Revised Commitments") and a final set of commitments on 10 July 2018 ("the Final Commitments").

(1422) The Final Commitments are attached as Annex III to this Decision and form integral part of this Decision.

### 9.2. The Initial Commitments

*9.2.1. Description of the Initial Commitments*

(1423) The Initial Commitments consist of three components: the "EEA Commitments", the "SIAD Commitments" and the "Helium Sourcing Commitments".

(1424) The **EEA Commitments** comprise a commitment to divest Praxair’s entire gas business in the EEA[1815] including Praxair's European engineering capabilities and Rivoira but excluding SIAD (the "EEA Divestment Business") to a single suitable

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market and the potential sub-market for the supply of standard purity cylinders; and (xvi) in the United Kingdom: the helium retail market and the potential sub-market for the supply of standard purity cylinders.

[1815] The legal entities to be divested are incorporated in [...] (these countries are referred to as the “EEA Divestment Countries”). Praxair (including Rivoira) also achieves some revenues in the EEA from sales of gas products in countries in which it has no legal entities or gas plants. Such countries are: [...] (the "Other EEA Countries"). All such sales generated out of the EEA Divestment Countries form part of the EEA Divestment Business. That means that all the sales to customers located outside the EEA Divestment Countries which originate from Praxair's legal entities or gas plants located in the EEA Divestment Countries are considered to form part of the EEA Divestment Business.

purchaser ("the Purchaser") within a set timeframe. The divestiture would be implemented by way of (a) share and/or asset purchase agreement(s), which would cause the transfer to the Purchaser of all relevant legal entities, assets and personnel related to the EEA Divestment Business.

(1425) Specifically, the EEA Divestment Business includes the following:

(a) the production, filling and transfilling facilities, including dry ice plants and remote operating centres and all production machinery, equipment and tooling;

(b) tankers, containers, dewars, cylinders, pipelines, storage tanks, loading facilities, ship terminals, distribution equipment and vehicles (including […] carbon dioxide ships and the option for the Purchaser to buy […]), finished goods inventories and other materials pertaining (in full or in part) to the EEA Divestment Business;

(c) all intellectual property rights (by way of assignment, non-assertion or […] licence) owned by Praxair, which are used in conducting the EEA Divestment Business. Trademarks which are currently used by the EEA Divestment Business and are also used by Praxair and/or undertakings controlled by Praxair[1816] outside the EEA would be licensed to the Purchaser under a [...] licence for up to [...] years;

(d) all relevant data, books and records, including but not limited to third-party supply and customer records pertaining (in full or in part) to the EEA Divestment Business;

(e) the personnel employed in the EEA Divestment Business;

(f) all governmental licences, permits and authorisations related to the EEA Divestment Business, including but not limited to marketing authorisations, manufacturing licences, certificates for the distribution of medicinal products/medical devices and environmental licences;

(g) all customer contracts, framework agreements and orders pertaining to the EEA Divestment Business (including, among other relevant contracts, helium wholesale supply agreements and Praxair's tonnage contracts related to the EEA Divestment Business);

(h) in relation to helium sourcing:

– Praxair's helium sourcing contract with [...]in […];

– Praxair's back-to-back agreement with [...]for […];

– an option to acquire a portion of Praxair's back-to-back supply agreement with [...] in relation to […];

– a back-to-back agreement to be entered with Praxair for up to a determined amount of helium sourced from [...] until the end of […]; and

– a fleet of helium cryogenic portable tanks sufficient to operate the EEA Divestment Business on a standalone basis and representative of Praxair's current global fleet in terms of age and quality profile.

[1816] Affiliated Undertakings are defined as undertakings controlled by the Notifying Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the Merger Regulation and in light of the Consolidated Jurisdictional Notice.

(i) Praxair's European engineering capabilities in relation to the on-site, bulk and cylinder activities currently relevant to the EEA Divestment Business, including:

[…];

(j) all third-party procurement and sourcing contracts (including swap agreements and contracts with carbon dioxide feed gas suppliers) concluded by the EEA Divestment Business.

(1426) In addition, the EEA Commitments include a number of transitional arrangements for the supply of (i) the gases that are currently sourced by the EEA Divestment Business from Praxair (including gases sourced from third parties on the basis of contracts concluded by Praxair at global level), (ii) gases related equipment, both for a period of up to [...] and (iii) the provision of services, including technical assistance for a period of up to [...].

(1427) In relation to medical gases, the EEA Commitments provide for a non-exclusive transitional supply agreement with the Purchaser pursuant to which Praxair would agree to supply [...] to the Purchaser for a term of [...] years, extendable at the Purchaser's option by up to a further [...] years.

(1428) In relation to the purification of Praxair's [...], which is currently performed by [...] under a contractual arrangement, the Notifying Parties commit not to terminate such contract until the end of [...], unless otherwise agreed with the Purchaser. Any changes made to the terms and conditions of that contract would be notified to and need to be approved by the Monitoring Trustee, subject to the positive opinion of the Commission in cases where the Monitoring Trustee considers the change to be substantial.

(1429) In relation to the supply of carbon dioxide in the United Kingdom and Ireland, the EEA Commitments provide that the merged entity would retain access rights to Praxair's [ship terminals], all of which are included in the EEA Divestment Business, as well to […]. To that end, the EEA Divestment Business would negotiate with the merged entity in good faith with a view to agreeing a contractual access agreement. The contractual access agreement could include provisions related to [...] (see Annex 4 to the Schedule to the EEA Commitments).

(1430) The implementation of the Transaction is subject to the Notifying Parties or the divestiture trustee entering into a final binding sale and purchase agreement for the sale of the EEA Divestment Business and the Commission approving the Purchaser and the terms of sale.

(1431) The **SIAD Commitments** provide for a share swap whereby Praxair would transfer its direct and indirect shareholdings in SIAD and in undertakings controlled by SIAD to Flow Fin, while Flow Fin would transfer to Praxair (and ultimately to the EEA Divestment Business) its direct and indirect shareholdings in Rivoira and in undertakings controlled by Rivoira ("the Share Swap"). SIAD is active in the production and supply of industrial gases, medical gases, specialty gases and the retail supply of helium in Austria, Bulgaria, Croatia, the Czech Republic, Hungary, Italy, Poland, Romania, Slovakia and Slovenia ("the SIAD Countries"). Moreover, SIAD provides respiratory homecare services in Italy. As a result of the Share Swap, SIAD (together with the undertakings controlled by SIAD) would be solely controlled by SIAD's current other shareholder (Flow Fin), while Rivoira (together with the undertakings controlled by Rivoira) would be solely controlled by the Purchaser of the EEA Divestment Business.

(1432) In addition, the SIAD Commitments include a number of transitional arrangements for the supply of products and services currently provided by Praxair (including from entities that are part of the EEA Divestment Business) to SIAD, and by SIAD to Praxair (including to entities that are part of the EEA Divestment Business). In particular, the SIAD Commitments provide for the following transitional arrangements for the benefit of SIAD: […].

(1433) While helium sourcing contracts forming part of the EEA Divestment Business are included in the EEA Commitments, the **Helium Sourcing Commitments** provide for the divestiture of additional helium sourcing contracts (either by way of transferring existing sourcing contracts or by way of entering into back-to-back supply arrangements) to the buyer(s) of the divestiture package(s) to be agreed with other competition authorities than the Commission, in particular the United States Federal Trade Commission.

(1434) The additional helium sourcing contracts to be divested under the Helium Sourcing Commitments ("the Helium Sourcing Divestment Business") would comprise an amount of helium sourcing contracts such that, when combined with the helium sourcing contracts that form part of the EEA Divestment Business, the overall helium sourcing volume divested globally would be the equivalent of virtually all of Praxair's existing global helium sourcing volumes.

*9.2.2. Results of the Market Test*

(1435) As part of the market test launched on 22 June 2018 questionnaires were sent to 500 market participants among the Notifying Parties' competitors, customers and helium suppliers, eliciting over 320 responses, and an interview was conducted with SIAD.

(1436) While most of the respondents did not provide an informative reply,[1817] the respondents which did reply did not identify any major shortcomings of the Initial Commitments. They suggested, however, a few improvements to the terms of the transitional supply agreements, the helium sourcing assets included in the EEA Commitments, and the Helium Sourcing Commitments.

(1437) The results of the Market Test are described in more details in Sections 9.2.2.1 to 9.2.2.4.

9.2.2.1. The EEA Commitments

(1438) The vast majority of the respondents to the Market Test expressing a view on this matter stated that the EEA Divestment Business includes all necessary tangible and intangible assets for the Purchaser to operate and to effectively compete.[1818] The vast majority of customers responding to the Market Test also indicated that there are no significant risks as regards the implementation of the transfer of customer contracts to be divested to the Purchaser.[1819] While some customers pointed to the existence of

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[1817] Most respondents have selected the answer option "we do not know" in the majority of their answers to the Market Test questionnaires. When describing the responses to the Market Test, "we do not know" responses will not be considered for the purpose of quantitative statements such as "a majority" or "most respondents".

[1818] Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 3, Q61 Market Test – Customers of medical gases and homecare services, question 3, and Q62 – Market test – Competitors and potential buyers, question 3.

[1819] Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 4, and Q61 Market Test – Customers of medical gases and homecare services, question 4.

change of control clauses for certain contracts[1820], the vast majority of respondents stated that they would consider remaining a customer of the EEA Divestment Business post-divestment.[1821] Some competitors also identified as potential risks entailed in the transfer of customer contracts the existence of change of control provisions and the potential need for customers to qualify the new supplier in relation to certain specific products, such as ESGs.[1822]

(1439) As to the scope of the divestment package, some respondents submitted that the full scope of the [...] contracts, including all additional products and services offered, should be divested. Several respondents pointed to advantages of having a single supplier for these products and services[1823] and some stated that they would not consider buying such services from a different supplier than their supplier of medical gases.[1824] Similarly, in relation to [...], some competitors explained that transitional supply agreements should also cover maintenance services and that the options included in the Initial Commitments (to either purchase [...] components and/or to take a [...] license with access to the components) should also provide for the access to the procedures to assemble such components and fill in the gases.[1825] Finally, some customers pointed to the need to provide for transitional supply agreements for products retained by the Notifying Parties in relation to process plants.[1826]

(1440) In addition, several customers expressed the view that the duration of the transitional services was too short. In particular, certain customers of [...] expressed the view that transitional supply agreements should last longer.[1827]

(1441) Furthermore, customers of ESGs explained that while they may source these types of gases and […][1828] in the context of separate purchase processes, they often buy them from the same supplier. If they were to change their supplier of […], requalification would take several months.[1829]

(1442) As regards [...], the Market Test did not provide evidence that the arrangements provided for by the Initial Commitments are not adequate, especially in relation to the possibility for the EEA Divestment Business to purchase some quantities of crude and/or purified [...] from third parties and/or to have [...] purified by third parties on the market, at the end of the transitional period.[1830] However, some respondents indicated that the duration of the transitional agreement for the purification of [...] should be longer.[1831]

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1820 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 4.1.

1821 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 7.1, and Q61 Market Test – Customers of medical gases and homecare services, question 6.1.

1822 Responses to RFI Q62 – Market test – Competitors and potential buyers, question 12.1.

1823 Responses to Q61 Market Test – Customers of medical gases and homecare services, question 5.

1824 Responses to Q61 Market Test – Customers of medical gases and homecare services, question 5.

1825 Responses to RFI Q62 – Market test – Competitors and potential buyers, question 10.

1826 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 5.

1827 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 5.

1828 Praxair provides these products to customers in the EEA through its entity […], not included in the Initial Commitments.

1829 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 6.

1830 Responses to RFI Q62 – Market test – Competitors and potential buyers, question 9.

1831 Responses to RFI Q62 – Market test – Competitors and potential buyers, question 16.

(1443) As regards helium, the results of the Market Test suggest that the sourcing portfolio included in the EEA Divestment Business is sufficiently diversified.[1832] However, some market participants pointed out that (i) the sourcing portfolio relies on contracts that will expire in a near future[1833] and that (ii) due to its geographic location, the [...] source is less economic than other sources (such as [...] and [...]) for the supply of helium in the EEA.[1834]

(1444) Moreover, the vast majority of the respondents indicated that the viability and competitiveness of the EEA Divestment Business may be affected by the fact that its helium sourcing mostly relies on back-to-back contracts with the merged entity.[1835] For instance, Messer indicated that "*it is a significant disadvantage to have a back-to-back contract versus direct contract with a producer*" since *"conditions may be worse and there is no long-term relationship with the producer.*"[1836] Uniper also explained that long-term back-to-back usually include a price-revision clause and thus could "*become a significant disadvantage when the first price revision begins. In such case, Linde alone will negotiate the contractual volumes, the contract price and potentially other contractual arrangements with* [...]. *Linde will – given the legal possibility to do so – very likely adapt the contract to its needs and in its own favor. The secondary buyer has no choice but to accept the outcome and […] – never gets the chance to negotiate individual and/or more favorable conditions than his competitor*."[1837] [A competitor] also indicated that back-to-back contracts may be less competitive that direct sourcing agreements in situations of crises (such as shortages or supply shortfall).[1838]

(1445) The majority of respondents also indicated that the helium cryogenic portable tank fleet to be divested is sufficiently large to enable the EEA Divestment Business to be operated on a standalone basis.[1839]

(1446) Overall, the majority of respondents currently not purchasing products from Praxair, indicated that they would consider the EEA Divestment Business as a possible supplier post-divestment, although some of them specified that this will also depend on the competitiveness of the Purchaser's offer.[1840]

(1447) Lastly, many customers explained that the capability of the Initial Commitments to restore competition post-Transaction would depend on the identity of the

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1832 Responses to RFI Q62 – Market test – Competitors and potential buyers, question 8.1, notably the replies of Messer (ID7840), Matheson (ID7975), and [a competitor]'s (ID7601).

1833 Westfalen's reply to RFI Q62 – Market test – Competitors and potential buyers, question 8.1 (ID7777).

1834 Uniper's reply to RFI Q62, question 8.1 (ID7739) and Westfalen's reply to RFI Q62, question 8.1 (ID7777).

1835 Responses to RFI Q62, question 8.2.1 Matheson is the only respondent indicating that the secondary sourcing contracts included in the EEA Divestment Business do not affect its competitiveness on the ground that "*secondary supply agreements that are truly back-to-back and with terms that are similar to the direct to source contract*" are competitive and viable (ID7975).

1836 Messer's reply to RFI Q62, question 8.2 ID7840. Also, SIAD's reply to RFI Q62, question 8.2.1 ID7384: "*competition is lower when buying from a secondary source because of the higher price.*"

1837 Uniper's reply to RFI Q62, question 8.2 (ID7739).

1838 [A competitor]'s reply to RFI Q62, question 8.2 (ID7601).

1839 Responses to RFI Q62, question 8.4. Market participants also indicated that the most relevant criteria to assess the quality of cryogenic portable tanks are the holding time without loss, the pressure, the size, and the age, as well as the maintenance history and the existence of a shield (Responses to RFI Q62, question 8.5).

1840 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 8, and Q61 Market Test – Customers of medical gases and homecare services, question 7.

Purchaser.[1841] In this respect, many customers pointed to the fact the Purchaser should have experience in the industrial gas business.[1842]

9.2.2.2. The SIAD Commitments

(1448) Most respondents expressing a view on this matter (i) consider that the SIAD Commitments include all necessary tangible and intangible assets to allow SIAD to operate and compete effectively,[1843] and (ii) did not identify difficulties or risks that could impede the implementation of the SIAD Commitments.[1844] This is notably confirmed by SIAD itself, which indicated that the implementation of the Share Swap will be facilitated by the fact that "*the controlling shareholder remains the same (FlowFin).*"[1845]

(1449) Moreover, the majority of SIAD's current customers indicated that they would consider remaining a customer of SIAD following the implementation of the Share Swap.[1846] As regards market participants that are not currently customers of SIAD, a significant number of them stated that they would consider SIAD as possible supplier post-implementation of the Share Swap. [1847]

(1450) As regards the transitional arrangements provided for by the SIAD Commitments, no respondent expressed reservations about their scope and terms and conditions (notably the duration).[1848]

9.2.2.3. The Helium Sourcing Commitments

(1451) A majority of the respondents to the Market Test indicated that the mere fact that the overall helium sourcing volume divested globally (as a result of the combination of the Helium Sourcing Commitments and the EEA Commitments) would be equivalent to virtually all of Praxair's existing global helium sourcing volumes, would be insufficient to ensure the creation of a viable and effective competitor able to replicate the pre-Transaction competitive conditions. Indeed, most informative responses stressed the fact that the Helium Sourcing Commitments did not specify in detail the assets to be included in their scope and were therefore too vague. [1849]

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1841 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 16.

1842 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 7.2, notably the replies of […] (ID7883) ("*[...] considers that the Purchaser shall be an industrial, able to demonstrate high safety standards, and not an investment fund*"), […] (ID7902) ("*Purchaser should have experience in the gas business and especially with ESGs and a global footprint (sourcing, engineering) to support and grow the European business*"), and […] (ID7831) ("*the Purchaser needs to be an experienced industrial gas company*").

1843 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 10; and Q61 Market Test – Customers of medical gases and homecare services, question 9.

1844 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 11 and Q61 Market Test – Customers of medical gases and homecare services, question 10. Also, Responses to Q62 Market Test – Competitors and potential buyers, question 19.

1845 SIAD's reply to Q62, question 19 (ID7384).

1846 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 12, notably the replies of […] (ID7813 – "*Praxair stake in SIAD is not relevant for business decision*"), […] (ID7241 - "*We There is no reason not to work with them anymore*") and […] (ID7207 – "*No reason to change*"). Also, responses to Q61 Market Test – Customers of medical gases and homecare services, question 11.

1847 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 13 and Q61 Market Test – Customers of medical gases and homecare services, question 12.

1848 Responses to Q62 Market Test – Competitors and potential buyers, questions 20 to 23.

1849 Responses to Q62 Market Test – Competitors and potential buyers, question 23.

(1452) In particular, several respondents indicated that:

– the Helium Sourcing Commitments should include qualitative criteria in order to ensure the competitiveness of the sourcing portfolio notably in terms of diversity, reliability, and duration;

– the Helium Sourcing Divestment Business should not be limited to sourcing contracts and should also include other assets, notably (i) an adequate cryogenic portable tank fleet[1850] and (ii) BLM assets.[1851]

(1453) Moreover, although some customers pointed to the existence of change of control clauses, the results of the Market Test do not suggest the existence of meaningful difficulties that could impede the implementation of the transfer of the sourcing contracts to be divested as part of the Helium Sourcing Commitments. [1852]

9.2.2.4. Overall results of the Market Test

(1454) Overall, the Market Test provided a positive feedback on the Initial Commitments. With the exception of the technical aspects discussed earlier in Section 9.2.2, respondents were in general favourable to the Initial Commitments. While some respondents indicated that the competitive conditions in the EEA gas industry would deteriorate following the Transaction and the implementation of the Initial Commitments, their explanations were insufficient to raise concerns in this regard.[1853]

(1455) The Market Test produced some negative feedback in relation to the question on the suitability of the Initial Commitments to ensure that, once Linde and Praxair have merged, the current competitive conditions of the EEA gas industry would remain unchanged.[1854] However, respondents who expressed a negative view either complained about the current not very competitive condition of the markets concerned (independently from the Transaction), and/or had an interest in acquiring parts of the EEA Divestment Business or assets related to the Helium Sourcing Commitments to improve current market conditions, and/or did not understand the scope and effects of Initial Commitments.[1855] As regards the EEA Commitments, many customers explained that the capability of the Initial Commitments to restore competition post-Transaction would depend on the identity of the Purchaser.[1856] In this respect, many customers pointed to the fact the Purchaser should have

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1850 Notably, Uniper's reply to RFI Q62, question 24 (ID7739).

1851 Notably, Westfalen's reply to RFI Q62, question 23 (ID7777) and Uniper's reply to RFI Q62, question 28 (ID7739).

1852 Responses to Q62 Market Test – Competitors and potential buyers, question 24.

1853 Some respondents complained, for example, that the current market conditions are not competitive enough and that the Initial Commitments should aim at ensuring a higher level of competition than the one currently in place.

1854 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 16; Q61 Market Test – Customers of medical gases and homecare services, questions 25 and 26 and Q62 Market Test – Competitors and potential buyers, questions 27 and 28.

1855 Notably, the responses to RFI Q62 Market Test – Competitors and potential buyers, questions 27 and 28, of [a competitor] (ID7601) and Uniper (ID7739). Also, the response to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 16 of […] (ID7485) and […] (ID7541).

1856 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 16.

experience in the industrial gas business, in line with the purchaser criteria included in the EEA Commitments.[1857]

*9.2.3. Commission's assessment*

9.2.3.1. Introduction

(1456) The Commission recalls that, to be acceptable, commitments submitted by the parties to a merger must be capable of rendering the concentration compatible with the internal market in such a way that they will prevent a significant impediment of effective competition. The commitments have to eliminate the competition concerns entirely and they have to be comprehensive and effective from all points of view. Furthermore, the commitments must be capable of being implemented effectively within a short period of time as the conditions of competition on the market will not be maintained until the commitments have been fulfilled.[1858] According to the Commission notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 ("the Remedies Notice"), structural commitments, in particular divestitures, proposed by the parties will meet these conditions only in so far as the Commission is able to conclude with the requisite degree of certainty that it will be possible to implement them and that it will be likely that the new commercial structures resulting from them will be sufficiently workable and lasting to ensure that the significant impediment to effective competition will not materialise.[1859]

(1457) In light of these basic conditions for acceptable commitments, the Commission notes that the scope of the Initial Commitments would fully remove (i) the overlap between the Notifying Parties' activities in all markets where they overlap as well as (ii) any link between the Notifying Parties' activities in all markets where they are vertically related, including in (but not limited to) all the affected markets in which the Transaction would lead to a significant impediment of effective competition as a result of horizontal non-coordinated effects or vertical non-coordinated effects identified in Section 8.14. Therefore, in general, the scope of the Initial Commitments would entirely remove the competition concerns identified in Section 8.

(1458) The Commission considers that the capability of the Initial Commitments to prevent the significant impediment of effective competition identified in Section 8 is not undermined by the split in three parts, for the following reasons.

(1459) First, as regards the split of the helium sourcing assets between the EEA Divestment Business and the Helium Sourcing Commitments, the Commission notes that it would not be viable to divest the whole of the assets included in the Helium Sourcing Commitments to the Purchaser of the EEA Divestment Business as the EEA Divestment Business alone does not include sufficient retail assets (customers and distribution network) to support a divestiture of the entire Helium sourcing to the Purchaser. The lack of sufficient retail sales to cover the costs of sourcing obligations

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1857 Responses to RFI Q60 Market Test – Customers of industrial gases, specialty gases and helium, question 7, notably the replies of […] (ID7883) ("*[…] considers that the Purchaser shall be an industrial, able to demonstrate high safety standards, and not an investment fund*"), […] (ID7902) ("*Purchaser should have experience in the gas business and especially with ESGs and a global footprint (sourcing, engineering) to support and grow the European business*"), and […] (ID7831) ("*the Purchaser needs to be an experienced industrial gas company*").

1858 OJ C 267, 22.10.2008, p. 1, paragraph 9.

1859 Remedies Notice paragraph 10.

acquired with the Helium Sourcing Commitments would put significant financial constraint on the Purchaser.

(1460) Second, as regards the dissolution of the SIAD joint venture and its separation from the EEA Divestment Business, the Commission notes that the second phase investigation has provided evidence that, whilst pre-Transaction SIAD is jointly controlled by Flow Fin and Praxair, it is recognised as a participant in its own right in the markets for the supply of industrial gases (irrespective of the mode of supply) where it is active (Italy and Central and Eastern Europe). In this respect, the majority of customers in Eastern Europe and a significant number of customers in Italy that responded to the market investigation (nearly half of the respondents) indicated that they were not aware of the fact that SIAD is a joint venture between Praxair and Flow Fin.[1860] In any event, also for those customers that are aware of Praxair's shareholding, this element does not appear to have influenced their decision to contract with SIAD or invite SIAD to tenders.[1861] As regards engineering, SIAD offers integrated tonnage solutions to customers as well as process plants and plant components to third parties and to Praxair (at arm's length). The second phase investigation provided also indications that SIAD is generally perceived as a credible and technologically independent supplier for small and medium range process plants, but not for the largest projects.[1862] In this respect, SOL indicated that:" […] *for small and medium size plants SIAD has to be viewed as an independent supplier that has acquired technical knowledge and expertise also thanks to its joint venture with Praxair. For plants of this size, SOL considers SIAD technologically independent*."[1863] Therefore, separating SIAD from Praxair/the EEA Divestment Business will likely have no negative impact on the competitive position of the two businesses.

(1461) In addition, the Commission notes that SIAD currently procures helium via a contract with [...]. . In addition, the Helium Sourcing Commitments together with the EEA Commitments would ensure that the competitive nature of the wholesale helium market is preserved, so that SIAD would be able to find an alternative supplier for helium, if needed.

(1462) Finally, the Commission notes that, currently SIAD is already operated and managed independently from Praxair. Furthermore it does not seem either necessary nor important to support the continued success of the EEA Divestment Business.

(1463) Based on those reasons, the Commission considers that the implementation of the EEA Commitments and the SIAD Commitments would create two strong, independent competitors that would be likely to compete at least as strongly as Praxair and SIAD did pre-Transaction.

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1860 Responses to questionnaire RFI Q52 questionnaire to customers of industrial gases in Austria, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia, question 5 and responses to questionnaire RFI Q51 questionnaire to industrial gas customers in Italy, question 5.

1861 Only a small minority of respondents indicated that the existence of Praxair's shareholding influenced their decision (responses to questionnaire RFI Q52 questionnaire to customers of industrial gases in Austria, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia, question 6 and responses to questionnaire RFI Q51 questionnaire to industrial gas customers in Italy, question 6).

1862 Response to RFI Q55 questionnaire to engineering customers, question 6.1. One exception is constituted by adsorption plants for oxygen (that is, VPSA plants) which SIAD (similarly to other Tier 2 players) offers to customers (at their request) [...].

1863 Agreed non-confidential minutes of conference call with SOL of 23 March 2018, paragraph 9 [ID 6243].

9.2.3.2. The EEA Commitments

(1464) In view of their scope, the EEA Commitments would fully remove the overlap between the Notifying Parties' activities in all the affected markets in which the Transaction would significantly impede effective competition as a result of the horizontal non-coordinated effects or vertical non-coordinated effects identified in Section 8.14. Therefore, in general, it would remove the competition concerns identified in Section 8, with the exception of the concerns related to the global market for the wholesale supply of helium and those related to the activities of SIAD, which are addressed by the Helium Sourcing Commitments and the SIAD Commitments respectively.

(1465) The EEA Commitments broadly amount to a divestiture of a going concern including all relevant assets. Furthermore, the package includes sufficient production assets and operational capabilities to make the EEA Divestment Business viable.

(1466) The purchaser criteria included in the EEA Commitments require, among other elements, that the EEA Divestiture Business is sold to an established industrial gas company with a proven capacity and track record in running a significant gases business or a consortium where such a company exerts a decisive influence on all aspects concerning the operation of the EEA Divestment Business. Furthermore, the purchaser is required to have the financial resources, proven expertise and incentive to maintain and develop the EEA Divestment Business as a viable and active competitive force.

(1467) The relevance of these purchaser criteria has been confirmed by the market investigation and the replies to the Market Test. For instance, Air Liquide when answering the question on which other assets (tangible or intangible) should be included in the commitments in order to allow the Purchaser of the EEA Divestment Business to operate and effectively compete in the EEA, stated that they did *"... not have access to the full information required to provide an opinion on this matter. However, the EEA Divestment Business should include all the assets, knowhow and means to execute competitively the activity divested, including but not limited to technology access rights and know-how on the current activities, also required to solve technological or operational issues and to ensure long term business competitiveness. Having the know-how to develop marketing, product innovation and adapted technical solution to customers evolving needs is a key requirement for competitiveness (e.g. engineering support for design, construction and operations, marketing competencies for market development strategies, R&D for product innovation, etc)."*[1864]

(1468) Therefore, while certain engineering capabilities are included in the EEA Commitments, the purchaser criteria ensure that the Purchaser will have knowledge of the business and sufficient operational capabilities to make the EEA Divestment Business profitable. This is particularly relevant for the tonnage market, where bidding for large projects requires, among other elements, advanced engineering competences and operational capabilities.

(1469) The EEA Commitments included adequate guarantees to minimise the risks involved in the divestment process, in particular in relation to customers and other third parties consent requirements for the transfer of the relevant contracts, as well as in relation to the need for transitional supply and service agreements for certain products.

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1864 Air Liquide's responses to RFI Q62 to competitors and potential buyers, question 3.1 [ID7868].

(1470) Nonetheless, as discussed in Section 9.2.2.1, the Market Test indicated that the EEA Commitments, as part of the Initial Commitments, should be improved in relation to some technical aspects, in order to make the EEA Divestment Business viable and competitive. On the basis of the results of the Market Test, the Commission considered the following amendments to the Initial Commitments to be necessary:

(1) A transitional supply agreement should be put in place to allow the EEA Divestment Business to buy from the merged entity any process plant component and/or spare part for process plants included in the EEA Divestment Business, which cannot be bought or sourced elsewhere;

(2) The transitional service agreement for [...] should also include ancillary products and services (for example, maintenance) that [...] currently provided to Praxair's Affiliates Undertaking;

(3) The transitional supply agreements for [...] cylinders should also include maintenance services, and the options included in the Initial Commitments in relation to [...] cylinders should also provide for the access to the procedures to assemble [...] components and fill in the gases, as well as to any other relevant procedure for the delivery and usage of [...] cylinders;

(4) The duration of the transitional supply and/or service agreements related to [...] should be extended;

(5) A transitional supply agreement for [...], produced by [...] and to be retained by the merged entity, should be put in place for an adequate period of time;

(6) The balance between direct sourcing contracts and back-to-back agreements in relation to helium sourcing, as well as the duration of the helium sourcing portfolio should be improved.

9.2.3.3. The SIAD Commitments

(1471) As set out in recitals 1459 to 1462, SIAD would become an independent supplier of industrial gases following the implementation of the Share Swap.

(1472) Overall, the Commission considers that the SIAD Commitments are suitable to dissolve the current structural ties between Praxair and SIAD. As the SIAD Commitments consist in the transfer of shares in companies between existing shareholders, many difficulties or risks involved in typical divestiture situations (such as disentanglement of a business from other businesses being retained) are of no concern when it comes to the SIAD Commitments. The transitional services agreement envisaged under the SIAD Commitments seem sufficient to ensure that SIAD would be able to continue operating on the market without a structural link to Praxair or the EEA Divestment Business.

(1473) Respondents to the Market Test did not point to any material shortcomings of the SIAD Commitments specifically. Flow Fin made a few suggestions on the contractual relationships between SIAD and the EEA Divestment Business (and more specifically between SIAD and Rivoira) after the dissolution of the SIAD joint venture. In Flow Fin's view, such comments aim at reflecting the fact that (i) those relationships had been negotiated between Flow Fin and Praxair in 2017 on the basis of a different scope of the EEA Divestment Business, whereby Praxair would have retained full control over Rivoira and that, (ii) under the terms of the EEA Commitments, those relationships would survive as agreed between Flow Fin and

Praxair in 2017, with the (purchaser of the) EEA Divestment Business (including Rivoira) succeeding to Praxair.[1865] In this respect, the Commission considers that the comments of Flow Fin have no merit and no change needs to be made to the contractual relationships at stake. Indeed, the purpose of the Initial Commitments in general, and the EEA Commitments in particular, is to replicate the role that Praxair had pre-Transaction, including through Rivoira. Precisely because the contractual relationships at stake were negotiated at a time when Praxair intended to retain full control over Rivoira and Flow Fin intended to retain full control over SIAD, the Commission considers that, if anything, those contractual relationships reflect an adequate balance between SIAD and the EEA Divestment Business and altering that equilibrium could hamper the viability of Rivoira and thus of the EEA Divestment Business.

(1474) However, the Commission considers that certain replies to the Market Test concerning the EEA Commitments also shed light on the likely viability of SIAD following implementation of the Share Swap. For this reason, the Commission considers that the transitional service agreement for [...] should also include ancillary products and services (e.g., maintenance) that [...] currently provides to SIAD.

9.2.3.4. The Helium Sourcing Commitments

(1475) Conceptually, the Commission takes the view that the Helium Sourcing Commitments together with the EEA Commitments are able to address its concerns on the global helium market. However, the Initial Commitments contained some shortcomings related to the Helium Sourcing Commitments.

(1476) Respondents to the Market Test pointed out that the sourcing agreements to be divested should be defined more precisely. While the Commission considers a detailed list of all sourcing agreements to be divested not necessary in light of the global character of the divestiture and of potential factors relevant only to specific regions outside the EEA for which other competition agencies might be better placed to consider, the sourcing portfolio to be divested should be representative of the current portfolio of Praxair in terms of diversity, reliability, competitiveness and duration.

(1477) In addition, participants in the Market Test pointed out that certain additional sourcing assets might be needed for the continued operation of the Helium Sourcing Divestment Business. Based on this feedback, the Commission takes the view that the following assets are missing to make the Helium Sourcing Divestment Business viable: (i) Linde's or Praxair's BML assets (including notably the inventory stored in the BLM reservoir, the refining capabilities connected to the BLM pipeline, and the interest in the Cliffside Refiners Limited Partnership joint venture), (ii) an adequate fleet of helium cryogenic portable tanks, and (iii) certain further assets and staff necessary to ensure the viability and competitiveness of the Helium Sourcing Divestment Business.

(1478) Subject to the above, despite constituting a divestiture of assets which did not form a uniform and viable business before the divestiture, the Commission considers that the viability and competitiveness of the Helium Sourcing Divestment Business is sufficiently ensured by the overall structure of the global helium market and the provisions contained in the Helium Sourcing Commitments.

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1865 Agreed minutes of the conference call with SIAD's shareholder Flow Fin of 26 June 2018, paragraph 2, ID 8319.

9.2.3.5. Conclusion

(1479) While the Initial Commitments, in terms of their scope, appear to be generally capable to fully address the competition concerns identified in Section 8, the responses to the Market Test and the Commission's assessment highlighted that the Initial Commitments contained a number of shortcomings. Most of these were of a rather technical nature. However, taken together, these shortcomings rendered the Initial Commitments insufficient to fully address the competition concerns identified in Section 8.

## 9.3. The Final Commitments

(1480) In order to address the shortcomings discussed in Section 9.2.3, the Notifying Parties submitted the Revised Commitments, on 4 July 2018, and the Final Commitments, on 10 July 2018. The Final Commitments and the Revised Commitments are in all material respects identical.[1866] Therefore the analysis in this Section refers only to the Final Commitments.

*9.3.1. Description of the Final Commitments*

(1481) The Final Commitments consist of three components: the "Final EEA Commitments", the "Final SIAD Commitments" and the "Final Helium Sourcing Commitments".

(1482) The Final Commitments are largely based on the Initial Commitments. They include, however, a number of improvements as compared with the Initial Commitments. This Section therefore describes only those improvements.

9.3.1.1. The Final EEA Commitments

(1483) In relation to the EEA Commitments, the Final Commitments have introduced the following main changes relative to the Initial Commitments:

(a) inclusion of a transitional supply agreement with the merged entity for any process plant component and/or spare part for process plants included in the EEA Divestment Business, which cannot be bought or sourced elsewhere; the duration of such an agreement would be for:

– at least the duration of existing tonnage/small on-site plant customer contracts, in relation to the process plants used to supply tonnage/small on-site plant customers; or

– at least [...] years, unless it can be proven to the Monitoring Trustee that a shorter period would be sufficient, in relation to all other process plants included in the EEA Divestment Business;

(b) extension of the transitional service agreement for [...] to cover ancillary products and services (for example, maintenance) that [...] currently provides to undertakings controlled by Praxair;

(c) inclusion in the transitional supply agreements for [...] cylinders of maintenance services, in addition to the options included in the Initial Commitments, and inclusion of the access to the procedures to assemble [...] components and fill in the gases, as well as to any other relevant procedure for the delivery and usage of […] cylinders;

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1866 The only meaningful amendment is the replacement of a direct sourcing contract included in the Revised Commitments, with a different direct sourcing contract.

(d) extension of the duration of the transitional supply and/or service agreements related to [...]at the option of the Purchaser by up to a further [...] years;

(e) inclusion of a transitional supply agreement for [...], produced by […] and to be retained by the merged entity, for a period of [...] years extendable at the option of the Purchaser by up to a further [...] years;

(f) inclusion of an option to replace the back-to-back agreements to be entered with Praxair for the supply of helium sourced from [...] (which would end in [...]) with Linde's helium direct contract with [...] for [...] MMScf (which is due to commence in January [...] and end in […]).

9.3.1.2. The Final SIAD Commitments

(1484) Compared with the Initial Commitments, the Final SIAD Commitments provide (i) for an additional transitional supply agreement between SIAD and Praxair concerning the supply of [...] to SIAD as well as the supply of ancillary products and services (e.g., maintenance); (ii) for an extension of the duration of that agreement at the option of the Purchaser by up to a further [...] years; and (iii) that the implementation of the Transaction is subject to the Notifying Parties entering into final binding transitional supply agreements with SIAD and the Commission approving the terms of such agreements.

9.3.1.3. The Helium Sourcing Commitments

(1485) The Final Helium Sourcing Commitments contain the following changes as compared with the Initial Commitments.

(1486) First, the Final Helium Sourcing Commitments include not only the transfer of helium sourcing contracts but also related assets and staff. The assets included in the Final Helium Sourcing Commitments comprise in particular (i) Linde's helium production assets in the United States and notably Linde's refinery in Otis, (ii) Linde's entire inventory held in the storage reservoir operated by the BLM, (iii) Linde's interests in the Cliffside Refiners Limited Partnership joint venture, and (iv) an adequate fleet of cryogenic portable tanks. In addition, the Final Helium Sourcing Commitments include certain personnel necessary to maintain the viability and competitiveness of the Helium Sourcing Divestment Business, including personnel of Linde's refinery in Otis.

(1487) Second, the description of the helium sourcing contracts to be divested has been amended. The Final Commitments state that the sourcing contracts divested as part of the Helium Sourcing Divestment Business would be representative of Praxair's current helium sourcing portfolio with respect to its diversity, reliability, competitiveness and duration.

(1488) Third, a number of technical changes have been made, for example, a change providing for a hold separate obligation and for ring-fencing of the Helium Sourcing Divestment Business.

*9.3.2. Commission's assessment*

(1489) The Commission considers that the Final Commitments address all shortcomings of the Initial Commitments.

(1490) The **Final EEA Commitments** fully address the shortcomings identified in the Initial Commitments as described in Section 9.2.3.2. In order to remedy those shortcomings, the Final Commitments include the amendments described in Section 9.3.1.1.

(1491) The **Final SIAD Commitments** fully address the limited concerns that the Commission identified on the basis of the results of the Market Test by including the amendments described in Section 9.3.1.2.

(1492) Further, the Commission considers that Flow Fin complies with the standard purchaser requirements in the Remedies Notice in terms of independence, financial resources and the absence of prima facie competition concerns. Indeed, first, there is no control relationship between Flow Fin and the Notifying Parties, and all commercial relationships between Flow Fin and Praxair were limited to the control and operation of SIAD, which the Final SIAD Commitments will sever. Second, Flow Fin possesses the financial resources, proven relevant expertise and has the incentive and ability to continue to operate SIAD as a viable and active competitive force as it has already done in the past. Third, the Share Swap will only modify the quality of control already exerted by Flow Fin over SIAD from joint control to sole control.

(1493) Finally, the Commission reviewed the agreement that Praxair and Flow Fin have entered into on [...] with which the Share Swap will be implemented. The Commission considers that the terms of that agreement are compliant with the Final SIAD Commitments. However, the agreement does not contain provisions in relation to any of the transitional supply agreements provided for in the Final SIAD Commitments. Thus this aspect will be subject to review and approval by the Commission in line with paragraph 3 of the Final SIAD Commitments.

(1494) As regards the **Final Helium Sourcing Commitments**, all shortcomings contained in the Initial Commitments as described in Section 9.2.3.4 have been addressed by including the amendments described in Section 9.3.1.3.

### 9.4. Overall conclusion

(1495) For the reasons outlined in Section 9.3, the Commission considers that the Final Commitments are sufficient in scope and suitable to remove entirely the significant impediment to effective competition to which the Transaction would otherwise have given rise and that, therefore, the Final Commitments render the concentration brought about by the Transaction compatible with the internal market and the EEA Agreement. The Commission therefore finds that, following modification in accordance with the Final Commitments, the concentration brought about by the Transaction would not significantly impede effective competition in the internal market or within the territory covered by the EEA Agreement, or in a substantial part of either of them.

## 10. CONDITIONS AND OBLIGATIONS

(1496) Pursuant to the second subparagraph of Article 8(2) of the Merger Regulation, the Commission may attach to its decision conditions and obligations intended to ensure that the undertakings concerned comply with the commitments they have entered into vis-à-vis the Commission with a view to rendering the concentration compatible with the internal market.

(1497) The fulfilment of a measure that gives rise to a structural change in the market is a condition, whereas the implementing steps which are necessary to achieve that result are generally obligations on the parties. Where a condition is not fulfilled, the Commission's decision declaring the concentration compatible with the internal market is no longer applicable. Where the undertakings concerned commit a breach of an obligation, the Commission may revoke the clearance decision in accordance with Article 8(6) of the Merger Regulation. The undertakings concerned may also be

subject to fines and periodic penalty payments under Articles 14(2) and 15(1) of the Merger Regulation.

(1498) In accordance with the distinction described in recital (1496) as regards conditions and obligations, this Decision should be made conditional on full compliance by the Notifying Parties with Section B of the Final EEA Commitments, Section B of the Final SIAD Commitments and Section B of the Final Helium Sourcing Commitments (including the Schedule to the Final EEA Commitments and Annexes, the Schedule to the Final SIAD Commitments and Annexes and the Schedule to the Final Helium Sourcing Commitments) and Sections C, D, E and F of the Final EEA Commitments, Sections C, D, E and F of the Final SIAD Commitments and Sections C, D, E and F of the Final Helium Sourcing Commitments should be obligations within the meaning of Article 8(2) of the Merger Regulation. The full text of the Final Commitments is attached as Annex III[1867] to this Decision and forms an integral part of this Decision.

HAS ADOPTED THIS DECISION:

*Article 1*

The notified concentration resulting from the merger of the entire undertaking of Praxair, Inc. and the entire undertaking of Linde AG within the meaning of Article 3(1)(a) of Regulation (EC) No 139/2004 is declared compatible with the internal market and the Agreement on the European Economic Area.

*Article 2*

Article 1 is subject to compliance with the conditions set out in Section B, the Schedule and Annexes to the Schedule, of Annex III.1; Section B, the Schedule and Annexes to the Schedule, of Annex III.2; and Section B and the Schedule of Annex III.3.

*Article 3*

Praxair, Inc. and Linde AG shall comply with the obligations set out in Sections C, D, E and F of Annex III.1, Sections C, D, E and F of Annex III.2, and Sections C, D, E and F of Annex III.3.

*Article 4*

The Commission approves Flow Fin S.p.A. as a suitable purchaser of the business divested pursuant to Annex III.2.

*Article 5*

The Commission approves the terms of the agreement entered into by Praxair, Inc. and Flow Fin S.p.A. on 5 December 2017, as being compliant with the commitments set out in Annex III.2. The transitional supply agreements provided for in Annex III.2 will be subject to review and approval by the Commission.

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[1867] Annex III comprises three parts: part 1 includes the Final EEA Commitments ("Annex III.1"), part 2 includes the Final SIAD Commitments ("Annex III.2") and part 3 includes the Final Helium Sourcing Commitments ("Annex III.3").

*Article 6*

This Decision is addressed to:

Praxair, Inc.
10 Riverview Drive
06810 – Danbury
United States of America

and

Linde AG
Klosterhofstraße 1
80331 – Munich
Germany

Done at Brussels, 20.08.2018

*For the Commission*

*(Signed)*
*Margrethe VESTAGER*
*Member of the Commission*

*M.8480 – PRAXAIR / LINDE*

**Market Shares for EEA countries - Industrial gases**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Market Shares for EEA countries - Medical gases**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Market Shares for EEA and worldwide - Noble gases (and noble gas mixtures)**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*
**Market Shares for EEA - ESGs**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Market Shares for EEA countries - Chemical gases**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Market Shares for EEA countries - Calibration and other gas mixtures**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Market Shares for EEA countries - Refrigerants**

All value sales in '000 Euro and volumes in '000 kilograms.

Note: HHI levels have been calculated excluding the cathegory "Others"

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*
**Helium Global Capacity Shares**

All volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Wholesale Helium Market Shares (EEA and Global) - excluding sales to other wholesalers and captive sales of vertically integrated players**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

**Wholesale Helium Market Shares (EEA) - including sales to other wholesalers and excluding captive sales of vertically integrated players**

All volumes in '000 kilograms.

**[CONFIDENTIAL]**

**Wholesale Helium Market Shares (EEA) - excluding sales to other wholesalers and including captive sales of vertically integrated players**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**National retail market shares for Helium**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Market Shares (EEA and Global) - Retail Sales in Cryogenic Containers**

All value sales in '000 Euro and volumes in '000 kilograms.

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**PORTUGAL - Respiratory Homecare Services - Value ('000 EUR)**

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**SPAIN - Respiratory Homecare Services - Value ('000 EUR)**

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**ITALY - Respiratory Homecare Services - Value ('000 EUR)**

**[CONFIDENTIAL]**

*M.8480 – PRAXAIR / LINDE*

**Plant Supply - Market Shares global and EEA 2014-2016**

All value sales in '000 Euro

**[CONFIDENTIAL]**

## ANNEX II

## Overview of data used for the bidding analysis

(1). This Annex provides an overview of the bidding data submitted by the Notifying Parties and explains the modifications made to the original dataset by the Commission. The Annex further explains the tender classification used by the Commission.

### A. Original dataset submitted by the Notifying Parties

(2). The Notifying Parties provided the final bidding data to the Commission on 20 April 2018 in their reply to the Commission's Request for Information No 57. The information on the tenders and project renewals was provided in the following format:

(a). Annex Q1.1 - RFI57 - Tender data, which contained information on […] closed tenders for tonnage and small on-site plants in the EEA for the years 2007 – 2018.

(b). Annex Q1.1 - RFI57 - Linde renewal projects, which contained information on […] contract extensions with Linde's existing clients in the EEA for the years 2008 – 2018. Linde did not classify these as tenders but rather as extensions of existing contracts with no competitive selection procedure.

(c). Annex Q1.1 - RFI57 - Praxair renewal projects, which contained information on […] contract extensions with Praxair's existing clients in the EEA for the years 2008 – 2018. Praxair did not classify these as tenders but rather as extensions of existing contracts with no competitive selection procedure.

(d). Annex Q5 - Ongoing projects, which contained information on […] tenders with no announced winner which are still ongoing in the EEA.

(3). For the purpose of performing the bidding analysis, the Commission took into account the bidding data for the past tenders (Annex Q1.1 - RFI57 - Tender data) and the ongoing tenders (Annex Q5 - Ongoing projects). The Commission did not take into account […] closed tenders with no information on winners, and often capacity. Information for the vast majority of these tenders was provided by the Notifying Parties after the Article 6(1)(c) Decision and the Notifying Parties acknowledged that the available information was relatively incomplete for these tenders (See the Reply to Request for Information No. 50, Question 1).

(4). Furthermore, in relation to […] renewal projects Praxair faced competition from other industrial gas suppliers ([…]). Therefore, in order to assess the competition for industrial gases supply, the Commission also included these two projects. This resulted in a bidding data set of […] projects in the EEA in the years 2007 - 2018.

(5). The tender data provided by the Notifying Parties covered:

(a). project specific information, such as customer name and location, project year and previous incumbent supplier on the site;

(b). competitive landscape for each tender, including the participants, the winner and the runner up, where available;

(c). plant specific information, such as plant model, gases supplied by the plant, the lead products and the nameplate plant capacity for the lead product;

(d). financial information from Praxair and Linde on their internal rate of return and the tender value for the projects where the Notifying Parties participated.

## B. Changes implemented by the Commission

(6). For the purpose of performing the bidding analysis, the Commission treated companies as one entity if they had common ownership and belonged to the same group, on the basis of the information provided in the Form CO. Therefore, the participations and wins of Rivoira and SIAD were allocated to Praxair, and the participations and wins of Sapio were allocated to Air Products. Moreover, Linde Engineering was also treated as Linde to take into account the tenders where a tonnage solution competed with a self-supply solution.[1]

(7). Furthermore, after reviewing the documents submitted by the Notifying Parties in reply to the Commission's internal document request (RFI38) and reviewing the analysis of the competitive landscape provided in the tender documents, the Commission took into account of the following information for the purpose of its bidding analysis:

(a). Praxair's participation in the […] tender. Linde's internal bidding documents include the discussion of Praxair's technical offer for the tender. (Filename: […]). Furthermore, the internal document review disclosed that Praxair classified this tender as lost. (Filename: […]).

(b). Praxair's participation in the […] tender. Linde's internal bidding documents include the discussion of Praxair's competitive advantages in this area with respect to this tender. Furthermore, the internal document review disclosed that in Praxair's view, the customer preferred to stay with Linde's pipeline supply. (Filename: […]).

(c). Linde's participation in the […] tender. In the course of the Phase II investigation, the Notifying Parties eliminated from the dataset the previously inserted Linde participation in the […] tender. However, the review of Praxair's internal documents revealed that Linde was competing in this tender. (Filename: […]).

(d). Praxair's participation in the […] tender. SIAD's participation was expected according to Linde's internal documents. (Filename: […]).

(e). Air Liquide's and Air Products' participation in the […] tender. Air Products' and Air Liquide's competitive positions were described in details in Linde's internal documents and both were understood to have had entered the tender. (Filename: […]). The Commission also added the missing capacity value for this tender based on the information available in the document.

[1] Self-supply solution relates to an offering of the plant supply only.

(f). Air Liquide's and Praxair's participation in the […] tender. According to Linde's internal documents, Air Liquide and Praxair were expected to be invited to this tender. (Filename: […]). The Commission also added the missing capacity value for this tender based on the information available.

(g). Missing plant capacity for the […] tender in […]. According to the internal documents reviewed by the Commission, capacity was listed in the range of […] Nm³/h. The Commission used the average of this range ([…] Nm³/h). (Filename: […]).

(h). Missing plant capacity for the […] in […], based on internal documents reviewed by the Commission. (Filename: […]).

(8). In the instances where the measurement units did not match, the Commission used the following conversion rates to convert the capacities in normal cubic meters per hour into capacities in tonnes per day: For example, for the […] tender, the nameplate capacity for hydrogen of […] Nm³/h was converted to metric tonnes per day by dividing by 11,126 (conversion rate for H2) and multiplying by 24 h.

| 1 t = | x | Nm3 | x | Sm3 |
|---|---|---|---|---|
| O2 | 700 | | 739 | |
| N2 | 801 | | 845 | |
| H2 | 11126 | | 11737 | |

(9). In the Reply to the Statement of Objections, the Notifying Parties noted that the Commission incorrectly presumed that the three tenders won by Praxair in […][2] were under individual contracts, each for the supply of […] tpd of oxygen. The Notifying Parties stated that the nameplate capacity of […] tpd applied to all three customers combined. The Commission took into account this information and amended the total capacity for the respective tenders in Belgium.

## C. Classification of tenders

(10). In line with the product market definitions retained in the Statement of Objections, the Commission grouped the tenders into 4 major segments:

(a). […] tenders relating to the tonnage market for oxygen and nitrogen. In line with the product market definitions, these tenders were awarded for plants with nameplate capacity for oxygen production equal to or exceeding 100 tons per day ("tpd"). The Commission took into account the fact that air separation units ("ASUs") produce oxygen, nitrogen and argon at the same time at different proportions.[3] To ensure that the sample classification based on the nameplate capacity correctly reflects the size of the tendered plants and their production capabilities, the Commission converted the nameplate capacity of 4 tonnage tenders for nitrogen as lead product to the nameplate capacity for oxygen. For the purpose of this conversion, the Commission used the production capacity proportions listed in the Form CO, Figure 4, page 38 to the Form

[2] […].
[3] See Form CO, page 37.

CO – 78% for nitrogen and 21% for oxygen. The Commission noted that in this segment the range of nameplate capacity figures is particularly wide - from 100tpd to […]tpd as shown in Figure 1 below. Therefore, when analysing the bidding data, the Commission looked into the count of tenders as well total tendered capacity. Furthermore, 13 of the tonnage tenders for oxygen were still ongoing and were used for the participation statistics only. The final sample used for winning analysis is comprised of […] tenders.

**Figure 1: The frequency distribution of nameplate capacities in the tonnage market for oxygen and nitrogen**

[…]

(b). […] tenders relating to the tonnage market for hydrogen. In line with the product market definitions, these tenders were awarded for plants with nameplate capacity for hydrogen production equal to or exceeding 0.3tpd. Furthermore, […] of the tonnage tenders for hydrogen were still ongoing and were used for the participation statistics only. The final sample used for the analysis of tender wins for hydrogen is comprised of […] tenders.

(c). […] tenders relating to the market for small-onsite plants for oxygen. In line with the product market definitions, these tenders were awarded for plants with nameplate capacity for oxygen production below 100tpd. Further to the bidding analysis performed for the Article 6(1)(c) Decision, the Commission has amended the tender sample of the small-onsite plants for oxygen and nitrogen by separating these into two separate samples for tenders with lead product oxygen and tenders with lead product nitrogen. By doing so, the Commission takes into account that, contrary to the tonnage tenders for oxygen, a substantial share of the small on-site plants produce either oxygen or nitrogen only. […] of the small-onsite plants for oxygen were still ongoing and were used for the participation statistics only. The final sample used for the analysis of tender wins for small-onsite plants for oxygen is comprised of […] tenders.

(d). […] tenders relating to the market for small-onsite plants for nitrogen as lead product. In line with the tonnage tender for oxygen sample description above, the sample for small-onsite plants for nitrogen is comprised of the tenders falling below 100tpd in terms of oxygen production. Similarly to the samples above, […] of the small-onsite plants for nitrogen were still ongoing and were used for the participation statistics only. The final sample used for the analysis of tender wins for small-onsite plants for nitrogen is comprised of […] tenders.

(11). Only […] tenders were issued for lead product carbon monoxide in the past and both were won by Air Liquide. The Notifying Parties did not provide data on the capacity of the relevant plants. There are also […] more ongoing tenders for lead product carbon monoxide where the winners are yet unknown. Therefore, the Commission was not able to perform a bidding analysis with respect to the tonnage market for carbon monoxide.

(12). The other tenders which were not included into the above samples were: […] ongoing tenders for liquid carbon dioxide, one ongoing tender for ammonia, […] close tender for ozone, […] tenders for lead product hydrogen with nameplate capacity falling below 0.3tpd, and […] more tenders with missing information on capacity and lead product.

(13). The final data set used by the Commission for the purpose of the bidding analysis presented in the Statement of Objections related to […] tenders in total.

* * *

10 July 2018

# CASE M. 8480 – PRAXAIR / LINDE

EEA Commitments to the European Commission

# CASE NO. COMP/M.8480 – PRAXAIR/ LINDE

## Commitments to the European Commission – The EEA Commitments

Pursuant to Articles 8(2) and 10(2) of Council Regulation (EC) No. 139/2004 (the **"Merger Regulation"**), Linde AG (**"Linde"**) and Praxair, Inc. (**"Praxair"**) (together, the **"Notifying Parties"**) hereby enter into the following Commitments (the **"EEA Commitments"**) vis-à-vis the European Commission (the **"Commission"**) with a view to rendering the combination of Linde and Praxair under a newly incorporated holding company (the **"Concentration"**) compatible with the internal market and the functioning of the EEA Agreement.

This text shall be interpreted in light of the Commission's decision pursuant to Article 8(2) of the Merger Regulation to declare the Concentration compatible with the internal market and the functioning of the EEA Agreement (the **"Decision"**), in light of the general framework of European Union law, in particular in the light of the Merger Regulation, and by reference to the Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under the Commission Regulation (EC) No 802/2004 (the **"Remedies Notice"**).

The EEA Commitments shall take effect upon the Effective Date, provided that if Completion does not subsequently take place for whatever reason and the Concentration is thereby abandoned, the Notifying Parties shall no longer be bound by these EEA Commitments.

### Section A. Definitions

1. For the purpose of the Commitments, the following terms shall have the following meaning:

**Affiliated Undertakings**: undertakings controlled by the Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the Merger Regulation and in the light of the Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the **"Consolidated Jurisdictional Notice"**).

**Assets:** the assets that contribute to the current operation or are necessary to ensure the viability and competitiveness of the EEA Divestment Business as indicated in Section B, paragraph 6 (a), (b) and (c) and described more in detail in the Schedule.

**Closing**: the transfer of the legal title of the EEA Divestment Business to the Purchaser.

**Closing Period**: the period of [...] from the approval of the Purchaser and the terms of sale by the Commission.

**Completion**: completion of the Concentration.

**Confidential Information**: any business secrets, know-how, commercial information, or any other information of a proprietary nature that is not in the public domain.

**Conflict of Interest**: any conflict of interest that impairs the Trustee's objectivity and independence in discharging its duties under the Commitments.

**EEA Divestment Business**: Praxair entire Industrial Gas Business in the EEA, including but not limited to all Praxair's subsidiaries incorporated in the EEA and indicated as legal entities to be divested in Annex 1 to the Schedule, as well as Praxair's European

engineering capabilities and other assets, all as defined in Section B and in the Schedule and which the Notifying Parties commit to divest, only excluding SIAD as defined in the SIAD Commitments.

**Divestiture Trustee**: one or more natural or legal person(s) who is/are approved by the Commission and appointed by the Notifying Parties and who has/have received from the Notifying Parties the exclusive Trustee Mandate to sell the EEA Divestment Business to a Purchaser at no minimum price.

**Effective Date**: the date of adoption of the Decision.

**First Divestiture Period**: the period of [...] from the Effective Date.

**Hold Separate Manager**: one or more individuals appointed by the Notifying Parties for the EEA Divestment Business to manage the day-to-day business under the supervision of the Monitoring Trustee.

**Industrial Gas Business**: the gas business described in the Schedule.

**Key Personnel**: all personnel necessary to maintain the viability and competitiveness of the EEA Divestment Business, as listed in the Schedule, including the Hold Separate Manager.

**Linde**: Linde AG, incorporated under the laws of Germany, with its registered office at Klosterhofstrasse 1, 80331, Munich, Germany. Reference to Linde includes reference to Linde's Affiliated Undertakings.

**Monitoring Trustee**: one or more natural or legal person(s), who is/are approved by the Commission and appointed by the Notifying Parties, and who has/have the duty to monitor the Notifying Parties' compliance with the conditions and obligations attached to the Decision.

**NOxBOX Ltd.**: Praxair's Affiliated Undertaking (not divested), incorporated under the laws of England and Wales, with its registered office at Bevan Brittan LLP, Kings Orchard, 1 Queen Street, Bristol, BS2 0HQ.

**Parties**: the Notifying Parties and the undertaking that is the target of the Concentration.

**Personnel**: all staff currently employed by the EEA Divestment Business, including staff seconded to the EEA Divestment Business, shared personnel as well as the additional personnel listed in the Schedule.

**Praxair MRC S.A.S**: Praxair's Affiliated Undertaking (not divested), incorporated under the laws of France, with its registered office at 66 boulevard de Thibaud, 31084, Toulouse Cedex 1, France.

**Praxair**: Praxair, Inc., incorporated under the laws of Connecticut, with its registered office at 10 Riverview Drive, Danbury, Connecticut, 06810 U.S.A. Reference to Praxair includes reference to Praxair's Affiliated Undertakings.

**Purchaser**: the entity approved by the Commission as acquirer of the EEA Divestment Business in accordance with the criteria set out in Section D.

**Purchaser Criteria**: the criteria laid down in paragraph 19 of these Commitments that the Purchaser must fulfil in order to be approved by the Commission.

**Schedule**: the schedule to these Commitments describing more in detail the EEA Divestment Business.

**SIAD**: Società Italiana Acetilene e Derivati (S.I.A.D) S.p.A.

**SIAD Business**: the business activities of SIAD.

**SIAD Commitments**: The parallel commitments of the Notifying Parties to divest Praxair's shareholding in SIAD.

**Trustee(s)**: the Monitoring Trustee and/or the Divestiture Trustee as the case may be.

**Trustee Divestiture Period**: the period of [...] from the end of the First Divestiture Period.

## Section B. The commitment to divest and the Divestment Business

### Commitment to divest

2. In order to maintain effective competition, the Notifying Parties commit to divest, or procure the divestiture of, the EEA Divestment Business by the end of the Trustee Divestiture Period as a going concern to one and the same purchaser on terms of sale approved by the Commission in accordance with the procedure described in paragraph 20 of these Commitments. To carry out the divestiture, the Notifying Parties commit to find a purchaser and to enter into a final binding sale and purchase agreement for the sale of the EEA Divestment Business within the First Divestiture Period. If the Notifying Parties have not entered into such an agreement at the end of the First Divestiture Period, they shall grant the Divestiture Trustee an exclusive mandate to sell the EEA Divestment Business in accordance with the procedure described in paragraph 32 in the Trustee Divestiture Period.

3. The proposed concentration shall not be implemented before the Notifying Parties or the Divestiture Trustee have entered into a final binding sale and purchase agreement for the sale of the EEA Divestment Business and the Commission has approved the purchaser and the terms of sale in accordance with paragraph 20.

4. The Notifying Parties shall be deemed to have complied with this commitment if:

   (a) by the end of the Trustee Divestiture Period, the Notifying Parties or the Divesture Trustee have entered into a final binding sale and purchase agreement and the Commission approves the proposed purchaser and the terms of sale as being consistent with the Commitments in accordance with the procedure described in paragraph 20; and

   (b) if the Closing of the sale of the EEA Divestment Business to the Purchaser takes place within the Closing Period.

5. In order to maintain the structural effect of the Commitments, the Notifying Parties shall, for a period of 10 years after Closing, not acquire, whether directly or indirectly, the possibility of exercising influence (as defined in paragraph 43 of the Remedies Notice, footnote 3) over

the whole or part of the EEA Divestment Business, unless, following the submission of a reasoned request from the Notifying Parties showing good cause and accompanied by a report from the Monitoring Trustee (as provided in paragraph 45 of these Commitments), the Commission finds that the structure of the market has changed to such an extent that the absence of influence over the EEA Divestment Business is no longer necessary to render the proposed concentration compatible with the internal market.

### Structure and definition of the Divestment Business

**6.** The EEA Divestment Business consists of Praxair's entire Industrial Gas Business in the EEA, including, but not limited to, Praxair's subsidiaries incorporated in the EEA and indicated as legal entities to be divested in Annex 1 to the Schedule, as well as Praxair's European engineering capabilities and other assets, and only excluding SIAD (as defined in the SIAD Commitments). The legal and functional structure of the EEA Divestment Business as operated to date is described in the Schedule. The EEA Divestment Business, described in more detail in the Schedule, includes all assets and staff that contribute to the current operation or are necessary to ensure the viability and competitiveness of the EEA Divestment Business, in particular:

(a) all tangible and intangible assets (including intellectual property rights);

(b) all licences, permits and authorisations issued by any governmental organisation for the benefit of the EEA Divestment Business;

(c) all contracts, leases, commitments and customer orders of the EEA Divestment Business; all customer, credit and other records of the EEA Divestment Business (it being understood that (i) the Parties undertake to use all their best efforts to obtain all third party change of control consents where applicable and, (ii) to the extent any such third party consent could not be obtained, or any other contract could not be otherwise transferred due to the need of a third party consent (for example in case of worldwide customer/supply contracts performed only partially in the EEA), the Parties will enter into back-to-back agreements with the EEA Divestment Business at the same terms and conditions of the contracts for which the third party consent could not be obtained, or of the contracts which could not be transferred. In the case of supply contracts, the duration of the back-to-back agreements should be at least [...] after Closing, if a longer duration is not provided for in the original contract) (items referred to under (a)-(c) hereinafter collectively referred to as "**Assets**").

(d) the Personnel.

**7.** In addition, the EEA Divestment Business includes the benefit, for transitional periods of up to [...] months after Closing and on terms and conditions equivalent to those at present afforded to the EEA Divestment Business, of all current arrangements under which the Notifying Parties or their Affiliated Undertakings supply products or services including, but not limited to, technical assistance to the EEA Divestment Business, as detailed in the Schedule, unless otherwise agreed with the Purchaser. Any changes made to the current terms and conditions of those arrangements will be notified to and approved by the Monitoring Trustee, subject to the approval of the European Commission in case the Monitoring Trustee considers the change to be material. The approval process by the

Monitoring Trustee should not delay any supply by the Notifying Parties to the EEA Divestment Business.

8. Further, the Notifying Parties commit not to terminate the contract between Praxair and Linde in relation to [...],[1] for up to [...] years from Closing, unless otherwise agreed with the Purchaser. Any changes made to the terms and conditions of said contract will be notified to and approved by the Monitoring Trustee, subject to the approval of the European Commission in case the Monitoring Trustee considers the changes to be material. The approval process by the Monitoring Trustee should not delay any supply by the Notifying Parties to the EEA Divestment Business.

9. The EEA Divestment Business also includes the benefit, for a term of [...] years, extendable at the Purchaser's option by up to a further [...] years, of (i) a non-exclusive transitional supply agreement pursuant to which Praxair agrees to supply [...] to the Purchaser on terms described in the Schedule, as well as (ii) non-exclusive transitional supply agreement pursuant to which Praxair agrees to supply [...] to the Purchaser, on terms described in the Schedule. Strict firewall procedures will be adopted so as to ensure that any competitively sensitive information related to, or arising from the arrangement and contract mentioned at paragraphs 7 and 8 (for example, product roadmaps) will not be shared with, or passed on to, anyone outside the relevant Notifying Parties' entity(ies) providing such services or products.

## Section C. Related Commitments

### Preservation of viability, marketability and competitiveness

10. From the Effective Date until Closing, the Notifying Parties shall preserve or procure the preservation of the economic viability, marketability and competitiveness of the EEA Divestment Business, in accordance with good business practice, and shall minimise as far as possible any risk of loss of competitive potential of the EEA Divestment Business. In particular, the Notifying Parties undertake:

(a) not to carry out any action that might have a significant adverse impact on the value, management or competitiveness of the EEA Divestment Business or that might alter the nature and scope of activity, or the industrial or commercial strategy or the investment policy of the EEA Divestment Business;

(b) to make available, or procure to make available, sufficient resources for the development of the EEA Divestment Business, on the basis and continuation of the existing business plans;

(c) to take all reasonable steps, or procure that all reasonable steps are being taken, including appropriate incentive schemes (based on industry practice), to encourage all Key Personnel to remain with the EEA Divestment Business, and not to solicit or move any Personnel to the Notifying Parties' remaining business. Where, nevertheless, individual members of the Key Personnel exceptionally leave the EEA Divestment Business, the Notifying Parties shall provide a reasoned proposal

[1] This contract commenced in [...]

to replace the person or persons concerned to the Commission and the Monitoring Trustee. The Notifying Parties must be able to demonstrate to the Commission that the replacement is well suited to carry out the functions exercised by those individual members of the Key Personnel. The replacement shall take place under the supervision of the Monitoring Trustee, who shall report to the Commission.

### Hold-separate obligations

**11.** The Notifying Parties commit, from the Effective Date until Closing, to procure that the EEA Divestment Business is kept separate from the businesses that the Notifying Parties will be retaining and from the SIAD Business and, after Completion to keep the EEA Divestment Business separate from the businesses that the Notifying Parties are retaining and from the SIAD Business and to ensure that unless explicitly permitted under these Commitments:

(a) management and staff of the businesses retained by the Notifying Parties or in the SIAD Business have no involvement in the EEA Divestment Business;

(b) the Key Personnel and Personnel of the EEA Divestment Business have no involvement in any business retained by the Notifying Parties or in the SIAD Business and do not report to any individual outside the EEA Divestment Business.

**12.** Until Closing, the Notifying Parties shall assist the Monitoring Trustee in ensuring that the EEA Divestment Business is managed as a distinct and saleable entity separate from the businesses which the Notifying Parties are retaining and from the SIAD Business. Immediately after the adoption of the Decision, the Notifying Parties shall appoint one or more Hold Separate Managers. The Hold Separate Manager, who shall be part of the Key Personnel, shall manage the EEA Divestment Business independently and in the best interest of the business with a view to ensuring its continued economic viability, marketability and competitiveness and its independence from the businesses retained by the Notifying Parties. The Hold Separate Manager shall closely cooperate with and report to the Monitoring Trustee and, if applicable, the Divestiture Trustee. Any replacement of the Hold Separate Manager(s) shall be subject to the procedure laid down in paragraph 10(c) of these Commitments. The Commission may, after having heard the Notifying Parties, require the Notifying Parties to replace the Hold Separate Manager.

**13.** To ensure that the EEA Divestment Business is held and managed as a separate entity the Monitoring Trustee shall exercise the Notifying Parties' rights as shareholder in the legal entity or entities that constitute the EEA Divestment Business (except for its rights in respect of dividends that are due before Closing), with the aim of acting in the best interest of the business, which shall be determined on a stand-alone basis, as an independent financial investor, and with a view to fulfilling the Notifying Parties' obligations under the Commitments. Furthermore, the Monitoring Trustee shall have the power to replace members of the supervisory board or non-executive directors of the board of directors, who have been appointed on behalf of the Notifying Parties. Upon request of the Monitoring Trustee, the Notifying Parties shall resign as a member of the boards or shall cause such members of the boards to resign.

### Ring-fencing

14. The Notifying Parties shall implement, or procure to implement, all necessary measures to ensure that they do not, after the Effective Date, obtain any Confidential Information relating to the EEA Divestment Business and that any such Confidential Information obtained by the Notifying Parties before the Effective Date will be eliminated as soon as reasonably practicable and no longer than six (6) weeks after the Effective Date and not be used by the Notifying Parties. This includes measures vis-à-vis the Notifying Parties' appointees on the supervisory board and/or board of directors of the EEA Divestment Business. In particular, the participation of the EEA Divestment Business in any central information technology network shall be severed to the extent possible, without compromising the viability of the EEA Divestment Business. The Notifying Parties may obtain or keep information relating to the EEA Divestment Business which is reasonably necessary for the divestiture of the EEA Divestment Business or the disclosure of which to the Notifying Parties is required by law.

### Non-solicitation clause

15. The Parties undertake, subject to customary limitations, not to solicit, and to procure that Affiliated Undertakings do not solicit, the Key Personnel transferred with the EEA Divestment Business for a period of [...] after Closing.

### Due diligence

16. In order to enable potential purchasers to carry out a reasonable due diligence of the EEA Divestment Business, the Notifying Parties shall, subject to customary confidentiality assurances and dependent on the stage of the divestiture process:

    (a) provide to potential purchasers sufficient information as regards the EEA Divestment Business;

    (b) provide to potential purchasers sufficient information relating to the Personnel and allow them reasonable access to the Personnel.

### Reporting

17. The Notifying Parties shall submit written reports in English on potential purchasers of the EEA Divestment Business and developments in the negotiations with such potential purchasers to the Commission and the Monitoring Trustee no later than 10 days after the end of every month following the Effective Date (or otherwise at the Commission's request). The Notifying Parties shall submit a list of all potential purchasers having expressed interest in acquiring the EEA Divestment Business to the Commission at each and every stage of the divestiture process, as well as a copy of all the offers made by potential purchasers within five days of their receipt.

18. The Notifying Parties shall inform the Commission and the Monitoring Trustee on the preparation of the data room documentation and the due diligence procedure and shall submit a copy of any information memorandum to the Commission and the Monitoring Trustee before sending the memorandum out to potential purchasers.

## Section D. The Purchaser

**19.** In order to be approved by the Commission, the Purchaser must fulfil the following criteria:

(a) The Purchaser shall be independent of and unconnected to the Notifying Parties and their Affiliated Undertakings (this being assessed having regard to the situation following the divestiture);

(b) The Purchaser shall be an established industrial gas company with a proven capacity and track record in running a significant industrial gases business or a consortium where such company exerts a decisive influence on all aspects concerning the operation of the EEA Divestment Business;

(c) The Purchaser shall have the financial resources, proven expertise and incentive to maintain and develop the EEA Divestment Business as a viable and active competitive force in competition with the Parties and other competitors;

(d) The acquisition of the EEA Divestment Business by the Purchaser must neither be likely to create, in light of the information available to the Commission, *prima facie* competition concerns nor give rise to a risk that the implementation of the Commitments will be delayed. In particular, the Purchaser must reasonably be expected to obtain all necessary approvals from the relevant regulatory authorities for the acquisition of the EEA Divestment Business.

**20.** The final binding sale and purchase agreement (as well as ancillary agreements) relating to the divestment of the EEA Divestment Business shall be conditional on the Commission's approval. When the Notifying Parties have reached an agreement with a purchaser, they shall submit a fully documented and reasoned proposal, including a copy of the final agreement(s), within one week to the Commission and the Monitoring Trustee. The Notifying Parties must be able to demonstrate to the Commission that the purchaser fulfils the Purchaser Criteria and that the EEA Divestment Business is being sold in a manner consistent with the Commission's Decision and the Commitments. For the approval, the Commission shall verify that the purchaser fulfils the Purchaser Criteria and that the EEA Divestment Business is being sold in a manner consistent with the Commitments including their objective to bring about a lasting structural change in the market. The Commission may approve the sale of the EEA Divestment Business without one or more Assets or parts of the Personnel, or by substituting one or more Assets or parts of the Personnel with one or more different assets or different personnel, if this does not affect the viability and competitiveness of the EEA Divestment Business after the sale, taking account of the proposed purchaser.

## Section E. Trustee

### I. Appointment procedure

**21.** The Notifying Parties shall appoint a Monitoring Trustee to carry out the functions specified in these Commitments for a Monitoring Trustee. The Notifying Parties commit not to close the Concentration before the appointment of a Monitoring Trustee.

**22.** If the Notifying Parties have not entered into a binding sale and purchase agreement regarding the EEA Divestment Business one month before the end of the First Divestiture Period or if the Commission has rejected a purchaser proposed by the Notifying Parties at that time or thereafter, the Notifying Parties shall appoint a Divestiture Trustee. The

appointment of the Divestiture Trustee shall take effect upon the commencement of the Trustee Divestiture Period.

**23.** The Trustee shall:

(a) at the time of appointment, be independent of the Notifying Parties and their Affiliated Undertakings;

(b) possess the necessary qualifications to carry out its mandate, for example have sufficient relevant experience as an investment banker or consultant or auditor; and

(c) neither have nor become exposed to a Conflict of Interest.

**24.** The Trustee shall be remunerated by the Notifying Parties in a way that does not impede the independent and effective fulfilment of its mandate. In particular, where the remuneration package of a Divestiture Trustee includes a success premium linked to the final sale value of the EEA Divestment Business, such success premium may only be earned if the divestiture takes place within the Trustee Divestiture Period.

**Proposal by the Notifying Parties**

**25.** No later than two weeks after the Effective Date, the Notifying Parties shall submit the name or names of one or more natural or legal persons whom the Notifying Parties propose to appoint as the Monitoring Trustee to the Commission for approval. No later than one month before the end of the First Divestiture Period or on request by the Commission, the Notifying Parties shall submit a list of one or more persons whom they propose to appoint as Divestiture Trustee to the Commission for approval. The proposal shall contain sufficient information for the Commission to verify that the person or persons proposed as Trustee fulfil the requirements set out in paragraph 23 and shall include:

(a) the full terms of the proposed mandate, which shall include all provisions necessary to enable the Trustee to fulfil its duties under these Commitments;

(b) the outline of a work plan which describes how the Trustee intends to carry out its assigned tasks;

(c) an indication whether the proposed Trustee is to act as both Monitoring Trustee and Divestiture Trustee or whether different trustees are proposed for the two functions.

**Approval or rejection by the Commission**

**26.** The Commission shall have the discretion to approve or reject the proposed Trustee(s) and to approve the proposed mandate subject to any modifications it deems necessary for the Trustee to fulfil its obligations. If only one name is approved, the Notifying Parties shall appoint or cause to be appointed the person or persons concerned as Trustee, in accordance with the mandate approved by the Commission. If more than one name is approved, the Notifying Parties shall be free to choose the Trustee to be appointed from among the names approved. The Trustee shall be appointed within one week of the Commission's approval, in accordance with the mandate approved by the Commission.

**New proposal by the Notifying Parties**

**27.** If all the proposed Trustees are rejected, the Notifying Parties shall submit the names of at least two more natural or legal persons within one week of being informed of the rejection, in accordance with paragraphs 21 and 26 of these Commitments.

**Trustee Nominated by the Commission**

**28.** If further proposed Trustees are rejected by the Commission, the Commission shall nominate a Trustee, whom the Notifying Parties shall appoint, or cause to be appointed, in accordance with a trustee mandate approved by the Commission.

## II. Functions of the Trustee

**29.** The Trustee shall assume its specified duties and obligations in order to ensure compliance with the Commitments. The Commission may, on its own initiative or at the request of the Trustee or the Notifying Parties, give any orders or instructions to the Trustee in order to ensure compliance with the conditions and obligations attached to the Decision.

**Duties and obligations of the Monitoring Trustee**

**30.** The Monitoring Trustee shall:

(i) propose in its first report to the Commission a detailed work plan describing how it intends to monitor compliance with the obligations and conditions attached to the Decision.

(ii) oversee, in close co-operation with the Hold Separate Manager, the on-going management of the EEA Divestment Business with a view to ensuring its continued economic viability, marketability and competitiveness and monitor compliance by the Notifying Parties with the conditions and obligations attached to the Decision. To that end the Monitoring Trustee shall:

(a) monitor the preservation of the economic viability, marketability and competitiveness of the EEA Divestment Business, and the keeping separate of the EEA Divestment Business from the business retained by the Parties, in accordance with paragraphs 10 and 11 of these Commitments;

(b) supervise the management of the EEA Divestment Business as a distinct and saleable entity, in accordance with paragraph 12 of these Commitments;

(c) with respect to Confidential Information:

– determine all necessary measures to ensure that the Notifying Parties do not after the Effective Date obtain any Confidential Information relating to the EEA Divestment Business,

– in particular strive for the severing of the EEA Divestment Business' participation in a central information technology network to the extent possible, without compromising the viability of the EEA Divestment Business,

- make sure that any Confidential Information relating to the EEA Divestment Business obtained by the Notifying Parties before the Effective Date is eliminated as soon as reasonably practicable and no longer than six (6) weeks after the Effective Date and will not be used by the Notifying Parties and
- decide whether such information may be disclosed to or kept by the Notifying Parties as the disclosure is reasonably necessary to allow the Notifying Parties to carry out the divestiture or as the disclosure is required by law;

(d) monitor the splitting of assets and the allocation of Personnel between the EEA Divestment Business and the Notifying Parties or Affiliated Undertakings;

(iii) propose to the Notifying Parties such measures as the Monitoring Trustee considers necessary to ensure the Notifying Parties' compliance with the conditions and obligations attached to the Decision, in particular the maintenance of the full economic viability, marketability or competitiveness of the EEA Divestment Business, the holding separate of the EEA Divestment Business and the non-disclosure of competitively sensitive information;

(iv) review and assess potential purchasers as well as the progress of the divestiture process and verify that, dependent on the stage of the divestiture process:

(a) potential purchasers receive sufficient and correct information relating to the EEA Divestment Business and the Personnel in particular by reviewing, if available, the data room documentation, the information memorandum and the due diligence process, and

(b) potential purchasers are granted reasonable access to the Personnel;

(v) act as a contact point for any requests by third parties, in particular potential purchasers, in relation to the EEA Commitments;

(vi) provide to the Commission, sending the Notifying Parties a non-confidential copy at the same time, a written report within 15 days after the end of every month that shall cover the operation and management of the EEA Divestment Business as well as the splitting of assets and the allocation of Personnel so that the Commission can assess whether the business is held in a manner consistent with the EEA Commitments and the progress of the divestiture process as well as potential purchasers;

(vii) promptly report in writing to the Commission, sending the Notifying Parties a non-confidential copy at the same time, if it concludes on reasonable grounds that the Notifying Parties are failing to comply with these Commitments;

(viii) within one week after receipt of the documented proposal referred to in paragraph 20 of these Commitments, submit to the Commission, sending the Notifying Parties a non-confidential copy at the same time, a reasoned opinion as to the suitability and independence of the proposed purchaser and the viability of the EEA Divestment Business after the Sale and as to whether the EEA Divestment

Business is sold in a manner consistent with the conditions and obligations attached to the Decision, in particular, if relevant, whether the sale of the EEA Divestment Business without one or more Assets or not all of the Personnel affects the viability of the EEA Divestment Business after the sale, taking account of the proposed purchaser;

(ix) assume the other functions assigned to the Monitoring Trustee under the conditions and obligations attached to the Decision.

**31.** If the Monitoring and Divestiture Trustee are not the same legal or natural persons, the Monitoring Trustee and the Divestiture Trustee shall cooperate closely with each other during and for the purpose of the preparation of the Trustee Divestiture Period in order to facilitate each other's tasks.

**Duties and obligations of the Divestiture Trustee**

**32.** Within the Trustee Divestiture Period, the Divestiture Trustee shall sell at no minimum price the EEA Divestment Business to a purchaser, provided that the Commission has approved both the purchaser and the final binding sale and purchase agreement (and ancillary agreements) as in line with the Commission's Decision and the EEA Commitments in accordance with paragraphs 19 and 20 of these Commitments. The Divestiture Trustee shall include in the sale and purchase agreement (as well as in any ancillary agreements) such terms and conditions as it considers appropriate for an expedient sale in the Trustee Divestiture Period. In particular, the Divestiture Trustee may include in the sale and purchase agreement such customary representations and warranties and indemnities as are reasonably required to effect the sale. The Divestiture Trustee shall protect the legitimate financial interests of the Notifying Parties, subject to the Notifying Parties' unconditional obligation to divest at no minimum price in the Trustee Divestiture Period.

**33.** In the Trustee Divestiture Period (or otherwise at the Commission's request), the Divestiture Trustee shall provide the Commission with a comprehensive monthly report written in English on the progress of the divestiture process. Such reports shall be submitted within 15 days after the end of every month with a simultaneous copy to the Monitoring Trustee and a non-confidential copy to the Notifying Parties.

## III. Duties and obligations of the Parties

**34.** The Notifying Parties shall provide and shall cause their advisors to provide the Trustee with all such co-operation, assistance and information as the Trustee may reasonably require to perform its tasks. The Trustee shall have full and complete access to any of the Notifying Parties' or the EEA Divestment Business' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the EEA Commitments and the Notifying Parties and the EEA Divestment Business shall provide the Trustee upon request with copies of any document. The Notifying Parties and the EEA Divestment Business shall make available to the Trustee one or more offices on their premises and shall be available for meetings in order to provide the Trustee with all information necessary for the performance of its tasks.

**35.** The Notifying Parties shall provide the Monitoring Trustee with all managerial and administrative support that it may reasonably request on behalf of the management of the EEA Divestment Business. This shall include all administrative support functions relating to

the EEA Divestment Business which are currently carried out at headquarters level. The Notifying Parties shall provide and shall cause their advisors to provide the Monitoring Trustee, on request, with the information submitted to potential purchasers, in particular give the Monitoring Trustee access to the data room documentation and all other information granted to potential purchasers in the due diligence procedure. The Notifying Parties shall inform the Monitoring Trustee on possible purchasers, submit lists of potential purchasers at each stage of the selection process, including the offers made by potential purchasers at those stages, and keep the Monitoring Trustee informed of all developments in the divestiture process.

**36.** The Notifying Parties shall grant or procure Affiliated Undertakings to grant comprehensive powers of attorney, duly executed, to the Divestiture Trustee to effect the sale (including ancillary agreements), the Closing and all actions and declarations which the Divestiture Trustee considers necessary or appropriate to achieve the sale and the Closing, including the appointment of advisors to assist with the sale process. Upon request of the Divestiture Trustee, the Notifying Parties shall cause the documents required for effecting the sale and the Closing to be duly executed.

**37.** The Notifying Parties shall indemnify the Trustee and its employees and agents (each an "**Indemnified Party**") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to the Notifying Parties for, any liabilities arising out of the performance of the Trustee's duties under the EEA Commitments, except to the extent that such liabilities result from the wilful default, recklessness, gross negligence or bad faith of the Trustee, its employees, agents or advisors.

**38.** At the expense of the Notifying Parties, the Trustee may appoint advisors (in particular for corporate finance or legal advice), subject to the Notifying Parties' approval (this approval not to be unreasonably withheld or delayed) if the Trustee considers the appointment of such advisors necessary or appropriate for the performance of its duties and obligations under the Mandate, provided that any fees and other expenses incurred by the Trustee are reasonable. Should the Notifying Parties refuse to approve the advisors proposed by the Trustee the Commission may approve the appointment of such advisors instead, after having heard the Notifying Parties. Only the Trustee shall be entitled to issue instructions to the advisors. Paragraph 37 of these Commitments shall apply *mutatis mutandis*. In the Trustee Divestiture Period, the Divestiture Trustee may use advisors who served the Notifying Parties during the Divestiture Period if the Divestiture Trustee considers this in the best interest of an expedient sale.

**39.** The Notifying Parties agree that the Commission may share Confidential Information proprietary to the Notifying Parties with the Trustee. The Trustee shall not disclose such information and the principles contained in Article 17 (1) and (2) of the Merger Regulation apply *mutatis mutandis*.

**40.** The Notifying Parties agree that the contact details of the Monitoring Trustee are published on the website of the Commission's Directorate-General for Competition and they shall inform interested third parties, in particular any potential purchasers, of the identity and the tasks of the Monitoring Trustee.

**41.** For a period of 10 years from the Effective Date the Commission may request all information from the Parties that is reasonably necessary to monitor the effective implementation of these Commitments.

### IV. Replacement, discharge and reappointment of the Trustee

**42.** If the Trustee ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Trustee to a Conflict of Interest:

(a) the Commission may, after hearing the Trustee and the Notifying Parties, require the Notifying Parties to replace the Trustee; or

(b) the Notifying Parties may, with the prior approval of the Commission, replace the Trustee.

**43.** If the Trustee is removed according to paragraph 42 of these Commitments, the Trustee may be required to continue in its function until a new Trustee is in place to whom the Trustee has effected a full hand over of all relevant information. The new Trustee shall be appointed in accordance with the procedure referred to in paragraphs 21-28 of these Commitments.

**44.** Unless removed according to paragraph 42 of these Commitments, the Trustee shall cease to act as Trustee only after the Commission has discharged it from its duties after all the EEA Commitments with which the Trustee has been entrusted have been implemented. However, the Commission may at any time require the reappointment of the Monitoring Trustee if it subsequently appears that the relevant remedies might not have been fully and properly implemented.

## Section F. The review clause

**45.** The Commission may extend the time periods foreseen in the EEA Commitments in response to a request from the Notifying Parties or, in appropriate cases, on its own initiative. Where the Notifying Parties request an extension of a time period, they shall submit a reasoned request to the Commission no later than one month before the expiry of that period, showing good cause. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to the Notifying Parties. Only in exceptional circumstances shall the Notifying Parties be entitled to request an extension within the last month of any period.

**46.** The Commission may further, in response to a reasoned request from the Notifying Parties showing good cause waive, modify or substitute, in exceptional circumstances, one or more of the undertakings in these Commitments. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to the Notifying Parties. The request shall not have the effect of suspending the application of the undertaking and, in particular, of suspending the expiry of any time period in which the undertaking has to be complied with.

## Section G. Entry into force

47. The EEA Commitments shall take effect upon the date of adoption of the Decision.

duly authorised for and on behalf of:

**Linde AG**

Date: 10 July 2018

**Praxair, Inc.**

Date: 10 July 2018

## Schedule to the EEA Commitments

**1.** The EEA Divestment Business consists of Praxair's entire Industrial Gas Business in the EEA, including, but not limited to, all Praxair's subsidiaries incorporated in the EEA and indicated as legal entities to be divested in **Annex 1** to the Schedule, as well as Praxair's European engineering capabilities and other assets, and only excluding SIAD (as defined in the SIAD Commitments).[1] These businesses are further described in the annexes attached to this Schedule.

**2.** The divestiture of the EEA Divestment Business will occur by way of (a) share and/or asset purchase agreement(s).

**3.** The legal and functional structures of the EEA Divestment Business are provided in **Annex 1** and **Annex 2**.

**4.** Pursuant to paragraph 6 of the EEA Commitments, the EEA Divestment Business includes, but is not limited to:

(a) The following main tangible assets:

(i) The production, filling and transfilling facilities, including dry ice plants and remote operating centres described in **Annex 3**;

(ii) All production machinery, equipment and tooling, such as compressors, pumps, vaporisers, liquefiers, carbon monoxide reformers, located in the above-mentioned production, filling and transfilling facilities and all other equipment owned and/or operated by the EEA Divestment Business;

(iii) Tankers, containers, dewars, cylinders, pipelines, storage tanks, loading facilities, ship terminals, distribution equipment and vehicles, including [...] CO2 ships [...], with the option for the Purchaser to buy [...] CO2 ship [...], owned and/or operated by the EEA Divestment Business to serve its customers. For [...] ship terminals, Linde/Praxair shall retain access rights (as further described in **Annex 4**). The CO2 ships and ship terminals are described in **Annex 5**;

(iv) Finished goods inventory relating to the products held by the EEA Divestment Business at the date of Closing; and

(v) Materials that pertain to the EEA Divestment Business (in full or in part, but excluding all material in relation to activities not included in the EEA Divestment Business).

(b) The following main intangible assets:

All intellectual property rights (by way of assignment, non-assertion or [...] licence) owned by Praxair, which are

[1] These legal entities mentioned in paragraph 1 of the Schedule are incorporated in [...]
It is noted that Praxair (including Rivoira S.p.A.) achieves some revenues from sales of gas products in countries in which it has no legal entities or gas plants. Such countries are: [...]. All such sales are generated out of the countries where the legal entities are incorporated, but form part of the EEA Divestment Business.

used in conducting the EEA Divestment Business. However, trademarks which are currently used by both the EEA Divestment Business and Praxair and/or Praxair's Affiliated Undertakings outside the EEA will be subject to a [...] licence for up [...] years.

(c) All relevant data, books and records, including but not limited to third-party supplier and customer records pertaining to the EEA Divestment Business (in full or in part, but excluding all information in relation to activities not included in the EEA Divestment Business). A list of all major customers of EEA Divestment Business is attached in **Annex 6**.

(d) The Personnel listed in **Annex 7**.

(e) The Key Personnel listed in **Annex 8**.

(f) All governmental licences, permits and authorisations related to the EEA Divestment Business, including but not limited to marketing authorisations, manufacturing licences, certificates for the distribution of medicinal products/medical devices and environmental licences.

(g) All customers contracts, framework agreements and orders pertaining to the EEA Divestment Business (including, among all other relevant contracts, helium wholesale supply agreements entered into with [...] and [...] and Praxair's tonnage contracts related to the EEA Divestment Business, the latter as listed in **Annex 9)**.

(h) In relation to helium sourcing:

(i) Praxair's helium sourcing contract with [...];

(ii) Praxair's back-to-back agreement with [...];

(iii) an option to acquire 1/3 of Praxair's back-to-back supply agreement concluded with [...] in relation to the [...] source for [...];

(iv) a back-to-back agreement with Praxair for up to [...] MMScf to be sourced from Praxair's [...] until the end of [...] and from Praxair's [...] from [...] until the end of [...], with the option to (subject to receipt of any necessary third-party consents) replace such back-to-back agreement with Linde's helium sourcing contract with [...] for 1[...] due to commence in [...]; and

(v) a fleet of helium cryogenic portable tanks (at least [...]) sufficient to operate the EEA Divestment Business on a standalone basis and taking into account, inter alia, the location of the sources and of the transfill centres to be supplied, the volumes at stake, and the estimated future growth as agreed with the Purchaser. The age and quality profile of the fleet to be divested shall be representative of Praxair's current global fleet of helium cryogenic portable tanks.

all as further described in **Annex 10.**

(i) Praxair's European engineering capabilities in relation to the on-site,[2] bulk and cylinder activities currently relevant to the EEA Divestment Business, including:

(i) Praxair's European engineering team located in [...];

(ii) Access to all Praxair's plant and plant equipment designs used by the EEA Divestment Business, including, but not limited to, plant and plant equipment designs for ASUs and VPSAs;

(iii) A [...] license to use Praxair's software tools that are currently used by the European commercial, operational and engineering teams. The tools are listed in **Annex 11** and include [...] among others; and

(iv) A [...] license to use in the EEA the current version of all of Praxair's design and safety standards used in the design of Praxair's gas plants and filling stations used by the EEA Divestment Business. A description of those standards is attached in **Annex 12**.

(v) An agreement between the Notifying Parties and the Purchaser of the EEA Divestment Business for the supply of any process plant component and/or spare part for the process plants included in the EEA Divestment Business, which cannot be bought and sourced elsewhere for a period:

- at least equal to the duration of existing tonnage/small on-site plant customer contracts, in relation to the process plants used to supply tonnage/small on-site plant customers; or
- at least of [...] years, unless it is proven to the satisfaction of the Monitoring Trustee that a shorter period would be sufficient, in relation to all other process plants.

The consideration should be no higher than that currently obtained by Praxair from Praxair's Affiliated Undertakings and/or SIAD, whichever is lower. For the avoidance of doubt, the consideration may include the profit margin of the Notifying Parties but any profit margin shall not be higher than the lower of the profit margin on current sales to Praxair's Affiliated Undertakings and/or SIAD.

(j) Without prejudice to Section 6(c) of the EEA Commitments, all third-party procurement and sourcing contracts (including swap agreements and contracts with CO2 feed gas suppliers) concluded by the EEA Divestment Business. A list of sourcing gas contracts with an order value of more than EUR 10,000 is attached as **Annex 13**.

(k) Arrangements for the transitional supply of the gases listed in **Annex 14** that are currently sourced by the EEA Divestment Business from Praxair, as well as of

[2] The term "on-site" refers to tonnage activities (encompassing supply via pipelines and dedicated/piggy-back plants) and small on-site plant activities.

gases related equipment, on terms and conditions equivalent to those of current deliveries and for a period of up to [...] months after Closing, extendable at the Purchaser's option by up to further [...] years.

(l) Arrangements for the transitional provision of services, including technical assistance, specified in **Annex 15** that are currently supplied by Praxair to the EEA Divestment Business, on terms and conditions equivalent to those of current deliveries and for a period of up to [...] months after Closing.

(m) Arrangements for the transitional supply of gases or other input materials procured and/or sourced from third parties on the basis of contracts concluded with Praxair and/or Praxair's Affiliated Undertakings not included in the EEA Divestment Business, to the extent that third parties' consent for the transfer of the said contracts cannot be obtained, on terms and conditions equivalent to those of current deliveries and for a period of up to [...] months after Closing. A list of sourcing contracts for gases / other input materials with an order value of more than EUR 10,000 (on a global basis) is attached as **Annex 16.**

(n) A non-exclusive transitional supply agreement with the Purchaser of the EEA Divestment Business pursuant to which, for a term of [...] years, extendable at the Purchaser's option by up to further [...] years, Praxair agrees to supply [...] to the Purchaser. The consideration should be no higher than that currently obtained by [...] from Affiliated Undertakings and/or SIAD, whichever is lower. For the avoidance of doubt, the consideration may include the profit margin of the Notifying Parties but any profit margin shall not be higher than the lower of the profit margin on current sales to Praxair's Affiliated Undertakings and/or SIAD. The agreement should cover not only the supply of [...], but also all other ancillary products and services (e.g. maintenance) that [...] currently provides to Praxair's Affiliated Undertakings.

(o) A non-exclusive transitional supply agreement with the Purchaser of the EEA Divestment Business pursuant to which, for a term of [...] years, extendable at the Purchaser's option by up to further [...] years, Praxair agrees to supply [...] at cost to the Purchaser.

**5.** In the event that materials to be transferred contain information that is confidential to Praxair's retained businesses and not relevant for the EEA Divestment Business, this information shall be redacted as appropriate.

**6.** The EEA Divestment Business shall not include:

(a) The right to the Praxair name and logos in any form, of any affiliate in the Praxair group, save for a transitional period of up to [...] years after Closing in order to allow rebranding by the Purchaser;

(b) Praxair's option agreements with [...];

(c) Any personnel records maintained by Praxair that pertain in full or in part to the EEA Divestment Business and the general books of account and books of original entry that comprise Praxair's permanent accounting or tax records, provided that

copies of all such documents relating to the EEA Divestment Business shall be provided to the Purchaser; and

(d) A number of legal entities in the EEA that belong to Praxair that are not active in the production of gases or the provision of homecare services, as identified in **Annex 1.**

**7.** If there is any asset or personnel which is not be covered by paragraph 4 of this Schedule but which is both used (exclusively or not) in the EEA Divestment Business and contributing to the continued viability and competitiveness of the EEA Divestment Business, that asset or adequate substitute will be transferred to potential purchasers.

***

## Annex 1
## Current legal ownership structure of the EEA Divestment Business

The legal ownership structure of the EEA Divestment Business is provided separately in Excel format. In the Excel file, the entities that form part of the EEA Divestment Business are marked with blue colour.

**Notes:**

***Legal structure of the EEA Divestment Business in Italy:***

Siad S.p.A. owns a number of subsidiaries which will be transferred as part of the transaction involving Praxair Italia S.r.l., Flow Fin S.p.A., Rivoira S.p.A., Siad S.p.A., Rivoira Pharma S.r.l. and Samac S.r.l. (the "Agreement"). These subsidiaries have not been included in the structure chart.

As part of the Agreement, Samac S.r.l. will sell:

[...]

Following the conclusion of the Agreement, [...]. ***EEA entities to be divested but with assets to be retained:***

[...]

***EEA entities that are not divested:***

[...]

## Annex 2
## EEA Divestment Business Functional Charts

Below are the functional charts of the EEA Divestment Business. We provide current and expected headcount figures that will be applicable as of the date of Closing.

[...]

## Annex 3
## Description of the EEA Divestment Business and its production facilities with product range by facility

The EEA Divestment Business includes the following production and filling facilities, as described in more detail in the maps and tables below:

[...]

The EEA Divestment Business also includes:

[...]

Further, the EEA Divestment Business includes Praxair's Industrial Gas Businesses in a number of countries where Praxair has no business assets but has gas sales/customer contracts made into these countries by entities which are part of the EEA Divestment Business as follows:

[...]

## Annex 4
## Access rights to Praxair's ship terminals/storage facilities

[...]

## Annex 5
## CO2 ships and ship terminals

[...]

## Annex 6
## List of all major customers of the EEA Divestment Business

[...]

## Annex 7
## Personnel of the EEA Divestment Business

[...]

## Annex 8
## Key Personnel of the EEA Divestment Business

[...]

## Annex 9
## Tonnage contracts of the EEA Divestment Business

[...]

## Annex 10
## Praxair's helium sourcing contracts

[...]

**Annex 11**
**A [...] license for the usage of the following software tools of Praxair**

[...]

## Annex 12
## A [...] license to use in the EEA the current version of all of Praxair's design and safety standards used in the design of Praxair's gas plants and filling stations

[...]

## Annex 13
## List of the third-party supply/sourcing contracts for the EEA Divestment Business

The EEA Divestment Business has the following sourcing contracts for raw and input materials with an order value of more than EUR 10,000.

[...]

## Annex 14
## List of gas products sourced by the EEA Divestment Business from Praxair

The EEA Divestment Business sources the following products:

[...]

## Annex 15
## Transitional arrangements with the EEA Divestment Business

These arrangements will cover:

[...]

**Annex 16**
**List of agreements for supplies to the EEA Divestment Business, which have been concluded on a global basis**

[...]

10 July 2018

# CASE M. 8480 – PRAXAIR / LINDE

## Helium Sourcing Commitments to the European Commission

# CASE NO. COMP/M.8480 – PRAXAIR/ LINDE

## Commitments to the European Commission – The Helium Sourcing Commitments

Pursuant to Articles 8(2) and 10(2) of Council Regulation (EC) No. 139/2004 (the "**Merger Regulation**"), Linde AG ("**Linde**") and Praxair, Inc. ("**Praxair**") (together, the "**Notifying Parties**") hereby enter into the following Commitments (the "**Helium Sourcing Commitments**") vis-à-vis the European Commission (the "**Commission**") with a view to rendering the combination of Linde and Praxair under a newly incorporated holding company (the "**Concentration**") compatible with the internal market and the functioning of the EEA Agreement.

This text shall be interpreted in light of the Commission's decision pursuant to Article 8(2) of the Merger Regulation to declare the Concentration compatible with the internal market and the functioning of the EEA Agreement (the "**Decision**"), in light of the general framework of European Union law, in particular in the light of the Merger Regulation, and by reference to the Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under the Commission Regulation (EC) No 802/2004 (the "**Remedies Notice**").

The Helium Sourcing Commitments shall take effect upon the Effective Date, provided that if Completion does not subsequently take place for whatever reason and the Concentration is thereby abandoned, the Notifying Parties shall no longer be bound by these Helium Sourcing Commitments.

### Section A. Definitions

1. For the purpose of the Commitments, the following terms shall have the following meaning:

   **Affiliated Undertakings**: undertakings controlled by the Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the Merger Regulation and in the light of the Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the "**Consolidated Jurisdictional Notice**").

   **Assets:** the helium sourcing contracts as indicated in Section B and described in more detail in the Schedule.

   **Closing**: the transfer to the Purchaser of the contractual rights under the Assets, the legal title to the related assets and the Personnel and Key Personnel.

   **Closing Period**: the period of [...] from the approval of the Purchaser and the terms of sale by the Commission.

   **Completion**: completion of the Concentration.

   **Confidential Information**: any business secrets, know-how, commercial information, or any other information of a proprietary nature that is not in the public domain.

   **Conflict of Interest**: any conflict of interest that impairs the Trustee's objectivity and independence in discharging its duties under the Commitments.

**Divestiture Trustee**: one or more natural or legal person(s) who is/are approved by the Commission and appointed by the Notifying Parties and who has/have received from the Notifying Parties the exclusive Trustee Mandate to transfer the Helium Sourcing Divestment Business to a Purchaser at no minimum price.

**EEA Commitments**: The parallel commitments of the Notifying Parties to divest Praxair entire gas business in the EEA, including but not limited to all Praxair's subsidiaries incorporated in the EEA as well as Praxair's European engineering capabilities and other assets.

**Effective Date**: the date of adoption of the Decision.

**First Divestiture Period**: the period of [...] from the Effective Date.

**Helium Sourcing Divestment Business**: the contractual rights under the Assets and other related assets and staff, all as defined in Section B and in the Schedule and which the Notifying Parties commit to divest.

**Key Personnel**: all personnel who are necessary to maintain the viability and competitiveness of the Helium Sourcing Divestment Business, as defined in the Schedule, including the Hold Separate Manager(s).

**Linde**: Linde AG, incorporated under the laws of Germany, with its registered office at Klosterhofstrasse 1, 80331, Munich, Germany. Reference to Linde includes reference to Linde's Affiliated Undertakings.

**Monitoring Trustee**: one or more natural or legal person(s), who is/are approved by the Commission and appointed by the Notifying Parties, and who has/have the duty to monitor the Notifying Parties' compliance with the conditions and obligations attached to the Decision.

**Hold Separate Manager**: one or more individuals appointed by the Notifying Parties for the Helium Sourcing Divestment Business to manage the day-to-day business under the supervision of the Monitoring Trustee.

**Parties**: the Notifying Parties and the undertaking that is the target of the Concentration.

**Personnel:** staff that contribute to the current operation of the Helium Sourcing Divestment Business, as defined in the Schedule, including, for the avoidance of doubt, all Key Personnel.

**Praxair**: Praxair, Inc., incorporated under the laws of Connecticut, with its registered office at 10 Riverview Drive, Danbury, Connecticut, 06810 U.S.A. Reference to Praxair includes reference to Praxair's Affiliated Undertakings.

**Purchaser(s)**: the entity or entities approved by the Commission as acquirer(s) of the Helium Sourcing Divestment Business in accordance with the criteria set out in Section D.

**Purchaser Criteria**: the criteria laid down in paragraph 14 of these Commitments that the Purchaser(s) must fulfil in order to be approved by the Commission.

**Schedule**: the schedule to these Commitments describing more in detail the Helium Sourcing Divestment Business.

**SIAD**: Società Italiana Acetilene e Derivati (S.I.A.D) S.p.A.

**SIAD Commitments**: The parallel commitments of the Notifying Parties to divest Praxair's shareholding in SIAD.

**Trustee(s)**: the Monitoring Trustee and/or the Divestiture Trustee as the case may be.

**Trustee Divestiture Period**: the period of [...] from the end of the First Divestiture Period.

## Section B. The commitment to divest and the Divestment Business

### Commitment to divest

2. In order to maintain effective competition, the Notifying Parties commit to divest, or procure the divestiture of, the Helium Sourcing Divestment Business by the end of the Trustee Divestiture Period to one or more purchasers on terms of sale approved by the Commission in accordance with the procedure described in paragraph 15 of these Commitments. To carry out the divestiture, the Notifying Parties commit to find one or several purchaser(s) and to enter into one or several final binding sale and purchase agreements for the transfer of the Helium Sourcing Divestment Business within the First Divestiture Period. If the Notifying Parties have not entered into such an agreement at the end of the First Divestiture Period, they shall grant the Divestiture Trustee an exclusive mandate to sell the Divestment Business in accordance with the procedure described in paragraph 27 in the Trustee Divestiture Period.

3. The Notifying Parties shall be deemed to have complied with this commitment if:

   (a) by the end of the Trustee Divestiture Period, the Notifying Parties or the Divesture Trustee have entered into one or several final binding sale and purchase agreement(s) and the Commission approves the proposed purchaser(s) and the terms of sale as being consistent with the Commitments in accordance with the procedure described in paragraph 15; and

   (b) if the Closing of the transfer of the Helium Sourcing Divestment Business to the Purchaser takes place within the Closing Period.

4. In order to maintain the structural effect of the Helium Sourcing Commitments, the Notifying Parties shall, for a period of 10 years after Closing, not acquire, whether directly or indirectly, the possibility of exercising influence (as defined in paragraph 43 of the Remedies Notice, footnote 3) over the whole or part of the Helium Sourcing Divestment Business, unless, following the submission of a reasoned request from the Notifying Parties showing good cause and accompanied by a report from the Monitoring Trustee (as provided in paragraph 41 of these Commitments), the Commission finds that the structure of the market has changed to such an extent that the non-acquisition of such rights is no longer necessary to render the proposed concentration compatible with the internal market. For the avoidance of doubt, this paragraph shall not prevent the Notifying Parties from purchasing helium from the Purchaser(s) of the Helium Sourcing Divestment Business or participating in future tenders.

### Structure and definition of the Divestment Business

5. The Helium Sourcing Divestment Business consists of contractual rights under the helium sourcing contracts and the associated staff and assets described in the Schedule. The Helium Sourcing Divestment Business, described in more detail in the Schedule, includes all assets and staff that contribute to the current operation of the Helium Sourcing Divestment Business or are necessary to ensure the viability and competitiveness of the Helium Sourcing Divestment Business, in particular (to the extent relevant):

   (a) all tangible and intangible assets (including intellectual property rights);

   (b) all licences, permits and authorisations issued by any governmental organisation for the benefit of the Helium Sourcing Divestment Business;

   (c) all contracts, leases, commitments and customer orders of the Helium Sourcing Divestment Business; all customer, credit and other records of the Helium Sourcing Divestment Business; and

   (d) the Personnel.

## Section C. Related Commitments

### Preservation of viability, marketability and competitiveness

6. From the Effective Date until Closing, the Notifying Parties shall preserve or procure the preservation of the economic viability, marketability and competitiveness of the Helium Sourcing Divestment Business, in accordance with good business practice, and shall minimise as far as possible any risk of loss of competitive potential of the Helium Sourcing Divestment Business. In particular, the Notifying Parties undertake

   (a) not to carry out any action that might have a significant adverse impact on the value, management or competitiveness of the Helium Sourcing Divestment Business or that might alter the nature and scope of activity, or the industrial or commercial strategy or the investment policy, of the Helium Sourcing Divestment Business.

   (b) to make available, or procure to make available, sufficient resources for the development of the Helium Sourcing Divestment Business, on the basis and continuation of the existing business plans;

   (c) to take all reasonable steps, or procure that all reasonable steps are being taken, including appropriate incentive schemes (based on industry practice), to encourage all Key Personnel to remain with the Helium Sourcing Divestment Business, and not to solicit or move any Personnel to the Notifying Parties' remaining business. Where, nevertheless, individual members of the Key Personnel exceptionally leave the Helium Sourcing Divestment Business, the Notifying Parties shall provide a reasoned proposal to replace the person or persons concerned to the Commission and the Monitoring Trustee. The Notifying Parties must be able to demonstrate to the Commission that the replacement is well suited to carry out the functions exercised by those individual members of the Key Personnel. The replacement shall take place under the supervision of the Monitoring Trustee, who shall report to the Commission.

**Hold Separate Obligation**

7. To the extent reasonably practicable in light of the obligation set out in paragraph 6, the Notifying Parties commit from the Effective Date until Closing, to keep the Helium Sourcing Divestment Business separate from the business(es) they are retaining and to ensure that unless explicitly permitted under these Commitments: (i) management and staff of the business(es) retained by the Notifying Parties have no involvement in the Helium Sourcing Divestment Business; (ii) the Key Personnel and Personnel of the Helium Sourcing Divestment Business have no involvement in any business retained by the Notifying Parties and do not report to any individual outside the Helium Sourcing Divestment Business. For the avoidance of doubt this paragraph shall not prevent the Helium Sourcing Divestment Business from continuing to supply the Notifying Parties with helium prior to Closing.

8. To the extent reasonably practicable in light of the obligation set out in paragraph 6, until Closing, the Notifying Parties shall assist the Monitoring Trustee in ensuring that the Helium Sourcing Divestment Business is managed as a distinct and saleable entity separate from the business(es) which the Notifying Parties are retaining. Immediately after the adoption of the Decision, the Notifying Parties shall appoint one or more Hold Separate Managers. The Hold Separate Manager(s), who shall be part of the Key Personnel, shall manage the helium Sourcing Divestment Business independently and in the best interest of the business with a view to ensuring its continued economic viability, marketability and competitiveness and its independence from the businesses retained by the Notifying Parties. The Hold Separate Manager(s) shall closely cooperate with and report to the Monitoring Trustee and, if applicable, the Divestiture Trustee. Any replacement of the Hold Separate Manager(s) shall be subject to the procedure laid down in paragraph 8(c) of these Commitments. The Commission may, after having heard the Notifying Parties, require the Notifying Parties to replace the Hold Separate Manager(s).

**Ring-fencing**

9. To the extent reasonably practicable in light of the obligation set out in paragraph 6, the Notifying Parties shall implement, or procure to implement, all necessary measures to ensure that they do not, after the Effective Date, obtain any Confidential Information relating solely to the Helium Sourcing Divestment Business and that any such Confidential Information obtained by the Notifying Parties before the Effective Date will be eliminated as soon as reasonably practicable and no longer than six (6) weeks after the Effective Date and not be used by the Notifying Parties. The Notifying Parties may obtain or keep information relating to the Helium Sourcing Divestment Business which is reasonably necessary for the continued operation of the helium business retained by the Notifying Parties, the divestiture of the Helium Sourcing Divestment Business or the disclosure of which to Notifying Parties is required by law. For the avoidance of doubt this paragraph shall not prevent the Helium Sourcing Divestment Business from continuing to supply the Notifying Parties with helium prior to Closing.

**Non-solicitation clause**

10. The Parties undertake, subject to customary limitations, not to solicit, and to procure that Affiliated Undertakings do not solicit, the Key Personnel transferred with the Helium Sourcing Divestment Business for a period of [...] after Closing.

### Due diligence

11. In order to enable potential purchasers to carry out a reasonable due diligence of the Helium Sourcing Divestment Business, the Notifying Parties shall, subject to customary confidentiality assurances and dependent on the stage of the divestiture process

    (a) provide to potential purchasers sufficient information as regards the Helium Sourcing Divestment Business;

    (b) provide to potential purchasers sufficient information relating to the Personnel and allow them reasonable access to the Personnel.

### Reporting

12. The Notifying Parties shall submit written reports in English on potential purchasers of the Helium Sourcing Divestment Business and developments in the negotiations with such potential purchasers to the Commission and the Monitoring Trustee no later than 10 days after the end of every month following the Effective Date (or otherwise at the Commission's request). The Notifying Parties shall submit a list of all potential purchasers having expressed interest in acquiring the Helium Sourcing Divestment Business to the Commission at each and every stage of the divestiture process, as well as a copy of all the offers made by potential purchasers within five days of their receipt.

13. The Notifying Parties shall inform the Commission and the Monitoring Trustee on the preparation of the data room documentation and the due diligence procedure and shall submit a copy of any information memorandum to the Commission and the Monitoring Trustee before sending the memorandum out to potential purchasers.

## Section D. The Purchaser

14. In order to be approved by the Commission, the Purchaser(s) must fulfil the following criteria:

    (a) The Purchaser(s) shall be independent of and unconnected to the Notifying Parties and their Affiliated Undertakings (this being assessed having regard to the situation following the divestiture);

    (b) The Purchaser(s) shall have the financial resources, proven expertise and incentive to maintain and develop the Helium Sourcing Divestment Business as a viable and active competitive force in competition with the Parties and other competitors;

    (c) The acquisition of the Helium Sourcing Divestment Business by the Purchaser(s) must neither be likely to create, in light of the information available to the Commission, *prima facie* competition concerns nor give rise to a risk that the implementation of the Commitments will be delayed. In particular, the Purchaser(s) must reasonably be expected to obtain all necessary approvals from the relevant regulatory authorities for the acquisition of the Helium Sourcing Divestment Business.

15. The final binding sale and purchase agreement(s) (as well as ancillary agreements) relating to the divestment of the Helium Sourcing Divestment Business shall be conditional on the

Commission's approval. When the Notifying Parties have reached an agreement with a purchaser(s), they shall submit a fully documented and reasoned proposal, including a copy of the final agreement(s), within one week to the Commission and the Monitoring Trustee. The Notifying Parties must be able to demonstrate to the Commission that the purchaser(s) fulfils the Purchaser Criteria and that the Helium Sourcing Divestment Business is being sold in a manner consistent with the Commission's Decision and the Commitments. For the approval, the Commission shall verify that the purchaser(s) fulfils the Purchaser Criteria and that the Helium Sourcing Divestment Business is being sold in a manner consistent with the Commitments including their objective to bring about a lasting structural change in the market. The Commission may approve the sale of the Helium Sourcing Divestment Business without one or more Assets or parts of the Personnel, or by substituting one or more Assets or parts of the Personnel with one or more different assets or different personnel, if this does not affect the viability and competitiveness of the Helium Sourcing Divestment Business after the sale, taking account of the proposed purchaser(s).

## Section E. Trustee

### I. Appointment procedure

16. The Notifying Parties shall appoint a Monitoring Trustee to carry out the functions specified in these Commitments for a Monitoring Trustee. The Notifying Parties commit not to close the Concentration before the appointment of a Monitoring Trustee.

17. If the Notifying Parties have not entered into a binding sale and purchase agreement(s) regarding the Helium Sourcing Divestment Business one month before the end of the First Divestiture Period or if the Commission has rejected a purchaser proposed by the Notifying Parties at that time or thereafter, the Notifying Parties shall appoint a Divestiture Trustee. The appointment of the Divestiture Trustee shall take effect upon the commencement of the Trustee Divestiture Period.

18. The Trustee shall:

    (a) at the time of appointment, be independent of the Notifying Parties and their Affiliated Undertakings;

    (b) possess the necessary qualifications to carry out its mandate, for example have sufficient relevant experience as an investment banker or consultant or auditor; and

    (c) neither have nor become exposed to a Conflict of Interest.

19. The Trustee shall be remunerated by the Notifying Parties in a way that does not impede the independent and effective fulfilment of its mandate. In particular, where the remuneration package of a Divestiture Trustee includes a success premium linked to the final sale value of the Helium Sourcing Divestment Business, such success premium may only be earned if the divestiture takes place within the Trustee Divestiture Period.

**Proposal by the Notifying Parties**

20. No later than two weeks after the Effective Date, the Notifying Parties shall submit the name or names of one or more natural or legal persons whom the Notifying Parties propose to appoint as the Monitoring Trustee to the Commission for approval. No later than one month before the end of the First Divestiture Period or on request by the Commission, the Notifying

Parties shall submit a list of one or more persons whom they propose to appoint as Divestiture Trustee to the Commission for approval. The proposal shall contain sufficient information for the Commission to verify that the person or persons proposed as Trustee fulfil the requirements set out in paragraph 18 and shall include:

(a) the full terms of the proposed mandate, which shall include all provisions necessary to enable the Trustee to fulfil its duties under these Commitments;

(b) the outline of a work plan which describes how the Trustee intends to carry out its assigned tasks;

(c) an indication whether the proposed Trustee is to act as both Monitoring Trustee and Divestiture Trustee or whether different trustees are proposed for the two functions.

**Approval or rejection by the Commission**

21. The Commission shall have the discretion to approve or reject the proposed Trustee(s) and to approve the proposed mandate subject to any modifications it deems necessary for the Trustee to fulfil its obligations. If only one name is approved, the Notifying Parties shall appoint or cause to be appointed the person or persons concerned as Trustee, in accordance with the mandate approved by the Commission. If more than one name is approved, the Notifying Parties shall be free to choose the Trustee to be appointed from among the names approved. The Trustee shall be appointed within one week of the Commission's approval, in accordance with the mandate approved by the Commission.

**New proposal by the Notifying Parties**

22. If all the proposed Trustees are rejected, the Notifying Parties shall submit the names of at least two more natural or legal persons within one week of being informed of the rejection, in accordance with paragraphs 16 and 21 of these Commitments.

**Trustee Nominated by the Commission**

23. If further proposed Trustees are rejected by the Commission, the Commission shall nominate a Trustee, whom the Notifying Parties shall appoint, or cause to be appointed, in accordance with a trustee mandate approved by the Commission.

## II. Functions of the Trustee

24. The Trustee shall assume its specified duties and obligations in order to ensure compliance with the Commitments. The Commission may, on its own initiative or at the request of the Trustee or the Notifying Parties, give any orders or instructions to the Trustee in order to ensure compliance with the conditions and obligations attached to the Decision.

**Duties and obligations of the Monitoring Trustee**

25. The Monitoring Trustee shall:

(i) propose in its first report to the Commission a detailed work plan describing how it intends to monitor compliance with the obligations and conditions attached to the Decision.

(ii) oversee, in close co-operation with the Hold Separate Manager(s), the on-going management of the Helium Sourcing Divestment Business with a view to ensuring its continued economic viability, marketability and competitiveness and monitor compliance by the Notifying Parties with the conditions and obligations attached to the Decision. To that end the Monitoring Trustee shall:

(a) monitor the preservation of the economic viability, marketability and competitiveness of the Helium Sourcing Divestment Business and the keeping separate of the Helium Sourcing Divestment Business from the business retained by the Parties, in accordance with paragraphs 6 and 7 of these Commitments;

(b) supervise the management of the Helium Sourcing Divestment Business as a distinct and saleable entity, in accordance with paragraph 8 of these Commitments;

(c) with respect to Confidential Information:

- determine all necessary measures to ensure that the Notifying Parties do not after the Effective Date obtain any Confidential Information relating to the Helium Sourcing Divestment Business,
- in particular strive for the severing of the Helium Sourcing Divestment Business' participation in a central information technology network to the extent possible, without compromising the viability of the Helium Sourcing Divestment Business,
- make sure that any Confidential Information relating to Helium Sourcing Divestment Business obtained by the Notifying Parties before the Effective Date is eliminated as soon as reasonably practicable and no longer than six (6) weeks after the Effective Date and will not be used by the Notifying Parties and
- decide whether such information may be disclosed to or kept by the Notifying Parties as the disclosure is reasonably necessary to allow the Notifying Parties to carry out the divestiture or as the disclosure is required by law;

(d) monitor the splitting of assets and the allocation of Personnel between the Helium Sourcing Divestment Business and the Notifying Parties or Affiliated Undertakings;

(iii) propose to the Notifying Parties such measures as the Monitoring Trustee considers necessary to ensure the Notifying Parties' compliance with the conditions and obligations attached to the Decision, in particular the maintenance of the full economic viability, marketability or competitiveness of the Helium Sourcing Divestment Business, the holding separate of the Helium Sourcing Divestment Business and the non-disclosure of competitively sensitive information where appropriate;

(iv) review and assess potential purchasers as well as the progress of the divestiture process and verify that, dependent on the stage of the divestiture process

(a) potential purchasers receive sufficient and correct information relating to the Helium Sourcing Divestment Business and the Personnel in particular by reviewing, if available, the data room documentation, the information memorandum and the due diligence process;

(b) potential purchasers are granted reasonable access to the Personnel;

(v) act as a contact point for any requests by third parties, in particular potential purchasers, in relation to the Helium Sourcing Commitments;

(vi) provide to the Commission, sending the Notifying Parties a non-confidential copy at the same time, a written report within 15 days after the end of every month that shall cover the operation and management of the Helium Sourcing Divestment Business as well as the splitting of assets so that the Commission can assess whether the business is held in a manner consistent with the Helium Sourcing Commitments and the progress of the divestiture process as well as potential purchasers;

(vii) promptly report in writing to the Commission, sending the Notifying Parties a non-confidential copy at the same time, if it concludes on reasonable grounds that the Notifying Parties are failing to comply with these Commitments;

(viii) within one week after receipt of the documented proposal referred to in paragraph 15 of these Commitments, submit to the Commission, sending the Notifying Parties a non-confidential copy at the same time, a reasoned opinion as to the suitability and independence of the proposed purchaser(s) and the viability of the Helium Sourcing Divestment Business after the Sale and as to whether the Helium Sourcing Divestment Business is sold in a manner consistent with the conditions and obligations attached to the Decision, in particular, if relevant, whether the sale of the Helium Sourcing Divestment Business without one or more Assets or not all of the Personnel affects the viability of the Helium Sourcing Divestment Business after the sale, taking account of the proposed purchaser;

(ix) assume the other functions assigned to the Monitoring Trustee under the conditions and obligations attached to the Decision.

26. If the Monitoring and Divestiture Trustee are not the same legal or natural persons, the Monitoring Trustee and the Divestiture Trustee shall cooperate closely with each other during and for the purpose of the preparation of the Trustee Divestiture Period in order to facilitate each other's tasks.

**Duties and obligations of the Divestiture Trustee**

27. Within the Trustee Divestiture Period, the Divestiture Trustee shall sell at no minimum price the Helium Sourcing Divestment Business to a purchaser(s), provided that the Commission has approved both the purchaser and the final binding sale and purchase agreement (and ancillary agreements) as in line with the Commission's Decision and the Helium Sourcing Commitments in accordance with paragraphs 14 and 15 of these Commitments. The Divestiture Trustee shall include in the sale and purchase agreement (as well as in any ancillary agreements) such terms and conditions as it considers appropriate for an expedient sale in the Trustee Divestiture Period. In particular, the Divestiture Trustee may

include in the sale and purchase agreement such customary representations and warranties and indemnities as are reasonably required to effect the sale. The Divestiture Trustee shall protect the legitimate financial interests of the Notifying Parties, subject to the Notifying Parties' unconditional obligation to divest at no minimum price in the Trustee Divestiture Period.

28. In the Trustee Divestiture Period (or otherwise at the Commission's request), the Divestiture Trustee shall provide the Commission with a comprehensive monthly report written in English on the progress of the divestiture process. Such reports shall be submitted within 15 days after the end of every month with a simultaneous copy to the Monitoring Trustee and a non-confidential copy to the Notifying Parties.

### III. Duties and obligations of the Parties

29. The Notifying Parties shall provide and shall cause their advisors to provide the Trustee with all such co-operation, assistance and information as the Trustee may reasonably require to perform its tasks. The Trustee shall have full and complete access to any of the Notifying Parties' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the Helium Sourcing Commitments and the Notifying Parties shall provide the Trustee upon request with copies of any document. The Notifying Parties shall make available to the Trustee one or more offices on their premises and shall be available for meetings in order to provide the Trustee with all information necessary for the performance of its tasks.

30. The Notifying Parties shall provide the Monitoring Trustee with all managerial and administrative support that it may reasonably request on behalf of the management of the Helium Sourcing Divestment Business. This shall include all administrative support functions relating to the Helium Sourcing Divestment Business which are currently carried out at headquarters level. The Notifying Parties shall provide and shall cause their advisors to provide the Monitoring Trustee, on request, with the information submitted to potential purchasers, in particular give the Monitoring Trustee access to the data room documentation and all other information granted to potential purchasers in the due diligence procedure. The Notifying Parties shall inform the Monitoring Trustee on possible purchasers, submit lists of potential purchasers at each stage of the selection process, including the offers made by potential purchasers at those stages, and keep the Monitoring Trustee informed of all developments in the divestiture process.

31. The Notifying Parties shall grant or procure Affiliated Undertakings to grant comprehensive powers of attorney, duly executed, to the Divestiture Trustee to effect the sale (including ancillary agreements), the Closing and all actions and declarations which the Divestiture Trustee considers necessary or appropriate to achieve the sale and the Closing, including the appointment of advisors to assist with the sale process. Upon request of the Divestiture Trustee, the Notifying Parties shall cause the documents required for effecting the sale and the Closing to be duly executed.

32. The Notifying Parties shall indemnify the Trustee and its employees and agents (each an "**Indemnified Party**") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to the Notifying Parties for, any liabilities arising out of the performance of the Trustee's duties under the Helium Sourcing Commitments, except to the extent that such liabilities result from the wilful default,

recklessness, gross negligence or bad faith of the Trustee, its employees, agents or advisors.

33. At the expense of the Notifying Parties, the Trustee may appoint advisors (in particular for corporate finance or legal advice), subject to the Notifying Parties' approval (this approval not to be unreasonably withheld or delayed) if the Trustee considers the appointment of such advisors necessary or appropriate for the performance of its duties and obligations under the Mandate, provided that any fees and other expenses incurred by the Trustee are reasonable. Should the Notifying Parties refuse to approve the advisors proposed by the Trustee the Commission may approve the appointment of such advisors instead, after having heard the Notifying Parties. Only the Trustee shall be entitled to issue instructions to the advisors. Paragraph 32 of these Commitments shall apply *mutatis mutandis*. In the Trustee Divestiture Period, the Divestiture Trustee may use advisors who served the Notifying Parties during the Divestiture Period if the Divestiture Trustee considers this in the best interest of an expedient sale.

34. The Notifying Parties agree that the Commission may share Confidential Information proprietary to the Notifying Parties with the Trustee. The Trustee shall not disclose such information and the principles contained in Article 17 (1) and (2) of the Merger Regulation apply *mutatis mutandis*.

35. The Notifying Parties agree that the contact details of the Monitoring Trustee are published on the website of the Commission's Directorate-General for Competition and they shall inform interested third parties, in particular any potential purchasers, of the identity and the tasks of the Monitoring Trustee.

36. For a period of 10 years from the Effective Date the Commission may request all information from the Parties that is reasonably necessary to monitor the effective implementation of these Commitments.

## IV. Replacement, discharge and reappointment of the Trustee

37. If the Trustee ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Trustee to a Conflict of Interest:

    (a) the Commission may, after hearing the Trustee and the Notifying Parties, require the Notifying Parties to replace the Trustee; or

    (b) the Notifying Parties may, with the prior approval of the Commission, replace the Trustee.

38. If the Trustee is removed according to paragraph 37 of these Commitments, the Trustee may be required to continue in its function until a new Trustee is in place to whom the Trustee has effected a full hand over of all relevant information. The new Trustee shall be appointed in accordance with the procedure referred to in paragraphs 16-23 of these Commitments.

39. Unless removed according to paragraph 37 of these Commitments, the Trustee shall cease to act as Trustee only after the Commission has discharged it from its duties after all the Helium Sourcing Commitments with which the Trustee has been entrusted have been implemented. However, the Commission may at any time require the reappointment of the

Monitoring Trustee if it subsequently appears that the relevant remedies might not have been fully and properly implemented.

## Section F. The review clause

40. The Commission may extend the time periods foreseen in the Helium Sourcing Commitments in response to a request from the Notifying Parties or, in appropriate cases, on its own initiative. Where the Notifying Parties request an extension of a time period, they shall submit a reasoned request to the Commission no later than one month before the expiry of that period, showing good cause. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to the Notifying Parties. Only in exceptional circumstances shall the Notifying Parties be entitled to request an extension within the last month of any period.

41. The Commission may further, in response to a reasoned request from the Notifying Parties showing good cause waive, modify or substitute, in exceptional circumstances, one or more of the undertakings in these Commitments. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to the Notifying Parties. The request shall not have the effect of suspending the application of the undertaking and, in particular, of suspending the expiry of any time period in which the undertaking has to be complied with.

## Section G. Entry into force

42. The Helium Sourcing Commitments shall take effect upon the date of adoption of the Decision.

duly authorised for and on behalf of:

**Linde AG**

**Praxair, Inc.**

## Schedule to the Helium Sourcing Commitments

**1.** The Helium Sourcing Divestment Business consists of

(a) in accordance with paragraph 2 of this Schedule, helium sourcing contracts to be divested (either by way of transferring existing sourcing contracts or by way of entering into back to back supply arrangements) to the buyer(s) of the divestiture package(s) to be agreed with other competition authorities than the European Commission, in particular the United States Federal Trade Commission and the People's Republic of China State Administration for Market Regulation. For the avoidance of doubt, the helium sourcing contracts forming part of the EEA Divestment Business (as described in Annex 10 of the Schedule to the EEA Commitments), do not form part of the Helium Sourcing Divestment Business;

(b) Linde's helium production assets located in the United States, including Linde's Otis refinery;

(c) Linde's entire inventory held in the storage reservoir operated by the Bureau of Land Management ("BLM") and all of Linde's interests in the BLM operations;

(d) a fleet of cryogenic portable tanks to operate the Helium Sourcing Divestment Business on a standalone basis and taking into account, inter alia, the location of the sources and of the trans-fill centres to be supplied, the volumes at stake, and the estimated future growth as agreed with the Purchaser(s)[1];

(e) to the extent agreed with other competition authorities than the European Commission, in particular the United States Federal Trade Commission and the People's Republic of China State Administration for Market Regulation, staff that contribute to the current operation of the Helium Sourcing Divestment Business including Linde's Otis refinery in the United States (i.e. "**Personnel**") and all personnel who are necessary to maintain the viability and competitiveness of the Helium Sourcing Divestment Business (i.e. "**Key Personnel**").

**2.** The Helium Sourcing Divestment Business will comprise such an amount of helium sourcing contracts and be of such a composition that, when combined with the helium sourcing contracts that form part of the EEA Divestment Business, the overall helium sourcing volume divested globally will be equivalent to virtually all of Praxair's existing global helium sourcing volumes and overall representative of the make-up of Praxair's current helium sourcing portfolio with respect to its diversity, reliability, competitiveness and duration.

***

[1] The age and quality profile of the fleet to be divested shall be representative of Praxair's current global fleet of cryogenic portable tanks used for the transportation of helium.

10 July 2018

# CASE M. 8480 – PRAXAIR / LINDE

## SIAD Commitments to the European Commission

# CASE NO. COMP/M.8480 – PRAXAIR/ LINDE

## Commitments to the European Commission – The SIAD Commitments

Pursuant to Article 8(2) and 10(2) of Council Regulation (EC) No. 139/2004 (the "**Merger Regulation**"), Linde AG ("**Linde**") and Praxair, Inc. ("**Praxair**") (together, the "**Notifying Parties**") hereby enter into the following Commitments (the "**SIAD Commitments**") vis-à-vis the European Commission (the "**Commission**") with a view to rendering the combination of Linde and Praxair under a newly incorporated holding company (the "**Concentration**") compatible with the internal market and the functioning of the EEA Agreement.

This text shall be interpreted in light of the Commission's decision pursuant to Article 8(2) of the Merger Regulation to declare the Concentration compatible with the internal market and the functioning of the EEA Agreement (the "**Decision**"), in light of the general framework of European Union law, in particular in the light of the Merger Regulation, and by reference to the Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under the Commission Regulation (EC) No 802/2004 (the "**Remedies Notice**").

The SIAD Commitments shall take effect upon the Effective Date, provided that if Completion does not subsequently take place for whatever reason and the Concentration is thereby abandoned, the Notifying Parties shall no longer be bound by these SIAD Commitments.

### Section A. Definitions

1. For the purpose of the Commitments, the following terms shall have the following meaning:

**Affiliated Undertakings**: undertakings controlled by the Parties, whereby the notion of control shall be interpreted pursuant to Article 3 of the Merger Regulation and in the light of the Commission Consolidated Jurisdictional Notice under Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings (the "**Consolidated Jurisdictional Notice**").

**Agreement**: the share purchase agreement of [...], between Praxair Italia S.r.l. ("Praxair Italia"), Rivoira S.p.A. ("Rivoira"), Rivoira Pharma S;r.l. ("Rivoira Pharma"), Flow Fin S.p.A. ("Flow Fin"), Società Italiana Acetilene e Derivati S.p.A. ("SIAD") and Samac S.r.l., ("Samac") as further described in Annex 1 to the Schedule, pursuant to which they agreed to implement certain transactions in order to sever the structural links between the Praxair Group and Flow Fin.

**Assets:** the assets that contribute to the current operation or are necessary to ensure the viability and competitiveness of the SIAD Business as indicated in Section B, paragraph 5 (a), (b) and (c) and described more in detail in the Schedule.

**Closing**: the transfer of the legal title of the SIAD Divestment Business to the Purchaser.

**Completion**: completion of the Concentration.

**Confidential Information**: any business secrets, know-how, commercial information, or any other information of a proprietary nature that is not in the public domain.

**Conflict of Interest**: any conflict of interest that impairs the Trustee's objectivity and independence in discharging its duties under the Commitments.

**EEA Divestment Commitments:** The parallel commitments of the Notifying Parties to divest Praxair's entire Industrial Gas Business in the EEA, only excluding Praxair's shareholding in SIAD, as defined in the EEA Divestment Commitments.

**Effective Date**: the date of adoption of the Decision.

**Hold Separate Manager**: the person appointed by Praxair to assist the Monitoring Trustee in the exercise of Praxair's rights under the shareholdings that together constitute the SIAD Business after the Effective Date under the supervision of the Monitoring Trustee.

**Key Personnel**: the individuals listed in Annex 11 of the Schedule.

**Linde**: Linde AG, incorporated under the laws of Germany, with its registered office at Klosterhofstrasse 1, 80331, Munich, Germany. Reference to Linde includes reference to Linde's Affiliated Undertakings.

**Monitoring Trustee**: one or more natural or legal person(s), who is/are approved by the Commission and appointed by the Notifying Parties, and who has/have the duty to monitor the Notifying Parties' compliance with the conditions and obligations attached to the Decision.

[...]

**Parties**: the Notifying Parties and the undertaking that is the target of the Concentration.

**Personnel**: the personnel currently employed by the SIAD Business.

**Praxair**: Praxair, Inc., incorporated under the laws of Connecticut, with its registered office at 10 Riverview Drive, Danbury, Connecticut, 06810 U.S.A. Reference to Praxair includes reference to Praxair's Affiliated Undertakings.

**Purchaser**: Flow Fin S.p.A., incorporated under the laws of Italy, with its registered office at via S. Bernardino, 92, 24126 Bergamo.

**SIAD**: Società Italiana Acetilene e Derivati (S.I.A.D) S.p.A., incorporated under the laws of Italy, with its registered office at via S. Bernardino, 92, 24126 Bergamo.

**SIAD Business**: the business operated by SIAD.

**SIAD Divestment Business**: the shareholdings which Praxair commits to divest pursuant to the Agreement, as further described in Section B and in the Schedule.

**Schedule**: the schedule to these Commitments describing more in detail the SIAD Divestment Business and the SIAD Business.

**Trustee(s)**: the Monitoring Trustee.

## Section B. The commitment to divest and the Divestment Business

### Commitment to divest

2. In order to maintain effective competition, the Notifying Parties commit to divest, or procure the divestiture of the SIAD Divestment Business to the Purchaser, pursuant to the Agreement.

3. The Notifying Parties shall be deemed to have complied with this commitment if pursuant to the Agreement, Praxair sells, at Closing, the SIAD Divestment Business to the Purchaser, within 6 months from the Effective Date. The proposed concentration shall not be implemented before the Notifying Parties have entered into final binding transitional supply agreements with SIAD as indicated in the Schedule and the Commission has approved the terms of such agreements.

4. In order to maintain the structural effect of the SIAD Commitments, the Notifying Parties shall, for a period of 10 years after Closing, not acquire, whether directly or indirectly, the possibility of exercising influence (as defined in paragraph 43 of the Remedies Notice, footnote 3) over the whole or part of the SIAD Divestment Business, unless, following the submission of a reasoned request from the Notifying Parties showing good cause and accompanied by a report from the Monitoring Trustee (as provided in paragraph 35 of these Commitments), the Commission finds that the structure of the market has changed to such an extent that the absence of influence over the SIAD Divestment Business is no longer necessary to render the proposed concentration compatible with the internal market.

### Structure and definition of the Divestment Business

5. The SIAD Divestment Business consists of (i) Praxair's [...] shareholding (via Praxair Italia S.r.l) in SIAD, (ii) Rivoira Pharma's [...] shareholding in Medigas, Italia S.r.l. ("Medigas"); (iii) Rivoira's [...] shareholding in IGAT — Industria Gas Tecnici S.p.A. ("IGAT") and its [...] interest in IGAT that it holds jointly with SIAD; and (iv) Samac's CO2 business in Scarlino. The legal and functional structure of the SIAD Business as operated to date is described in the Schedule. The SIAD Business, described in more detail in the Schedule, includes all assets and staff that contribute to the current operation or are necessary to ensure the viability and competitiveness of the SIAD Business, in particular:

   (a) all tangible and intangible assets (including intellectual property rights);

   (b) all licences, permits and authorisations issued by any governmental organisation for the benefit of the SIAD Business;

   (c) all contracts, leases, commitments and customer orders of the SIAD Business; all customer, credit and other records of the SIAD Divestment Business (items referred to under (a)-(c) hereinafter collectively referred to as "**Assets**").

   (d) the Personnel.

6. In addition, the SIAD Business includes the benefit, for a transitional period after Closing and on terms and conditions substantially equivalent to those at present afforded to the SIAD Business, of all current arrangements under which Praxair's Affiliated Undertakings that are part of the EEA Divestment Business supply products or services to the SIAD Business, as detailed in the Schedule, unless otherwise agreed with the Purchaser.

7. Further, the SIAD Business includes the benefit, for a transitional period of [...] months after Closing and on terms and conditions equivalent to those at present afforded to the SIAD Business, of all current arrangements under which Praxair or its Affiliated Undertakings supply helium to the SIAD Business, as detailed in the Schedule, unless otherwise agreed with the Purchaser. Any changes made to the current terms and conditions of those arrangements will be notified and approved by the Monitoring Trustee, subject to the approval of the European Commission in case the Monitoring Trustee considers the change to be material. The approval process by the Monitoring Trustee should not delay any supply by the Notifying Parties to the SIAD Divestment Business.

8. The SIAD Business also includes the benefit, for a term of [...] years, extendable at SIAD's option by up to a further [...] years, of a non-exclusive transitional supply agreement pursuant to which Praxair agrees to supply [...] to SIAD on terms described in the Schedule.

9. Strict firewall procedures will be adopted so as to ensure that any competitively sensitive information related to, or arising from the arrangements indicated at paragraphs 6 and 7 (for example, product roadmaps) will not be shared with, or passed on to, anyone outside the relevant entities providing such services or products to the SIAD Business.

## Section C. Related Commitments

### Preservation of viability, marketability and competitiveness

10. From the Effective Date until Closing, the Notifying Parties shall preserve or procure the preservation of the economic viability, marketability and competitiveness of the SIAD Business, in accordance with good business practice, and shall minimise as far as possible any risk of loss of competitive potential of the SIAD Business. In particular the Notifying Parties undertake:

    (a) not to carry out any action that might have a significant adverse impact on the value, management or competitiveness of the SIAD Business or that might alter the nature and scope of activity, or the industrial or commercial strategy or the investment policy of the SIAD Business; and

    (b) to make available, or procure to make available, sufficient resources for the development of the SIAD Business, on the basis and continuation of the existing business plans.

### Hold-separate obligations

11. The Notifying Parties commit, from the Effective Date until Closing, to procure that the SIAD Business is kept separate from the businesses that the Notifying Parties will be retaining and the EEA Divestment Business and, after Completion to keep the SIAD Business separate from the business that the Notifying Parties are retaining and EEA Divestment Business and to ensure that unless explicitly permitted under these Commitments:

    (a) management and staff of the businesses retained by the Notifying Parties or in EEA Divestment Business have no involvement in the SIAD Business;

(b) the Key Personnel and Personnel of the SIAD Business have no involvement in any business retained by the Notifying Parties and do not report to any individual outside the SIAD Business.

12. Until Closing, the Notifying Parties shall assist the Monitoring Trustee in ensuring that the SIAD Business is managed as a distinct and saleable entity separate from the businesses which the Notifying Parties are retaining and from the EEA Divestment Business. Immediately after the adoption of the Decision, the Notifying Parties shall appoint a Hold Separate Manager. The Hold Separate Manager shall act independently and in the best interest of the business with a view to ensuring its continued economic viability, marketability and competitiveness and its independence from the businesses retained by the Notifying Parties. The Hold Separate Manager shall closely cooperate with and report to the Monitoring Trustee. Any replacement of the Hold Separate Manager shall take place under the supervision of the Monitoring Trustee, who shall report to the Commission. The Commission may, after having heard the Notifying Parties, require the Notifying Parties to replace the Hold Separate Manager.

13. To ensure that the SIAD Business is held and managed as a separate entity the Monitoring Trustee shall exercise Praxair's rights as shareholder in the legal entity or entities that constitute the SIAD Business (except for its rights in respect of dividends that are due before Closing), with the aim of acting in the best interest of the business, which shall be determined on a stand-alone basis, as an independent financial investor, and with a view to fulfilling the Notifying Parties' obligations under the Commitments.

**Ring-fencing**

14. The Notifying Parties shall implement, or procure to implement, all necessary measures to ensure that they do not, after the Effective Date, obtain any Confidential Information relating to the SIAD Business and that any such Confidential Information obtained by the Notifying Parties before the Effective Date will be eliminated as soon as reasonably practicable and no longer than six (6) weeks after the Effective Date and not be used by the Notifying Parties. This includes measures vis-à-vis the Notifying Parties' appointees on the supervisory board and/or board of directors of the SIAD Business. In particular, the participation of the SIAD Business in any central information technology network shall be severed to the extent possible, without compromising the viability of the SIAD Business. The Notifying Parties may obtain or keep information relating to the SIAD Business which is reasonably necessary for the divestiture of the SIAD Business pursuant to the Agreement or the disclosure of which to the Notifying Parties is required by law.

**Non-solicitation clause**

15. The Parties undertake, subject to customary limitations, not to solicit, and to procure that Affiliated Undertakings do not solicit, the Key Personnel transferred with the SIAD Divestment Business for a period of [...] years after Closing.

## Section E. Trustee

### I. Appointment procedure

16. The Notifying Parties shall appoint a Monitoring Trustee to carry out the functions specified in these Commitments for a Monitoring Trustee. The Notifying Parties commit not to close the Concentration before the appointment of a Monitoring Trustee.

17. The Trustee shall:

    (a) at the time of appointment, be independent of the Notifying Parties and their Affiliated Undertakings;

    (b) possess the necessary qualifications to carry out its mandate, for example have sufficient relevant experience as an investment banker or consultant or auditor; and

    (c) neither have nor become exposed to a Conflict of Interest.

18. The Trustee shall be remunerated by the Notifying Parties in a way that does not impede the independent and effective fulfilment of its mandate.

**Proposal by the Notifying Parties**

19. No later than two weeks after the Effective Date, the Notifying Parties shall submit the name or names of one or more natural or legal persons whom the Notifying Parties propose to appoint as the Monitoring Trustee to the Commission for approval. The proposal shall contain sufficient information for the Commission to verify that the person or persons proposed as Trustee fulfil the requirements set out in paragraph 17 and shall include:

    (a) the full terms of the proposed mandate, which shall include all provisions necessary to enable the Trustee to fulfil its duties under these Commitments;

    (b) the outline of a work plan which describes how the Trustee intends to carry out its assigned tasks.

**Approval or rejection by the Commission**

20. The Commission shall have the discretion to approve or reject the proposed Trustee and to approve the proposed mandate subject to any modifications it deems necessary for the Trustee to fulfil its obligations. If only one name is approved, the Notifying Parties shall appoint or cause to be appointed the person or persons concerned as Trustee, in accordance with the mandate approved by the Commission. If more than one name is approved, the Notifying Parties shall be free to choose the Trustee to be appointed from among the names approved. The Trustee shall be appointed within one week of the Commission's approval, in accordance with the mandate approved by the Commission.

**New proposal by the Notifying Parties**

21. If all the proposed Trustees are rejected, the Notifying Parties shall submit the names of at least two more natural or legal persons within one week of being informed of the rejection, in accordance with paragraphs 16 and 20 of these Commitments.

**Trustee Nominated by the Commission**

22. If further proposed Trustees are rejected by the Commission, the Commission shall nominate a Trustee, whom the Notifying Parties shall appoint, or cause to be appointed, in accordance with a trustee mandate approved by the Commission.

## II. Functions of the Trustee

23. The Trustee shall assume its specified duties and obligations in order to ensure compliance with the Commitments. The Commission may, on its own initiative or at the request of the Trustee or the Notifying Parties, give any orders or instructions to the Trustee in order to ensure compliance with the conditions and obligations attached to the Decision.

**Duties and obligations of the Monitoring Trustee**

24. The monitoring Trustee shall:

(i) propose in its first report to the Commission a detailed work plan describing how it intends to monitor compliance with the obligations and conditions attached to the Decision.

(ii) oversee, in close co-operation with the Hold Separate Manager, the on-going management of the SIAD Business with a view to ensuring its continued economic viability, marketability and competitiveness and monitor compliance by the Notifying Parties with the conditions and obligations attached to the Decision. To that end the Monitoring Trustee shall:

(a) monitor the preservation of the economic viability, marketability and competitiveness of the SIAD Business, and the keeping separate of the SIAD Business from the business retained by the Parties, in accordance with paragraphs 10 and 11 of these Commitments;

(b) supervise the management of the SIAD Business as a distinct and saleable entity, in accordance with paragraph 12 of these Commitments;

(c) with respect to Confidential Information:

- determine all necessary measures to ensure that the Notifying Parties do not after the Effective Date obtain any Confidential Information relating to the SIAD Business,
- in particular strive for the severing of the SIAD Business' participation in a central information technology network to the extent possible, without compromising the viability of the SIAD Business,
- make sure that any Confidential Information relating to the SIAD Business obtained by the Notifying Parties before the Effective Date is eliminated as soon as reasonably practicable and no longer than six (6) weeks after the Effective Date and will not be used by the Notifying Parties and
- decide whether such information may be disclosed to or kept by the Notifying Parties as the disclosure is reasonably necessary to allow the Notifying Parties to carry out the divestiture or as the disclosure is required by law;

(d) if applicable, monitor the splitting of assets and the allocation of Personnel between the SIAD Business and the Notifying Parties or Affiliated Undertakings;

(iii) propose to the Notifying Parties such measures as the Monitoring Trustee considers necessary to ensure the Notifying Parties' compliance with the conditions and obligations attached to the Decision, in particular the maintenance of the full economic viability, marketability or competitiveness of the SIAD Divestment Business, the holding separate of the SIAD Divestment Business and the non-disclosure of competitively sensitive information;

(iv) act as a contact point for any requests by third parties, in particular the Purchaser, in relation to the SIAD Commitments;

(v) provide to the Commission, sending the Notifying Parties a non-confidential copy at the same time, a written report within 15 days after the end of every month that shall cover the operation and management of the SIAD Business as well as, if applicable, the splitting of assets and the allocation of Personnel so that the Commission can assess whether the business is held in a manner consistent with the SIAD Commitments;

(vi) promptly report in writing to the Commission, sending the Notifying Parties a non-confidential copy at the same time, if it concludes on reasonable grounds that the Notifying Parties are failing to comply with these Commitments;

(vii) assume the other functions assigned to the Monitoring Trustee under the conditions and obligations attached to the Decision.

### III. Duties and obligations of the Parties

25. The Notifying Parties shall provide and shall cause their advisors to provide the Trustee with all such co-operation, assistance and information as the Trustee may reasonably require to perform its tasks. The Trustee shall have full and complete access to any of the Notifying Parties' or the SIAD Business' books, records, documents, management or other personnel, facilities, sites and technical information necessary for fulfilling its duties under the SIAD Commitments and the Notifying Parties and the SIAD Business shall provide the Trustee upon request with copies of any document. The Notifying Parties and the SIAD Business shall make available to the Trustee one or more offices on their premises and shall be available for meetings in order to provide the Trustee with all information necessary for the performance of its tasks.

26. The Notifying Parties shall provide the Monitoring Trustee with all managerial and administrative support that it may reasonably request on behalf of the management of the SIAD Business.

27. The Notifying Parties shall indemnify the Trustee and its employees and agents (each an "**Indemnified Party**") and hold each Indemnified Party harmless against, and hereby agrees that an Indemnified Party shall have no liability to the Notifying Parties for, any liabilities arising out of the performance of the Trustee's duties under the SIAD Commitments, except to the extent that such liabilities result from the wilful default, recklessness, gross negligence or bad faith of the Trustee, its employees, agents or advisors.

28. At the expense of the Notifying Parties, the Trustee may appoint advisors (in particular for corporate finance or legal advice), subject to the Notifying Parties' approval (this approval not to be unreasonably withheld or delayed) if the Trustee considers the appointment of such advisors necessary or appropriate for the performance of its duties and obligations

under the Mandate, provided that any fees and other expenses incurred by the Trustee are reasonable. Should the Notifying Parties refuse to approve the advisors proposed by the Trustee the Commission may approve the appointment of such advisors instead, after having heard the Notifying Parties. Only the Trustee shall be entitled to issue instructions to the advisors. Paragraph 27 of these Commitments shall apply mutatis mutandis.

29. The Notifying Parties agrees that the Commission may share Confidential Information proprietary to the Notifying Parties with the Trustee. The Trustee shall not disclose such information and the principles contained in Article 17 (1) and (2) of the Merger Regulation apply mutatis mutandis.

30. The Notifying Parties agree that the contact details of the Monitoring Trustee are published on the website of the Commission's Directorate-General for Competition and they shall inform interested third parties, in particular the Purchaser of the identity and the tasks of the Monitoring Trustee.

31. For a period of 10 years from the Effective Date the Commission may request all information from the Parties that is reasonably necessary to monitor the effective implementation of these Commitments.

### IV. Replacement, discharge and reappointment of the Trustee

32. If the Trustee ceases to perform its functions under the Commitments or for any other good cause, including the exposure of the Trustee to a Conflict of Interest:

    (a) the Commission may, after hearing the Trustee and the Notifying Parties, require the Notifying Parties to replace the Trustee; or

    (b) the Notifying Parties may, with the prior approval of the Commission, replace the Trustee.

33. If the Trustee is removed according to paragraph 32 of these Commitments, the Trustee may be required to continue in its function until a new Trustee is in place to whom the Trustee has effected a full hand over of all relevant information. The new Trustee shall be appointed in accordance with the procedure referred to in paragraphs 19-26 of these Commitments.

34. Unless removed according to paragraph 32 of these Commitments, the Trustee shall cease to act as Trustee only after the Commission has discharged it from its duties after all the SIAD Commitments with which the Trustee has been entrusted have been implemented. However, the Commission may at any time require the reappointment of the Monitoring Trustee if it subsequently appears that the relevant remedies might not have been fully and properly implemented.

## Section F. The review clause

35. The Commission may extend the time periods foreseen in the SIAD Commitments in response to a request from the Notifying Parties or, in appropriate cases, on its own initiative. Where the Notifying Parties request an extension of a time period, they shall submit a reasoned request to the Commission no later than one month before the expiry of that period, showing good cause. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to

the Notifying Parties. Only in exceptional circumstances shall the Notifying Parties be entitled to request an extension within the last month of any period.

36. The Commission may further, in response to a reasoned request from the Notifying Parties showing good cause waive, modify or substitute, in exceptional circumstances, one or more of the undertakings in these Commitments. This request shall be accompanied by a report from the Monitoring Trustee, who shall, at the same time send a non-confidential copy of the report to the Notifying Party. The request shall not have the effect of suspending the application of the undertaking and, in particular, of suspending the expiry of any time period in which the undertaking has to be complied with.

## Section G. Entry into force

37. The SIAD Commitments shall take effect upon the date of adoption of the Decision.

duly authorised for and on behalf of:

## Schedule to the SIAD Commitments

1. The SIAD Divestment Business consists of (i) Praxair's [...]% shareholding (via Praxair Italia S.r.l) in Società Italiana Acetilene e Derivati (S.I.A.D) S.p.A. ("**SIAD**"), (ii) Rivoira Pharma's [...]% shareholding in Medigas, Italia S.r.l. ("Medigas"); (iii) Rivoira's [...]% shareholding in IGAT — Industria Gas Tecnici S.p.A. ("IGAT") and its [...]% interest in IGAT that it holds jointly with SIAD; and (iv) Samac's CO2 business in Scarlino.

2. SIAD, with its registered office at via San Bernardino 92, 24126 Bergamo, Italy, is a joint venture currently jointly controlled by Praxair and Flow Fin S.p.A ("**Flow Fin**"). The main shareholder of Flow Fin is Sefin S.p.A. The shareholders of Sefin S.p.A. are different members of the Sestini family that has been jointly controlling and managing SIAD for more than 90 years.

3. SIAD is active in the production and supply of industrial gases, medical gases and specialty gases in Austria, Bulgaria, Croatia, Czech Republic, Hungary, Italy, Poland, Romania, Slovakia, and Slovenia. Moreover, SIAD provides homecare services in Italy. Outside the EEA, SIAD is active in the gas business in Eastern Europe (Ukraine, Bosnia Herzegovina and Serbia) and in the engineering business in Asia and South America. Further information can be found at www.siad.com.

4. The divestiture of Praxair's shareholding in SIAD will occur by way of a share swap ("**Share Swap**"), whereby Praxair will transfer its shareholding in SIAD to Flow Fin, while Flow Fin will transfer its shareholding in Rivoira S.p.A. ("**Rivoira**") to Praxair. Rivoira is a joint venture currently jointly controlled by Praxair and Flow Fin. Another party to this swap is Samac S.r.l ("**Samac**"), a joint venture between Rivoira, SIAD and the Marotta family. Samac is jointly controlled by Rivoira and SIAD. Following the implementation of the Share Swap, SIAD will be solely controlled by Flow Fin, while Rivoira will be solely controlled by Praxair.[1]

5. In order to implement the Share Swap, on [...], Praxair Italia S.r.l. (an Affiliated Undertaking of Praxair), Flow Fin, SIAD, Rivoira, Rivoira Pharma S.r.l. and Samac entered into the share purchase agreement (the "**Agreement**"), attached in **Annex 1**.

6. Structure charts of SIAD and Rivoira before and after the Share Swap are provided in **Annexes 2 and 3.**

7. For the current legal ownership structure of SIAD, reference is made to **Annex 2**. A list of SIAD's subsidiaries as well as a structure chart with the relevant shareholdings are provided in **Annexes 5** and **6**.

8. SIAD is managed by dedicated and independent management teams. An organisational/management chart of SIAD is provided in **Annex 7.**

9. In accordance with paragraph 5 of the Commitments, the SIAD Divestment Business possesses:

   (a) The following main tangible and intangible assets:

[1] It is noted that as part of the EEA Commitments, Praxair will divest Rivoira and its affiliated undertakings. Therefore, Rivoira will ultimately be controlled by the buyer of the EEA Divestment Business.

(i) The real estate, including the production, filling, transfilling and blending facilities, as described in **Annexes 8 and 9**;

(ii) All relevant equipment located in the above-mentioned facilities and all technical files and records related to such equipment;

(iii) [...];

(iv) All customer relations, data, books and records. A list of SIAD's main customers, including turnover generated with each of these customers, will be sent by SIAD to the European Commission separately upon request;

(b) The Personnel listed in **Annex 10**;

(c) The Key Personnel listed in **Annex 11**.

**10.** SIAD is a standalone business and has available all necessary tangible and intangible assets to conduct its business and will continue to do so after the Share Swap. Therefore, only transitional supply agreements will be entered into to ensure that the products and services currently provided by Praxair (including from entities that are part of the EEA Divestment Business) to SIAD (or related companies), and by SIAD (or related companies) to Praxair (including to entities that are part of the EEA Divestment Business), will continue for a transitional period. The Parties propose the following with regard to the duration of the transitional agreements to the benefit of SIAD:
**[...]**

**11.** A list of products and services currently sourced by SIAD from Praxair is provided in **Annex 12**, while a list of products and services currently sourced by Praxair from SIAD is provided in **Annex 13**.

**12.** A non-exclusive transitional supply agreement will also be entered into with SIAD pursuant to which, for a term of [...] years, extendable at SIAD's option by up to a further [...] years,

Praxair agrees to supply [...] to SIAD. The consideration should be no higher than that currently obtained by [...] from Affiliated Undertakings and/or SIAD, whichever is lower. For the avoidance of doubt, the consideration may include the profit margin of the Notifying Parties but any profit margin shall not be higher than the lower of the profit margin on current sales to Praxair's Affiliated Undertakings and/or SIAD. The agreement should cover not only the supply of [...], but also all other ancillary products and services (e.g. maintenance) that [...] currently provided to Praxair's Affiliated Undertakings.

**Annex 1**

**The Agreement**

[...]

## Annex 2

## SIAD and Rivoira's structural links before the Share Swap

[...]

**Annex 3**

**SIAD and Rivoira's structural links after the Share Swap**

[...]

## Annex 4

## Trademarks and IP licensing arrangements

[...]

At closing of the Share Swap, SIAD and Praxair Technology Inc. will terminate the Industrial Gas License dated [...] between them.

Praxair will ensure that SIAD and all SIAD Affiliates receive a [...] licence from Praxair Technology Inc. and/or any other Praxair group company, to allow SIAD, its subsidiaries, and their respective customers, to continue to use the relevant rights, at the facilities existing at Closing:

- all patents of Praxair Technology Inc. and/or other Praxair Group Companies which SIAD or SIAD Group companies, and their respective customers used prior to the Share Swap; and
- all know-how and technology which has not been patented by Praxair Technology Inc. or other Praxair Group companies, which was transferred to SIAD, its subsidiaries or their customers before the Share Swap or became available to the general public via third parties.

SIAD will be allowed to continue using, on the basis of a [...] licence, [...] plant monitoring system it acquired from Praxair. Praxair will carry out, without additional costs for SIAD, all necessary adjustments to the [...] software to allow SIAD to use it without logging into Praxair's network.

SIAD will grant Praxair and Praxair Affiliates a [...] licence allowing them and their respective customers to continue using at the facilities existing on the date of the Share Swap:

- all SIAD patents which Praxair and patents customers have already used prior to the Share Swap; and
- all know-how and technology which has not been patented by SIAD, which was transferred to Praxair and its respective customers before the Share Swap or became available to the general public via third parties.

For a [...] period, Rivoira will provide, free of charge and promptly upon SIAD's request, all necessary technical assistance to extract data belonging to SIAD or any of its subsidiaries from the [...] system in order to comply with the requirements of the Italian tax authorities.

**Annex 5**
**SIAD's structure chart (subsidiaries and shareholdings, including JV's)**

[...]

**Annex 6**
**Current SIAD's subsidiaries and shareholdings (JV's)**

[...]

**Annex 7**

**SIAD organisational/management chart**

[…]

## Annex 8

## Description of SIAD's production facilities (with product range by facility)

[...]

## Annex 9

## Description of SIAD's filling facilities (with product range by facility)

[...]

## Annex 10

## Personnel of the SIAD Business

[...]

## Annex 11

## SIAD Key Personnel

[...]

## Annex 12

**List of gas products and services provided by Praxair/Rivoira to SIAD**

[...]

## Annex 13

**List of gas products and services sourced by Praxair/Rivoira from SIAD**

[...]