

CREDIT OPINION

13 September 2022

Update



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RATINGS

Air Liquide S.A.

Domicile	Paris, France
Long Term Rating	A2
Type	LT Issuer Rating - Dom Curr
Outlook	Stable

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

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Air Liquide S.A.

Update following rating upgrade

Summary

[Air Liquide S.A.](#)'s (Air Liquide, A2 stable) rating reflects its leading position in the concentrated industrial gas market, with a high degree of revenue visibility provided by long-term take-or-pay contracts in its large industry business unit that contain cost pass-through clauses; a high network density, also supporting its industrial merchant business unit; and a highly regulated market environment for its healthcare business. The rating also benefits from its well-spread exposure across different customers, industries and geographies, as well as solid and stable profitability levels.

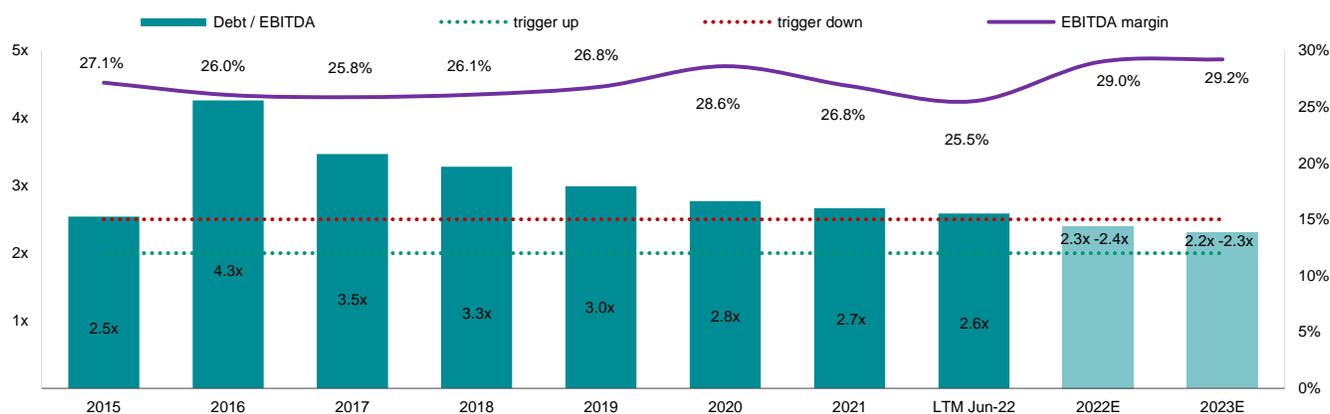
As of June 2022, Air Liquide's Moody's adjusted gross leverage stood at 2.6x. During its 2022 capital markets day Air Liquide confirmed a continued focus on cost containment, which will support EBITDA generation in addition to increasing volumes as the company executes on its investment backlog, resulting in EBITDA in excess of €6.6 billion in 2022. These EBITDA levels will translate into leverage of below 2.5x in 2022 with scope for further deleveraging in 2023. While its leverage and cash flow metrics approach our guidelines for the current rating, a material weakening of the macro environment or event risks related to the availability of natural gas in Europe represent a downside to this view.

As of June 2022 Air Liquide's order backlog was around €3 billion, which once fully ramped up will contribute around €1.1 billion of annual sales. We expect that Air Liquide's capital expenditures will remain elevated over the the next 12-18 months as the company executes its order backlog, resulting in Moody's adjusted FCF being moderately negative to breakeven levels in 2022 and 2023.

Air Liquide's rating remains supported by a financial policy, characterized by a balanced allocation of cash and a commitment to an "A range" rating.

This report was republished on 16 September 2022 with corrected typos in Exhibit 1 and Exhibit 18

Exhibit 1

Air Liquide's leverage is forecast to continue to decline

Source: Moody's Investors Service

Credit strengths

- » Global leader in the industrial gas market, underpinned by scale, regional network density and strong customer relationships
- » Long-term contracts, and balanced geographic and wide end-market diversifications, which provide revenue visibility and resilience
- » Solid and resilient profitability
- » Large exposure to markets like the home healthcare and electronics segments, which provide organic growth potential

Credit challenges

- » Capital intensiveness and generous dividend policy are a constraint to free cash flow (FCF) generation
- » High investment needs to capture growth opportunities related to carbon transition
- » Expectation of only a moderate decline in Moody's-adjusted gross leverage

Rating outlook

The stable outlook reflects the expectation that Air Liquide's credit metrics will remain in line with the requirements for the A2 rating. The stable outlook also reflects the expectation that the company will take appropriate measures to protect its credit quality and rating in case of broader based macro-economic downturn or a gas rationing in Europe meaningfully impacting its earnings and cashflow generation.

Factors that could lead to an upgrade

- » We could consider upgrading the rating if Air Liquide adjusted financial leverage would be sustained below 2.0x, retained cash flow-to-debt sustained above 35% (RCF/Debt), and if the company would publicly commit to a higher rating.

Factors that could lead to a downgrade

- » We could consider downgrading Air Liquide's rating if its leverage would remain above 2.5x on a sustainable basis and its RCF / net debt would be below 25% through the cycle. Any indications that its financial policy would become less conservative would also be negative for the rating.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody's.com> for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2

Air Liquide S.A.

USD Millions	Dec-17	Dec-18	Dec-19	Dec-20	Dec-21	LTM Jun-22
Revenue	22,992	24,812	24,540	23,381	27,609	30,109
Net Property Plant and Equipment	23,420	23,194	23,653	24,432	25,582	25,003
EBITDA Margin %	25.8%	26.1%	26.8%	28.6%	26.8%	25.5%
EBIT / Avg. Assets	7.6%	8.0%	8.4%	8.4%	9.0%	9.3%
Debt / EBITDA	3.5x	3.3x	3.0x	2.8x	2.7x	2.6x
RCF / Debt	17.6%	16.3%	18.9%	19.9%	21.6%	22.6%
EBITDA / Interest Expense	8.9x	9.9x	11.1x	12.0x	15.8x	15.7x

All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.

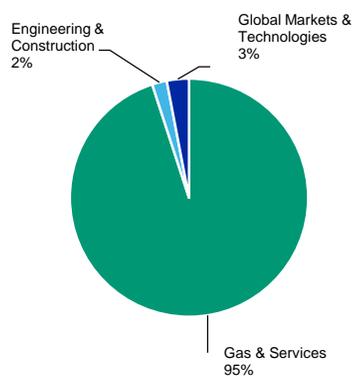
Source: Moody's Financial Metrics™

Profile

Headquartered in Paris, France, Air Liquide S.A. (Air Liquide) is a world leader in gas, technologies and services for industries and healthcare, generating €23.3 billion revenue in 2021. The company employs about 66,400 people across 75 countries. After the merger of its two main competitors, [Linde plc](#) (A2 stable) and Praxair, Air Liquide is currently the second-largest company in the industrial gas market.

Exhibit 3

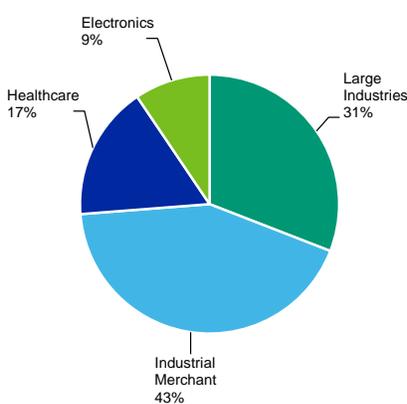
Revenue split by business unit (2021)



Source: Company's 2021 annual report

Exhibit 4

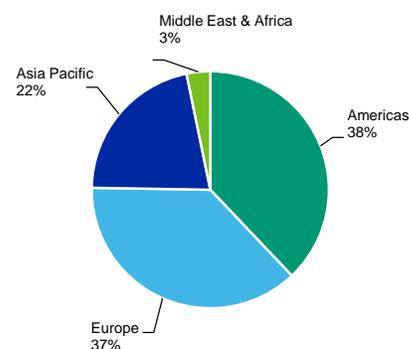
G&S global revenue split by business lines (2021)



Source: Company's 2021 annual report

Exhibit 5

G&S revenue split by region (2021)



Source: Company's 2021 annual report

The company divides its operations into three business units: Gas and Services (G&S), which is the main unit (95% of 2021 sales), supplying industrial gases and related services; Engineering and Construction (E&C), which designs and constructs industrial gas production units (2% of sales); and Global Markets and Technologies (GM&T), which delivers technological solutions to support the new markets of energy transition, maritime logistics and deep tech. Through a truly global footprint, the group G&S sales are well balanced across the world's main manufacturing regions, with the Americas accounting for 38% of sales, Europe 37%, Asia-Pacific 22% and the Middle East and Africa 3%.

Air Liquide is listed on the Paris stock market, and its market capitalization as of mid of August 2022 was about €67 billion.

Detailed credit considerations

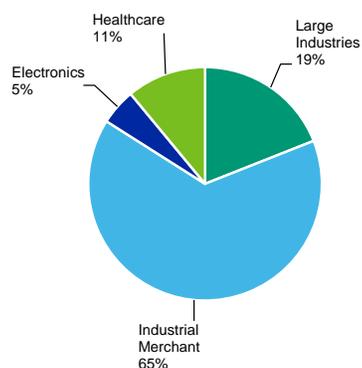
Large industries segment provides revenue visibility and resilient earnings...

Air Liquide's resilient business profile with a diversified geographic footprint and revenues well spread across different end-markets, long-term cost indexed take-or-pay contracts in its large industries segment and its leading position in the industrial gas segment of the chemical industry are key factors supporting its rating. We expect these defensive characteristics to support resilient EBITDA and cash generation. Even in the current challenging macro environment characterized by cost inflation and in particular high energy prices we expect the industrial gas sector to perform resilient relative to the rest of the chemical industry.

Air Liquide's presence in the large industries segment, which contributed around 31% to the 2021 G&S revenues, provides it with a high degree of visibility into profit and cash generation. Air gases are mainly obtained by the separation of air into its main components, oxygen and nitrogen, through air separation units, a process that is energy and capital intensive. This segment predominantly serves customers in the refining, metals and chemical industries through on-site plants and pipeline networks. Because of the high capital intensity of the large industries business, supply contracts are generally closed for 15 years. The contracts contain a minimum take-or-pay level, and prices are indexed on electricity and natural gas prices. Air Liquide also operates more than 9,700 kilometers (km) of pipelines in the most gas-intensive manufacturing basins, such as the US Gulf Coast and the Rotterdam area, allowing the company to provide a reliable and cost-efficient service to customers.

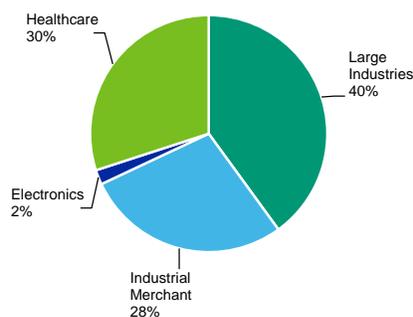
The group's natural gas consumption mainly stems from the operation of steam methane reformers to provide its customers with syntheses gas, carbon monoxide and oxogas and hydrogen and from cogeneration units to produce electricity and steam. Air Liquide disclosed that around 50% of the revenues of the large industries segment were related to hydrogen, carbon monoxide as well as cogeneration. This also includes sales of hydrogen from electrolysis. We note that the company's European steam methane reformers to some degree might be exposed to the risk of a rationing of natural gas in the region.

Exhibit 6
G&S revenue split by business line in the Americas (2021)



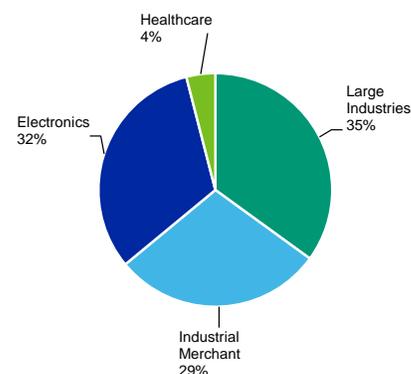
Source: Company's 2021 annual report

Exhibit 7
G&S revenue split by business line in Europe (2021)



Source: Company's 2021 annual report

Exhibit 8
G&S revenue split by business line in Asia Pacific (2021)



Source: Company's 2021 annual report

... while industrial merchant, health care and electronics segments provide additional diversification

The large industries division also supplies gas to Air Liquide's other business lines. The company's industrial merchant business serves a broad range of industries and customers (43% of group revenue). The industrial merchant business mainly relies on gas supply from the large industries business unit. Supply modes range from on-site facilities and bulk deliveries to packaged gases in the form of cylinders. Air Liquide's dense distribution and production network to some degree constitutes a barrier to market entrance because distribution usually only takes place within a 250-km radius around the production site. Around 25% of revenue of the industrial merchant business is generated from rental income and another 25% from sales to industries that can be considered defensive, such as the pharmaceutical and food and beverage sectors.

However, the industrial merchant business is Air Liquide's segment most vulnerable to lower profits due to cost inflation and a weakening macro environment. So far Air Liquide has been able to address the steep increase in energy cost by price increases. In Q2-22 the company was able to increase prices in the industrial merchant business by 14.4%.

Apart from gases for the industrial and technology sectors, Air Liquide is also engaged in the healthcare sector. Air Liquide's healthcare division supplies medical gases (oxygen, nitrous oxides and xenon) to 15,000 hospitals and clinics, and comprehensive treatments to 1.8 million home healthcare patients suffering from chronic diseases. Medical gases are treated as drugs and thus constitute a highly regulated market, demanding health authorities' approval. The hospitals and clinics segment is experiencing pricing pressure in developed economies as healthcare systems look to curb spending. However, the home healthcare segment has positive fundamentals, in both advanced and developing economies, as patient care is increasingly shifting from hospitals to homes. An aging population and an increasing rate of chronic diseases are also growth factors in this sector.

Air Liquide's electronics unit serves the semiconductor, flat panel display and photovoltaic markets. Around 38% of revenue in its electronics unit is generated by carrier gases, where deliveries are usually based on long-term gas supply agreements. The electronics business has grown strongly over the last couple of years; in 2021, it generated revenue of around €2.1 billion, compared with €830 million in 2003.

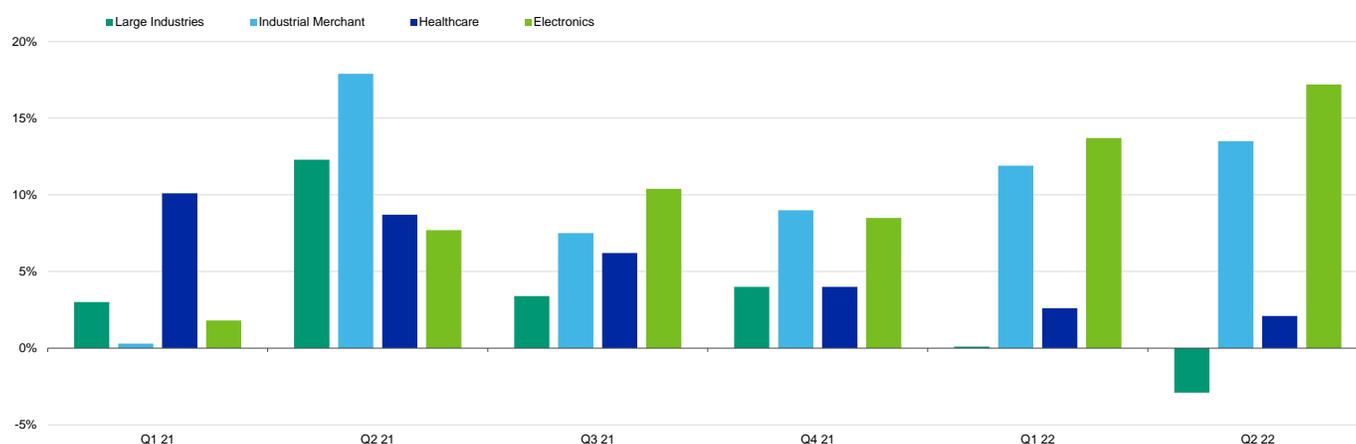
While contributing only a combined 5% of the company's total revenue, the E&C and GM&T business units are strategically important for Air Liquide. E&C provides crucial engineering support to internal gas projects. Building gas units for third-party customers can also lead to supply contracts for large industry operations. As E&C orders depend on customers' long-term investment decisions, revenue in that business unit is more volatile. The GM&T business unit is focused on maritime logistics, scientific exploration (aerospace) and the development of renewable fuels, such as hydrogen and biogas for which technology is a major differentiator.

Strong recovery during 2021 following challenging 2020, execution of investment backlog expected to support continued revenue growth

Following a 1.3% decline of comparable sales because of the corona virus pandemic in 2020, Air Liquide's revenues in 2021 have strongly recovered with a comparable sales growth of 8%. Group revenues started to recover since the third quarter of 2020, with the positive trend continuing well into the first half of 2022, with comparable sales increasing by 7.7% on a group level.

Exhibit 9

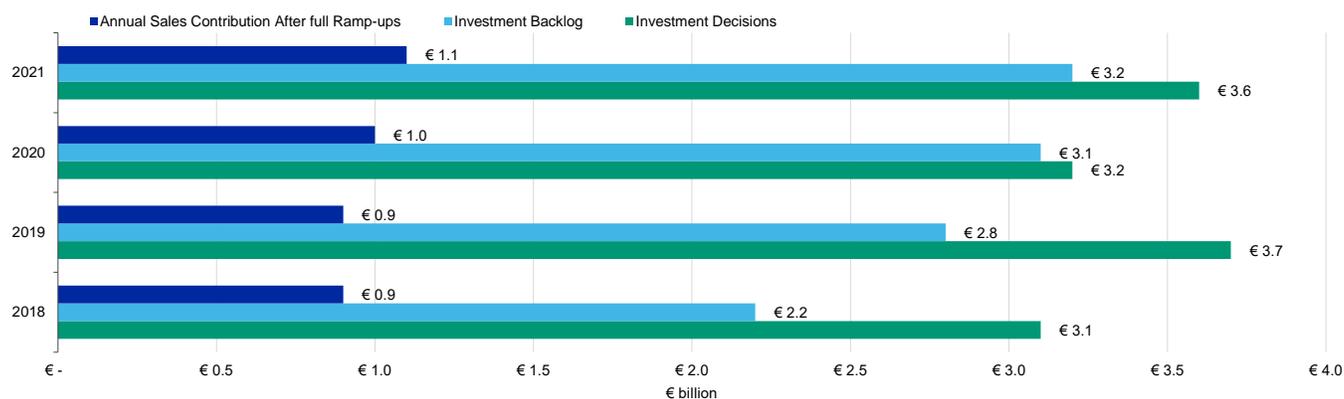
Comparable sales growth of Gas & Services business segments on a quarter-on-quarter basis



Source: Company information

In 2021, Air Liquide committed to around €3.6 billion of investments (€3.2 billion in 2020), which typically are spread over two to three years. During H1-22 investment decisions continued to be at a high level with around €1.8 billion, which compares to €1.4 billion (excluding the takeover of the Sasol ASU's) a year ago, supporting an investment backlog of €3.0 billion. This backlog will translate into €1.1 billion of annual sales after it is fully ramped up and contribute between €410 and €435 million of sales in 2022 already.

Exhibit 10

Continued high level of investments provides good visibility into revenue growth

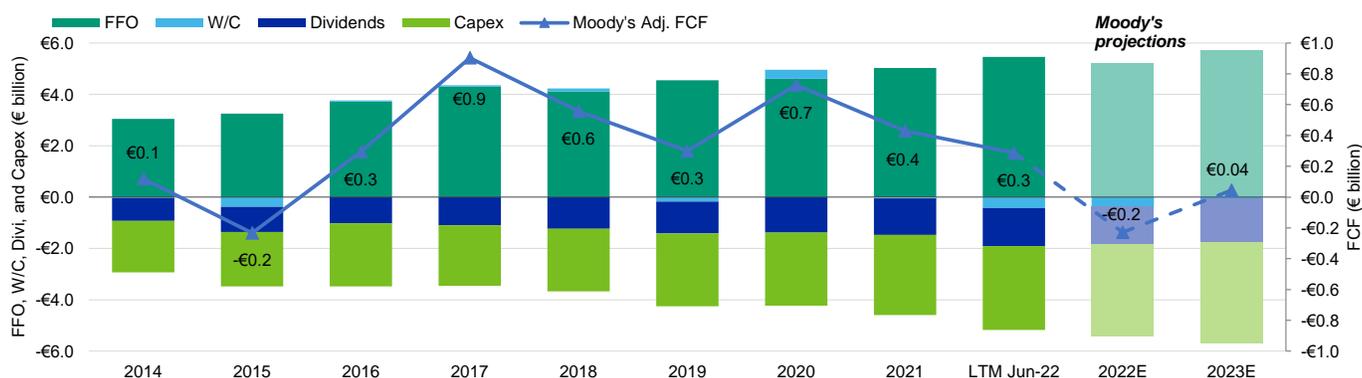
Source: Company's 2018, 2019, 2020 and 2021 full-year result presentations

We understand that Air Liquide's investment decisions are subject to a thorough process of evaluating risks associated with a given decision, including counterparty risks, asset quality, the location of the customer site and contract clauses, among others. Notably the composition of Air Liquide's investment backlog has shifted towards projects related to energy transition and the electronics industry. In the context of its ADVANCE strategy program the company aims at further accelerating its investment decisions to an accumulated €16 billion in the 2022 to 2025 period, which is expected to support a compounded annual revenue growth rate of 5%-6% over the same period. In the context of the ADVANCE program the company also confirmed its ambitions to triple its hydrogen sales before 2035, which will be supported by €8 billion of capex and reiterated its target to achieve 3 giga watts of electrolysis capacity by 2030.

High capital expenditures to burden FCF, continued focus on cost discipline to support EBITDA generation

Given the company's fairly high investment backlog we expect that capital expenditure including maintenance capital spending in 2022 will strongly increase to around €3.3 billion, which compares to around €3 billion in 2021. Hence, we forecast FCF generation to be moderately negative to moderately positive in 2022. However, in the context of a cash balance as of the end of H1-2022 of around €1.5 billion, we believe that this high level of capital spending can be accommodated from internal sources and assume that the company would allocate some excess cash to debt reduction. However, we also note that the company is aiming to continuously expand its dividend payments.

Exhibit 11

Air Liquide's Moody's-adjusted FCF is expected to remain around break even levels in 2022

Source: Moody's Financial Metrics™ and Moody's estimates

Despite the margin-dilutive effect of the Airgas acquisition (Airgas' EBITDA margin was around 21% before the acquisition), Air Liquide has managed to maintain its adjusted EBITDA margin in excess of 25%, which supports the current rating positioning. However, Air Liquide's profitability level remains weaker than Linde's, which has a comparable business profile. Hence, we view it favorably that in the context of its ADVANCE program the company has also reiterated its focus on improving profitability, following the successful

completion of its previous NEOS efficiency program. The company now targets around €400 million of efficiency per year resulting in cumulative cost savings of €1.6 billion until 2025.

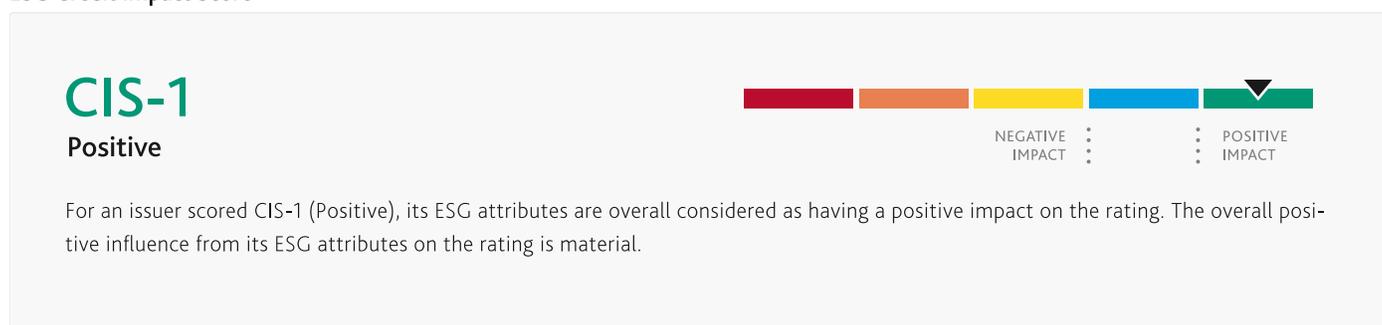
In addition to contributions from the investment backlog, we expect that the company's continued focus on profitability will support a deleveraging to below 2.5x in 2022, with additional scope for deleveraging if excess cash on balance sheet would be deployed towards debt reduction. This deleveraging trajectory is in line with our expectation for the A2 rating. However, a material weakening of the macro environment or event risks with regards to the availability of natural gas in Europe constitute a downside to this view, we would expect that Air Liquide's performance in such a scenario would continue to be resilient relative to other chemical peers.

ESG considerations

Air Liquide S.A.'s ESG Credit Impact Score is Positive CIS-1

Exhibit 12

ESG Credit Impact Score



Source: Moody's Investors Service

ESG considerations have a positive impact on Air Liquide's rating. This reflects Air Liquide's strong governance and financial policy, which to some degree mitigate the company's highly negative exposure to environmental and social risks. The company's involvement in various green and blue hydrogen projects and in carbon capture initiatives to a limited degree balance environmental and social risks.

Exhibit 13

ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

Air Liquide has highly negative exposure to environmental risk. Its greenhouse gas emissions are mainly related to the production of hydrogen and electric power through cogeneration units. Its air separation units consume high amounts of energy. However, contractual cost pass through in the company's large industries segment to some degree mitigate exposure to increasing energy prices and CO2 prices and increasing order backlog for projects related to energy transition somewhat mitigate its high exposure to carbon transition risk.

Social

Air Liquide has a moderately negative exposure to social risks (S-3). The score mainly reflects the health and safety risks of the industry and relatively frequent fatal accidents in the industrial gas sector. Air Liquide's ambition to contribute towards decarbonization by

the involvement in various green and blue hydrogen projects as well as facilitating decarbonization initiatives of its customers and providing carbon capture services is reflected in the demographic and societal trends sub score of 2.

Governance

Air Liquide's governance is positive. The company has a track record of adhering to its conservative financial policy and is committed to maintain an "A-range" rating. Until recently the CEO and Chairman of the supervisory board roles were not separated, however this perceived control gap has been addressed as with the already announced succession plan for the CEO role.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moody's.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Liquidity analysis

Air Liquide's liquidity profile is strong. As of 30 June 2022, the company had around €1.5 billion of cash and cash equivalents on its balance sheet. Furthermore, the company has access to an undrawn €2.5 billion syndicated revolving credit facility and €1.1 billion of other credit lines. In combination with expected adjusted funds from operations (FFO) generation of around €5 billion, these sources should be more than sufficient to cover capital expenditures estimated to be around €3.3 billion, debt maturities, dividend payments and working capital swings.

Rating methodology and scorecard factors

The scorecard indicated outcome, applying the chemical industry scorecard to Air Liquide, is A2.

Exhibit 14

Scorecard factors for Air Liquide S.A.

Chemical Industry Scorecard [1][2]	Current LTM 6/30/2022	Score	Moody's 12-18 Month Forward View As of Sept-22 [3]	Score
Factor 1 : Scale (15%)	Measure		Measure	
a) Revenue (USD Billion)	\$30.1	A	\$29 - \$31	A
b) PP&E (net) (USD Billion)	\$25.0	Aa	\$25.0	Aa
Factor 2 : Business Profile (25%)				
a) Business Profile	Aa	Aa	Aa	Aa
Factor 3 : Profitability (10%)				
a) EBITDA Margin	25.5%	A	25% - 26%	A
b) ROA (Return on Average Assets)	9.3%	Ba	8.5% - 9.5%	Ba
Factor 4 : Leverage & Coverage (30%)				
a) Debt / EBITDA	2.6x	Baa	2.2x - 2.3x	Baa
b) RCF / Debt	22.6%	Baa	25% - 26%	Baa
c) EBITDA / Interest Expense	15.7x	A	15.5x - 16x	A
Factor 5 : Financial Policy (20%)				
a) Financial Policy	A	A	A	A
Rating:				
a) Scorecard-Indicated Outcome		A2		A2
b) Actual Rating Assigned				A2

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations. [2] As of 06/30/2022. [3] This represents Moody's forward view, not the view of the issuer, and unless noted in the text, does not incorporate significant acquisitions and divestitures.

Source: Moody's Financial Metrics™ and Moody's estimates

Ratings

Exhibit 15

Category	Moody's Rating
AIR LIQUIDE S.A.	
Outlook	Stable
Issuer Rating -Dom Curr	A2
Senior Unsecured -Dom Curr	A2
Commercial Paper -Dom Curr	P-1
ST Issuer Rating -Dom Curr	P-1
AIR LIQUIDE FINANCE	
Outlook	Stable
Bkd Senior Unsecured	A2
Bkd Commercial Paper -Dom Curr	P-1
AIR LIQUIDE U.S. LLC	
Outlook	Stable
Bkd Commercial Paper	P-1

Source: Moody's Investors Service

Appendix

Exhibit 16

Moody's-Adjusted Debt Reconciliation for Air Liquide S.A.^{[1][2]}

EUR Millions	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	LTM Jun-22
As Reported Debt	14,261	14,730	13,588	13,956	14,852
Pensions	1,566	1,690	1,560	1,344	1,344
Operating Leases	1,098	0	0	0	0
Securitized	1,053	1,133	1,062	1,395	1,395
Total Adjusted Debt	17,978	17,554	16,211	16,695	17,591

[1] All figures are calculated using Moody's estimates and standard adjustments.

[2] Periods are Financial Year-End unless indicated. LTM = Last Twelve Months.

Source: Moody's Financial Metrics™

Exhibit 17

Moody's-Adjusted EBITDA Reconciliation for Air Liquide S.A.^{[1][2]}

EUR Millions	FYE Dec-18	FYE Dec-19	FYE Dec-20	FYE Dec-21	LTM Jun-22
As Reported EBITDA	5,047	5,704	6,084	6,114	6,376
Pensions	-1	-2	-5	-1	0
Operating Leases	290	0	0	0	0
Securitized	13	11	0	3	20
Unusual	136	158	-221	146	408
Non-Standard Adjustments	-4	-1	0	0	0
Moody's-Adjusted EBITDA	5,481	5,870	5,858	6,262	6,805

[1] All figures are calculated using Moody's estimates and standard adjustments.

[2] Periods are Financial Year-End unless indicated. LTM = Last Twelve Months.

Source: Moody's Financial Metrics™

Exhibit 18

Peer Comparison^{[1][2]}

(in USD million)	Air Liquide S.A. A2 Stable			Linde plc A2 Stable			Air Products and Chemicals, Inc. A2 Stable		
	FYE	FYE	LTM	FYE	FYE	LTM	FYE	FYE	LTM
	Dec-20	Dec-21	Jun-22	Dec-20	Dec-21	Jun-22	Sep-20	Sep-21	Jun-22
Revenue	23,381	27,609	30,109	27,243	30,793	32,634	8,856	10,323	11,970
EBITDA	6,686	7,409	7,675	8,898	10,307	10,879	3,691	3,978	4,241
Total Debt	19,835	18,986	18,391	20,048	16,899	18,735	9,256	8,495	8,444
Cash & Cash Equivalents	2,087	2,384	1,589	3,754	2,823	3,655	5,253	4,469	2,957
EBITDA margin %	28.6%	26.8%	25.5%	32.7%	33.5%	33.3%	41.7%	38.5%	35.4%
ROA - EBIT / Average Assets	8.4%	9.0%	9.3%	6.7%	8.5%	9.6%	10.9%	9.9%	10.5%
EBITDA / Interest Expense	12.0x	15.8x	15.7x	30.1x	39.7x	45.9x	24.4x	20.7x	23.7x
Debt / EBITDA	2.8x	2.7x	2.6x	2.3x	1.6x	1.7x	2.5x	2.1x	2.0x
RCF / Debt	19.9%	21.6%	22.6%	28.3%	39.0%	36.2%	24.4%	24.9%	23.3%

[1] All figures & ratios calculated using Moody's estimates & standard adjustments.

[2] FYE = Financial Year-End. LTM = Last Twelve Months. RUR* = Ratings under Review, where UPG = for upgrade and DNG = for downgrade.

Source: Moody's Financial Metrics™

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