



Overall Assessment

Air Liquide is expected to remain aligned with a 2°C pathway by 2030.

Operational emissions (Scope 1 and 2, market-based) have declined by 11.1% since 2020, supporting its 33% reduction target by 2035. However, total emissions fell only 2.7% between 2020 and 2024, as a 67% rise in upstream Scope 3 emissions offset reductions elsewhere. Scope 3 represents 40% of the footprint and remains without a quantified medium-term reduction target. Capital deployment has accelerated. Investment decisions reached EUR 4.4 billion in 2024, with over 40% of the opportunity pipeline linked to energy transition projects. The Group has also earmarked EUR 8 billion for low-carbon hydrogen by 2035 and issued three successive EUR 500 million green bonds (in 2021, 2024 and 2025) for projects in low-carbon hydrogen, CO₂ capture, and low-carbon air gases. Yet investors cannot trace these commitments to project-level abatement outcomes, limiting independent verification of delivery against targets. Risk governance has matured, including carbon price sensitivity analysis (\geq EUR 100/TCO₂) and physical risk screening across ~670 assets under high-emission scenarios. Still, financial exposure to transition and physical risks remains largely unquantified. Absent measurable Scope 3 targets and clearer capital-to-carbon linkage, Air Liquide's trajectory supports continued 2°C alignment rather than the more ambitious 1.5°C positioning.



Aligned with 1.5°C



Aligned with +2°C



Aligned with BAU+3°C

Download the Shareholder [Engagement Sheet](#).



Climate Alignment

- Air Liquide's total emissions fell just 2.7% between 2020 and 2024, with operational reductions largely offset by a 67% rise in upstream Scope 3 emissions, particularly purchased goods.
- Its 2050 neutrality goal is supported by a 33% Scope 1 and 2 reduction target by 2035, but the absence of quantified Scope 3 targets limits visibility over 40% of its total GHG footprint.



Policy and Governance

- Air Liquide has structured engagement frameworks aligned with net zero, but lacks quantified, time-bound expectations and clearer safeguards around blue hydrogen and CCUS use.
- The Board has climate oversight, yet climate linked remuneration accounts for just 6.9% of variable pay (considered material), indicating limited financial incentives for transition delivery.



Risk Analysis

- Air Liquide views direct carbon pricing exposure as low due to contractual pass-through mechanisms and internal carbon sensitivity thresholds of at least EUR 100/TCO₂e, though this assumes stable policy expansion and contract renewal terms.
- Physical risks are screened across ~670 assets under high-emission IPCC scenarios, yet financial impacts remain undisclosed.



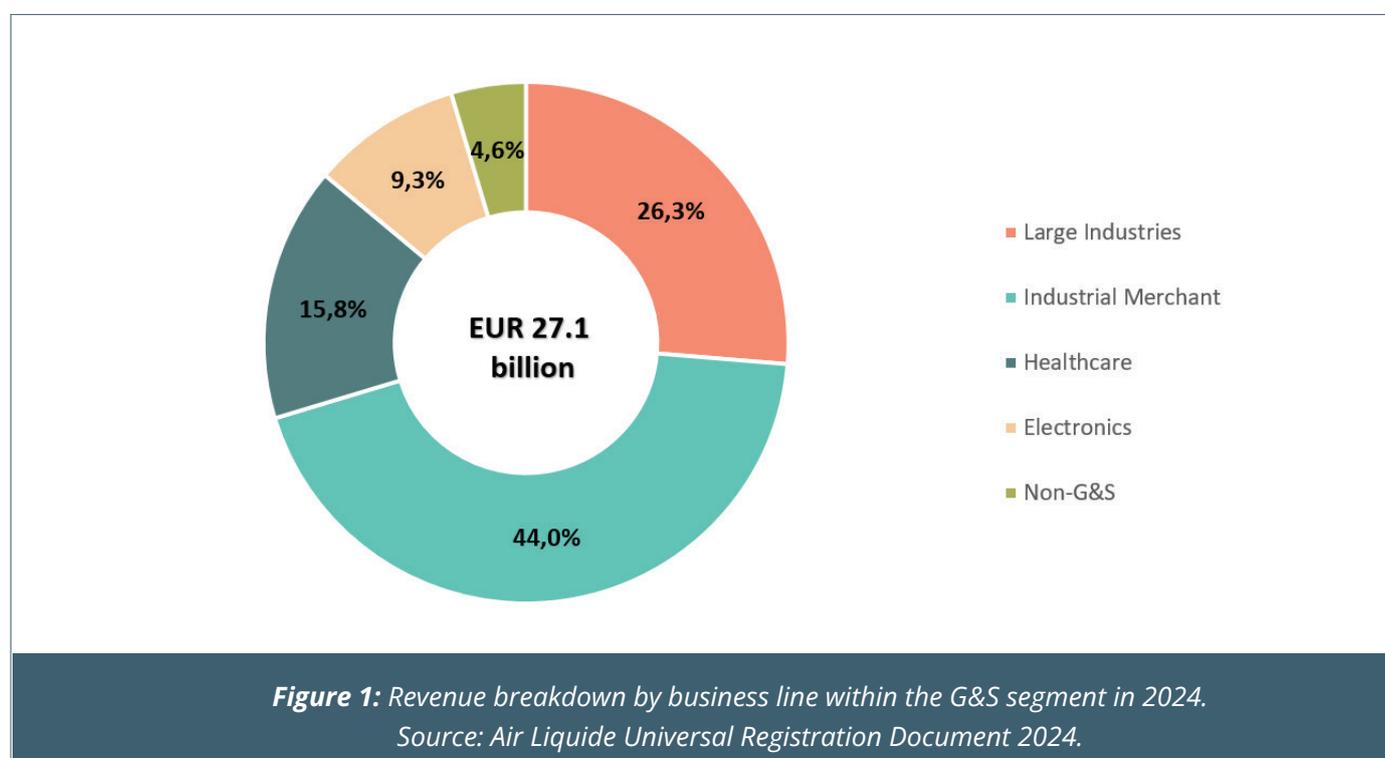
Strategy Assessment

- Air Liquide announced EUR 16 billion in industrial investments for the 2022-2025 period, and EUR 8 billion for low-carbon hydrogen by 2035; but as of 2024 had not published a transparent breakdown on how much of this had been committed or spent, or how it maps to expected emission reductions.
- While operational emissions have declined 11.1% since 2020 and governance has strengthened, absent Scope 3 targets and limited capital-to-carbon traceability constrain full Paris alignment, supporting a 2°C pathway outlook.

Company Overview

Air Liquide (AI) is a global producer of industrial gases and related technologies, headquartered in Paris, France. It is the second-largest player in its market by both, market capitalisation and sales¹. In 2024, the company reported an annual revenue of EUR 27.1 billion (or USD 28.0 billion²) and an operating income of EUR 4.9 billion (USD 5.1 billion).

The company operates through three main segments: Gas and Services (G&S), Engineering & Construction (E&C), and Global Markets & Technologies (GM&T). The former is by far the largest, accounting for 95.4% of the company's net sales in 2024. As shown in Figure 1 G&S supplies industrial gases and related services across four business lines: Industrial Merchant (44% of total sales in 2024), Large Industries (26.3%), Healthcare (15.8%), and Electronics (9.3%).



Within the Non-G&S segments, GM&T supplies biomethane, hydrogen, and other products with applications in “energy transition and deep tech” and accounted for 3% of total sales. E&C designs industrial gas production facilities for Air Liquide as well as third-party customers and accounted for the remaining 2%.

¹ As of 2 February 2026, Air Liquide's market capitalisation was USD 109.5 billion while Linde's market capitalisation was USD 215.4 billion. In 2025, Air Liquide's revenues are estimated at USD 29.7 billion vs Linde's USD 33 billion. Source: Bloomberg Terminal, company disclosures.

² Unless stated otherwise, all conversions to USD in this profile are based on historical exchange rates as of the year-end for each reporting year. Source: Bloomberg Terminal.

The G&S segment's sales are spread globally and reported across three regions: Europe, Middle East and Africa (39% of total sales in 2024), Americas (37%), and Asia Pacific (20%), as shown in Figure 2. This concentration of the company's sales in advanced economies leaves it exposed to regulatory risks (such as the introduction of or an increase in carbon prices) in these areas.

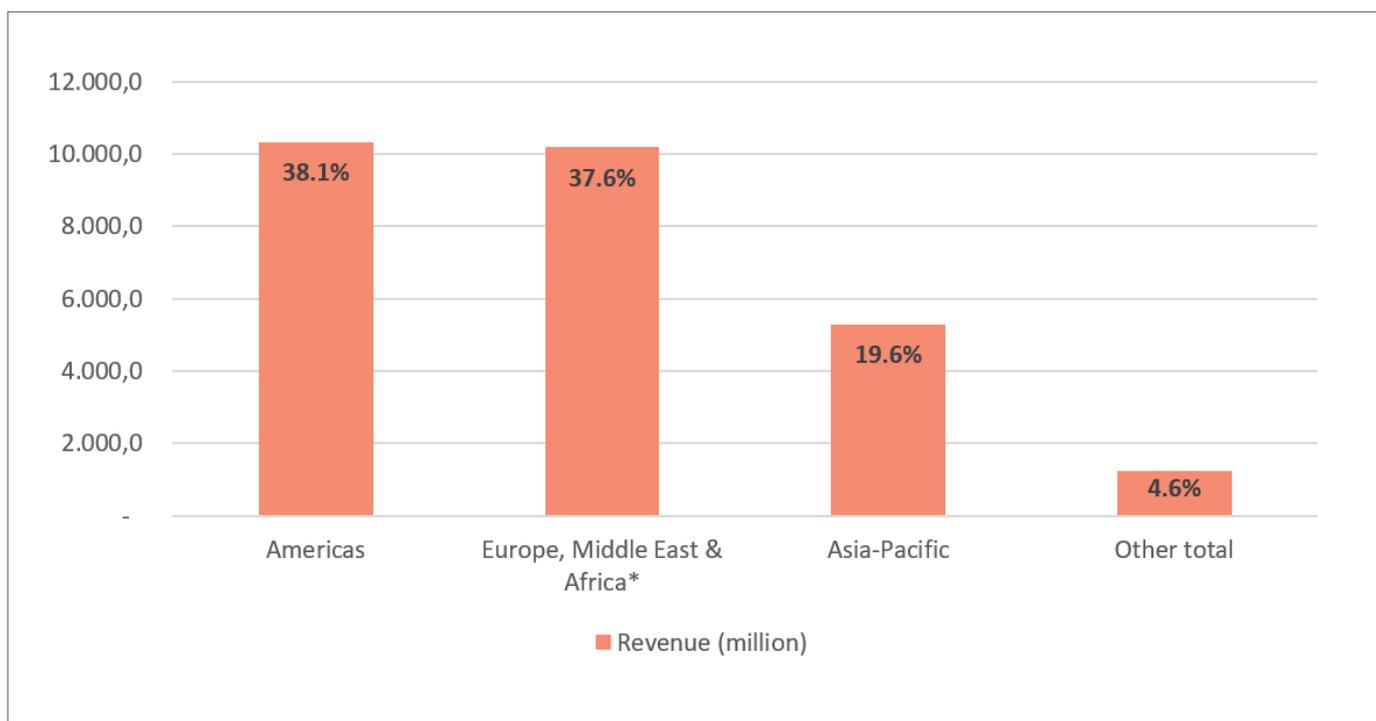


Figure 2: G&S Revenue - Breakdown by Geography (2024). Source: Air Liquide, Universal Registration Document 2024
*As of 2024, results for Europe and the Middle East & Africa are reported within the same operational segment.

Climate Alignment

EMISSIONS INVENTORY

Over the last five years (2020-2024) Air Liquide's greenhouse gas (GHG) emissions averaged 59,177 kilotons of CO₂ equivalent (KTCO₂e), peaking at 61,440 KTCO₂e in 2022 and declining gradually to a low of 58,177 KTCO₂e in 2024. The company's GHG footprint is weighted towards operational emissions, which together accounted for 60% of the total in 2024, as presented in Figure 3. Scope 3 emissions (40%) were dominated by emissions from "purchased goods" and "fuel and energy" in the upstream segment of the value chain, and from "use of sold products" in the downstream segments of the value chain, as shown in Figure 4.

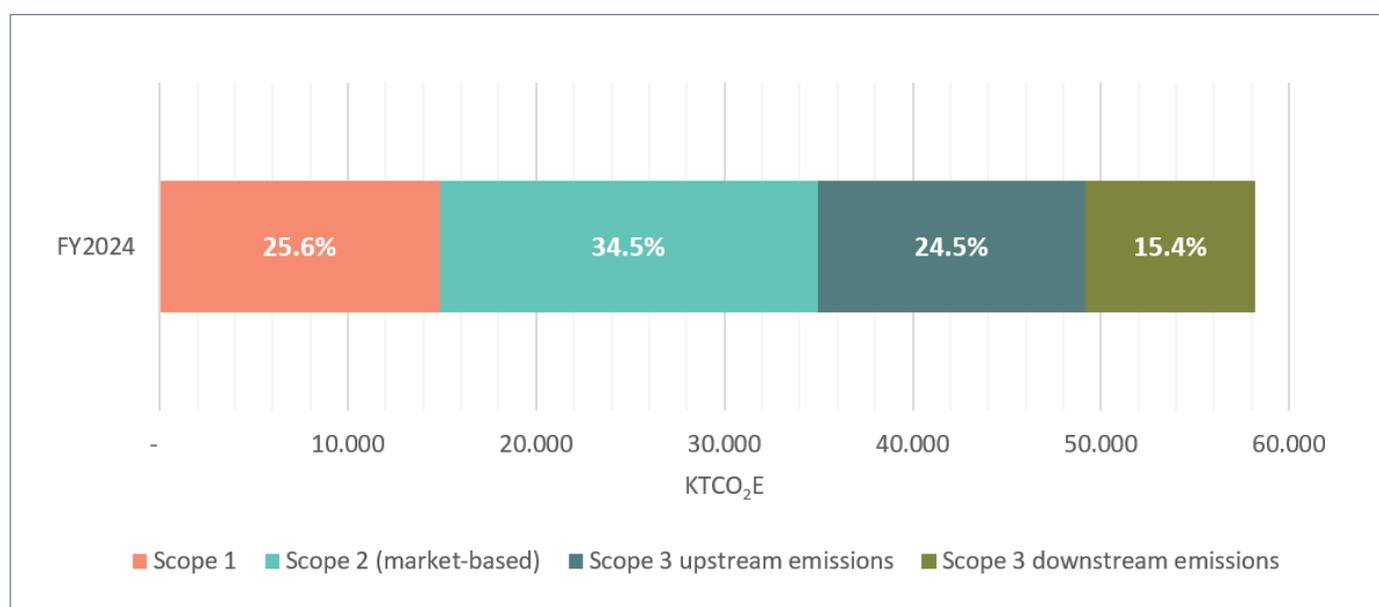
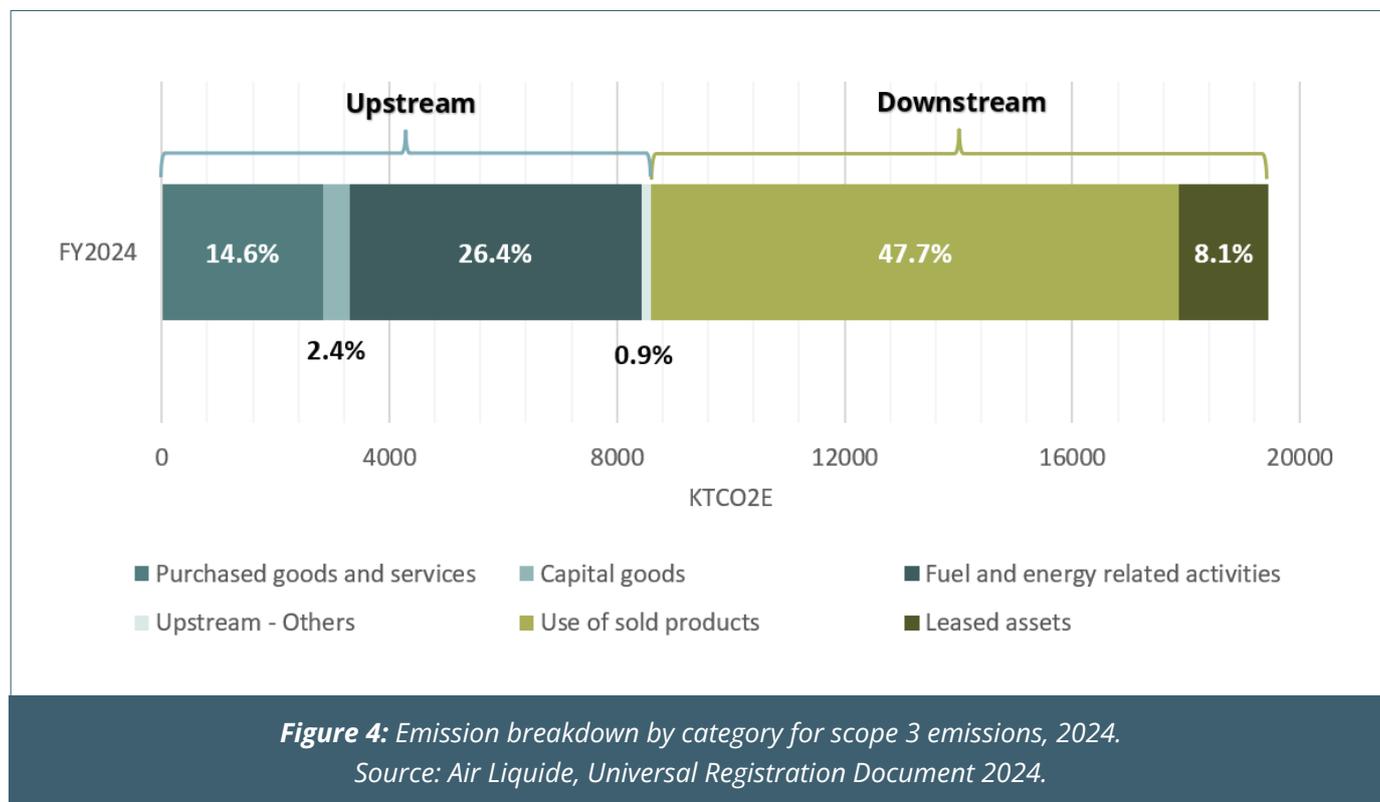


Figure 3: Emission breakdown by scope (%), 2024.
Source: Air Liquide, Universal Registration Document 2024.



In the next section, we assess the company's potential emission evolution by examining its past performance, targets, and initiatives disclosed to mitigate its GHG footprint.

Emissions Historic Evolution

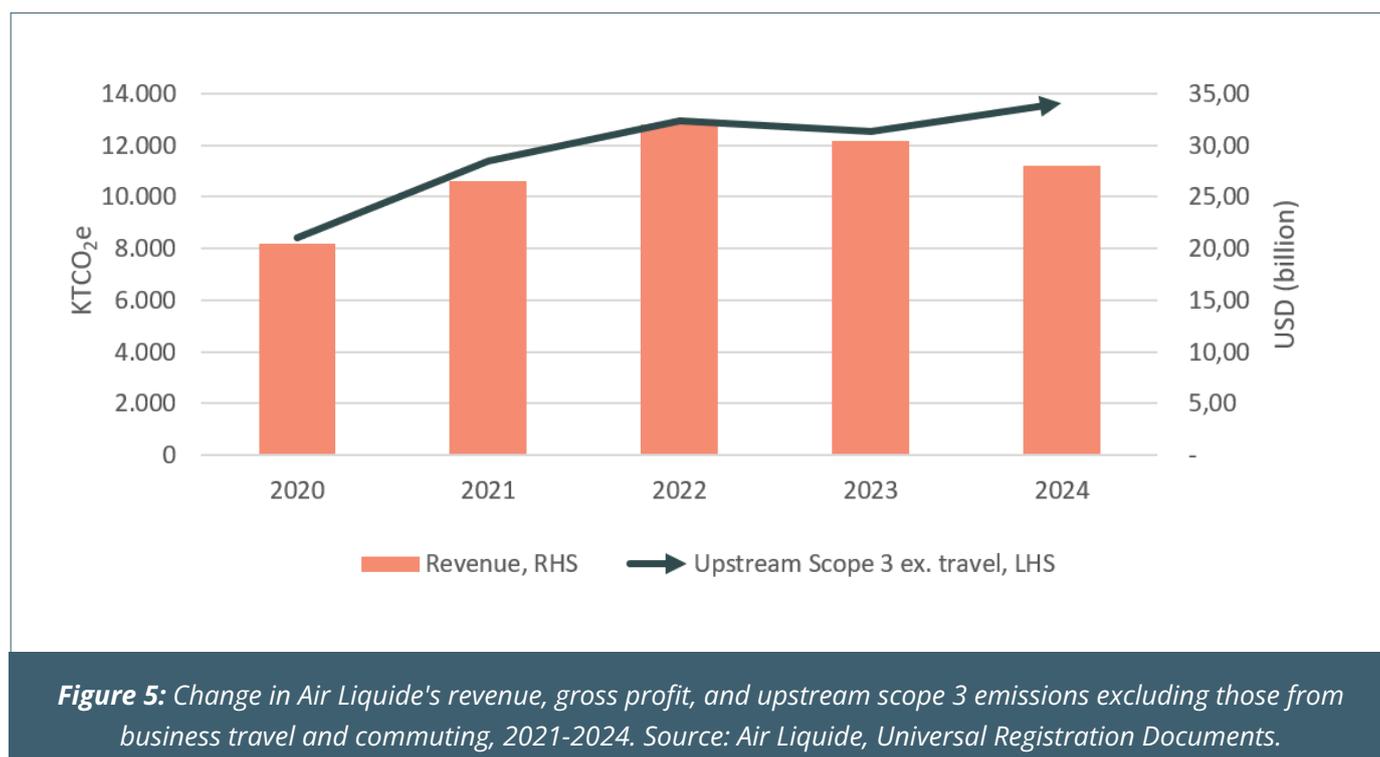
Air Liquide's total emissions remained relatively flat over 2020-2024, decreasing by 2.7% in absolute terms – see Table 1. While emissions decreased across most categories, including significant cuts in Scope 2 and Downstream Scope 3 emissions, these were almost fully offset by a sharp increase in Upstream Scope 3 emissions, which rose by 66% over the period.

Table 1: Air Liquide's emission breakdown by scope and absolute change, 2020-2024
Source: Air Liquide Universal Registration Documents

Scope	2020*	2021	2022	2023*	2024	Absolute Change (2020-2024)
Scope 1 emissions	15,505	15,536	16,273	15,473	14,868	-4.1%
Scope 2 (Market-based) emissions	23,784	20,829	23,033	21,504	20,064	-15.6%
Scope 3 Upstream emissions	8,603	11,583	13,608	13,174	14,264	65.8%
Scope 3 Downstream emissions	10,846	10,306	8,526	9,126	8,980	-17.2%
Scope 1, 2 and 3	58,738	58,254	61,440	59,277	58,177	-2.7%

Note: *Restated in 2024. It is likely that the figures from 2021 and 2022 have also been restated, but as we were unable to find the restated figures, we sourced the latest available figures and greyed them out for information purposes.

In absolute terms, the increase in Upstream Scope 3 emissions was driven primarily by a 130% rise in emissions from purchased goods, though emissions also rose in transportation and distribution, as well as from Capital Goods, signalling possible growth in production. Moreover, while we could not obtain production volumes to show the relation between production and emissions changes, we can observe a trend of Upstream Scope 3 emissions moving in the same direction as revenues, as presented in Figure 5.³



On the other hand, we note that downstream emissions from use of sold products declined by more than a quarter over 2020-2024, suggesting a move to a product line with fewer emissions emitted in use.

³ Please note that the divergence between scopes likely reflects methodological and structural factors: Scope 1 and 2 emissions would have benefited from greater use of low carbon electricity and efficiency measures, while downstream Scope 3 could have fallen in part due to a gradual shift towards less emissions intensive products and applications, whereas upstream Scope 3 remains calculated largely on a spend basis and is therefore more sensitive to procurement prices, capital expenditure and evolving data coverage.

Emissions Targets

Air Liquide presents a long term strategy to reach carbon neutrality by 2050, which includes a mid-term goal to reduce operational emissions (Scopes 1 and 2) by 33% by 2035 against a 2020 baseline. Notably, the company's deadline is five years ahead of its peers which tend to have a mid-term target by 2030⁴. Air Liquide's target has been validated as "well-below 2°C" by the SBTi, according to the company's Climate Transition Plan.⁵

Furthermore, the company claims most of its Scope 1 and 2 emissions are concentrated at a select number of assets or in a few geographies, and its plan prioritises abatement actions over carbon removals, which are reserved for residual emissions.⁶

For Scope 1, the firm seeks to cut feedstock and fuel consumption at chemical and cogeneration plants, as well as reduce emissions from its transportation network. To do so, the company plans to deploy Carbon Capture Utilisation and Storage (CCUS), switch to "low-carbon" or "alternative fuels", optimise power use, and electrify facilities where possible. The company plans to phase in the new units, by timing replacements for the end of useful lives of existing assets.⁷ Notably, Air Liquide does not provide a quantified breakdown of how much each Scope 1 lever (CCUS, fuel switching, optimisation, electrification, transport measures) will contribute to achieving its 2035 reduction target; the levers are described qualitatively and sometimes illustrated with project level examples, but without percentage shares or CO₂e allocations by lever.

For Scope 2, Air Liquide plans a shift towards less emission-intensive energy, including by electrifying steam-driven air separation units while buying a greater share of electricity from "low-carbon sources". Among other things, the company seeks to source an additional 10 TWh in "zero-carbon" electricity between 2025 and 2035⁸; as of 2025, more than 40% of its purchased electricity already comes from low carbon sources (renewables and nuclear)⁹, so this represents a substantial further increase in low carbon power use. We note that if materialised, this would result in a 112% increase in the company's energy use from renewables, excluding nuclear.¹⁰

At the same time, Air Liquide expects demand growth for its products in healthcare, industries, transport, and "energy transition" related sectors. Accordingly, it cautions that it expects some increase in its operational emissions.¹¹

Moreover, the company claims to be committed to decreasing its Scope 3 emissions, but it has not set a quantified target similar to that established for Scope 1 and 2 emissions. It only describes broadly the categories of emissions where it sees opportunities for its suppliers and customers to decarbonise, as well as the levers it sees them using to address these.

4 For more details see Planet Tracker's [Lessons in Chemistry](#).

5 Air Liquide, [Climate Transition Plan](#) (2024), p.6.

6 For more details see: Air Liquide, [Climate Transition Plan](#) (2024).

7 For more details see: Air Liquide, [Climate Transition Plan](#) (2024).

8 For more details see: Air Liquide, [Climate Transition Plan](#) (2024).

9 Source: [Air Liquide Expands Low-Carbon Electricity Sourcing with 3 TWh PPAs by 2025](#).

10 The company used 8.9 TWh in renewable energy in 2024. See Air Liquide, [Universal Registration Document 2024](#), p.319.

11 Air Liquide, [Climate Transition Plan](#) (2024), p.28.

The portion of emissions that Air Liquide can estimate with what it describes as good accounting precision includes:

- Category 3: Fuel Use upstream (10.7% of total emissions in 2024)
- Category 9: Transportation (% of total not available)
- Category 10: Processing of Sold Products (% of total not available)
- Category 11: Use of Sold Products downstream (11.8% of total emissions in 2024)

To address these, the company plans to reduce emissions from gas consumption, switch to zero-carbon sourcing, have its distributors convert their fleets to renewable fuel, and engage with customers to identify abatement opportunities or develop new products with lower end-use carbon footprints, including those made from biogenic feedstock.

Overall, Air Liquide's strategy contains several elements we find to be credible. Prioritising abatement ensures a focus on tackling emissions today, and levers like electrifying facilities, making them more efficient, and buying more renewable power are among the more realistic options. Yet, some levers have yet to be proven commercial at scale (e.g. CCUS) or need to be ringfenced to rule out the use of fossil fuels (e.g. by explicitly excluding fossil gas from the list of "low-carbon fuels" or "alternative fuels").

Furthermore, while Air Liquide's carbon neutrality goal applies to all of its emissions, visibility of its emission trajectory to 2050 remains limited. A mid-term target has been set only for operational emissions, which cover 60% of its total footprint, and does not extend beyond 2035. Meanwhile, plans for Scope 3 emissions remain couched in general terms and rely in some part on a change in its product line (Category 11: Use of Sold Products emissions, accounted for 29% of the Scope 3 total in 2024). Investors should seek greater transparency around the longer-term vision of the company's outlook for its carbon footprint and ask for:

- 1) A better-defined emission reduction trajectory, pinned down by regular interim targets both before and after 2035;
- 2) A greater degree of precision around fuels it classifies as "low-carbon", ideally with breakdown by specific type of fuel.

Policy and Governance

ENGAGEMENT AND INFLUENCE

Suppliers' Engagement

Air Liquide's supplier engagement is guided by its procurement policy which is supported in turn by a Procure to Neutrality Roadmap and a Suppliers' Code of Conduct. As presented below, it also has a series of additional measures through which it seeks to reduce its value chain emissions.

Key Components of Suppliers' Engagement

- **Procure to Neutrality Roadmap** is a four-part roadmap run by Air Liquide's procurement department, which seeks to improve GHG accounting, engage with suppliers and customers alike, and prepare a reduction action plan. We have not been able to identify a deadline for the action plan, nor any specific objectives attached to any of the actions.
- **Suppliers' Code of Conduct** outlines in general Air Liquide's expectations for its suppliers on environmental protection and requires in particular that they identify risks, "avoid or minimise negative environmental impacts", improve their products or services to allow for greater circularity, and align with Air Liquide's carbon neutrality objective.¹² Another version of the code has better-defined requirements regarding GHG emissions, expecting suppliers to measure them, "put an action plan in place aimed at reducing" them, and reduce and recycle their waste. Neither version, however, outlines any quantifiable targets for the suppliers.¹³
- **Other measures** include using alternative fuels and raw materials (e.g. off-gases and biogases), increasing renewable and nuclear electricity purchases, as well as engaging with transportation and distribution service providers to convert their fleets.

Air Liquide's engagement plan contains some items we find credible. These include clauses in the Suppliers' Code of Conduct requiring alignment with the company's carbon neutrality goal, as well as measures like fuel switching, cleaner electricity profile, and engagement around fleet conversion. However, we have not been able to find quantified, time-bound targets backing up any of these levers. Therefore, we recommend investors engaging with Air Liquide to inquire for more details for an accurate assessment of these levers influence on emissions.

Customers' Engagement

Air Liquide has identified reducing "sales of products with high global warming potential" as the main levers to use to reduce its downstream Scope 3 emissions. Some 30% of its Scope 3 emissions come from gases like CO₂ and N₂O, though these accounted for <5% of total sales in 2023.¹⁴

¹² Air Liquide, [Air Liquide's Suppliers Code of conduct](#).

¹³ [Air Liquide Supplier Code of Conduct 2023](#) (February 2024). Note: as published on Air Liquide Austria.

¹⁴ For more details see: Air Liquide, [Climate Transition Plan](#) (2024).

Key Components of Customers' Engagement

- CO₂ emissions are expected to be addressed by shifting production towards biogenic sources.
- N₂O emissions, however, are thought to be harder to abate, with plans in place only to investigate abatement opportunities and the possibility of developing alternative products.
- Category 13: Leased Assets emissions are expected to decline gradually as power grids in countries of operation decarbonise and customers make their own efforts to source lower-carbon electricity.

Moreover, the company aims to have 50 of its “top customers” committed to a 2050 carbon neutrality goal by 2035, with a mid-term target for 75% of them (38 companies) to be committed by 2025. The company claims to have had 74% of its top customers (37 companies) meet this criterion in 2023.¹⁵

Influence on Policymakers

As of July 2025, Air Liquide was a member of 34 associations in Europe (including France and Germany), South-East Asia (China, Japan, and Korea), the US, South Africa and Australia. In its [engagement with public stakeholders 2024 Public Affairs Report](#), the company says it requests that all associations to which it belongs explicitly align with the goals of the Paris Agreement and “contribute to net zero pathways as outlined by the International Energy Agency”.¹⁶

Air Liquide’s stated policy is to verify the climate objective positions of a trade association before joining it, although it is unclear if the association in question must meet any criteria, including those used in annual reviews (see below), to be considered suitable for joining.

The company also reviews annually the main associations to which it belongs, to assess against two broad criteria: “alignment with Paris agreement’s goals” and “alignment with Air Liquide’s advocacy positions on climate” (described below). Based on this assessment, associations are put into one of three categories:

- Aligned, meaning public support for the goals of the Paris Agreement;
- Partially aligned, meaning the association in question demonstrates pragmatic approaches towards the goals of the Paris Agreement; and
- Misaligned, meaning opposition to the goals of the Paris Agreement.

From the 34 associations identified by Air Liquide in its [Engagement with public stakeholders 2024 Public Affairs Report](#), it found 25 to be aligned and 9 partially aligned.¹⁷ From these nine, seven have been found to be aligned with the goals of the Paris Agreement but only partially aligned with Air Liquide’s policy stance.

¹⁵ Air Liquide, [Climate Transition Plan](#) (2024), p.31.

¹⁶ 2024 Public Affairs Report, p.11.

¹⁷ Air Liquide, [Engagement with public stakeholders 2024 Public Affairs Report](#), p.12.

Policy Stance and Engagement

Air Liquide's stated policy stance is to reduce its absolute CO₂ emissions to reach carbon neutrality by 2050 and to restrict global temperature increase to 1.5°C above pre-industrial levels, subject to favourable regulations and infrastructure availability. It has outlined 4 public advocacy positions, which are as follows:

- 1. Renewable and low carbon hydrogen**, where Air Liquide calls for an emission intensity metric to differentiate between different types of hydrogen depending on climate impact.
- 2. Carbon Capture Utilisation and Storage**, where Air Liquide calls for policy support to encourage technical advances in CCUS.
- 3. Electrification and access to low-carbon electricity**, where Air Liquide calls for visibility and reliability around energy prices and volumes.
- 4. Carbon pricing**, where Air Liquide aims to remove the competitive asymmetry between jurisdictions with carbon pricing mechanisms and those without.

Similarly to our observations of emission reduction strategies and engagement tools above, we note some discrepancies between these positions, as well as with the current ambition to limit global warming to 1.5°C. For example, in its position on CCUS, the company recognises that it should be deployed primarily in "hard-to-abate sectors such as steel, cement and chemical industries [...] where alternative decarbonisation methods are not commercially or technically available". However, the company's position on hydrogen seems to capture not just green but also blue hydrogen, which is produced using fossil gas and CCUS and has possible applications in transport, where battery-electric alternatives are developing quickly. Investors engaging with the company should enquire:

- How the company reconciles its positions on CCUS and hydrogen; and
- Whether it can and will show in which industries and for which applications its blue hydrogen is used.

MANAGEMENT ALIGNMENT

Sustainability Targets Oversight

A. The Board

Air Liquide's Board of Directors reviews the company's strategy and performance against climate targets, the Climate Transition Plan, and approves its sustainability statement as part of a broader approval of the Universal Registration Document.

It has a dedicated 3-member Environment and Society Committee meeting three times per year. Its mandate includes 7 "tasks", including making recommendations on Air Liquide's sustainability strategy and commitments, monitoring risks and material sustainability issues, and reviewing the company's sustainability statement and the Duty of Vigilance plan.¹⁸

B. The Management

From Air Liquide's 7 committees involved in the monitoring of control systems, oversight over sustainability falls on the Risk Committee, chaired by the CEO.¹⁹ It meets twice a year and reviews sustainability issues as part of the broader risk management work that also covers compliance, legal, finance, communication, safety and human resources.

At the executive level, duties of oversight of sustainability and procurement appear to complement the duties of the Group Vice President for Healthcare and General Secretary.

Sustainability features prominently in the company's overarching ADVANCE strategic plan as the second of its four priorities and one of its financial and extra-financial targets, in addition to the Climate Transition Plan, which serves as Air Liquide's roadmap to carbon neutrality by 2050.²⁰ The company also states it requires its investment plans to be compatible with the group's carbon neutrality goal.²¹

18 A Duty of Vigilance plan is a mandatory document under French law requiring large companies meeting certain criteria to publish a plan for the company to identify and prevent violations of human rights, health and safety violations, as well as environmental harm. For greater detail see Linklaters, [French Duty of Vigilance Law](#) (6 December 2023), and also Air Liquide, [Universal Registration Document 2024](#), p.124.

19 Air Liquide, [Universal Registration Document 2024](#), p.87.

20 Air Liquide, [Universal Registration Document 2024](#), pp.39,127.

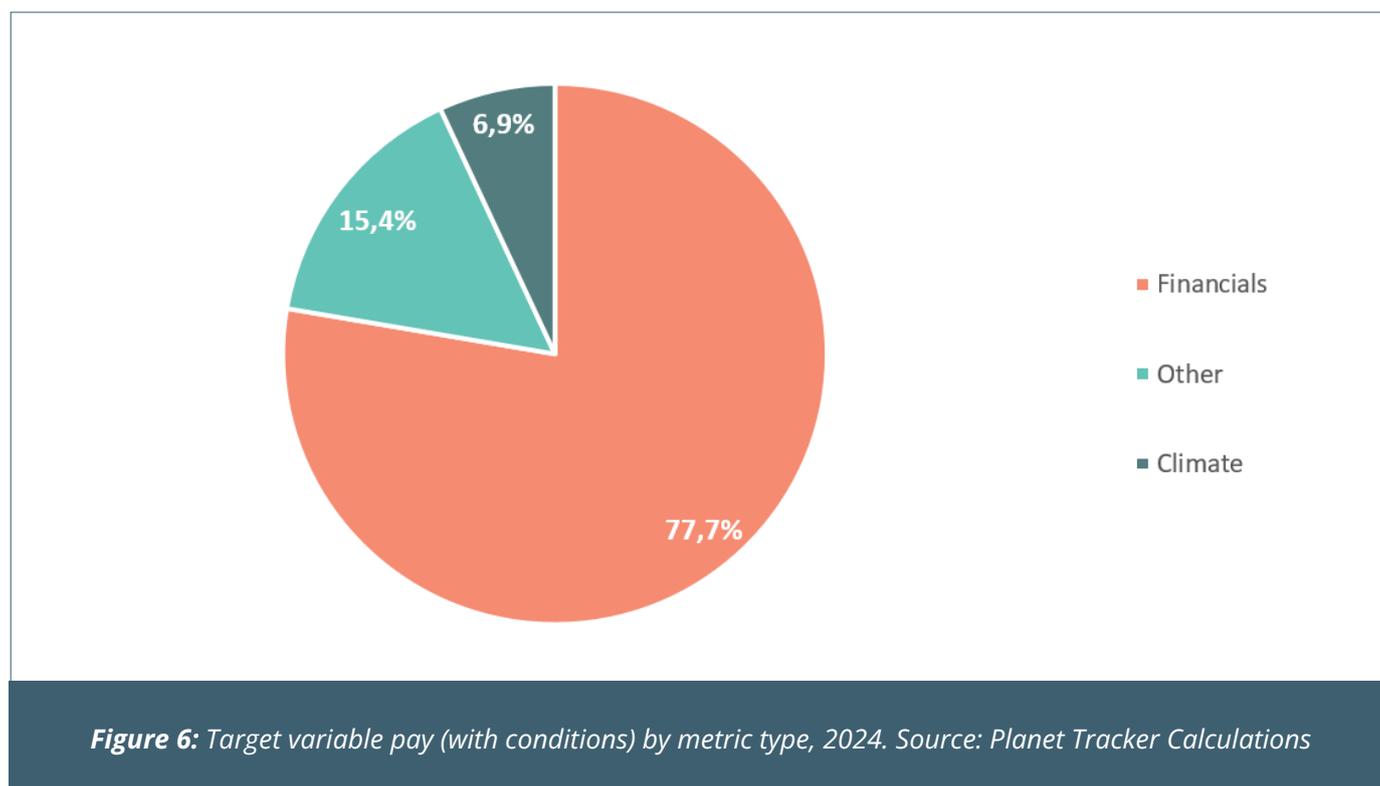
21 Air Liquide, [Integrated Annual Report 2024](#), p.45.

Management Compensation

The executive remuneration plan of Air Liquide’s CEO includes the base salary, an annual bonus, and a long-term incentive plan (LTIP). According to our calculations, in 2024 these made up:

- 34%, 41% and 25% respectively at target values; and
- 25%, 38% and 37% respectively at maximum values.²²

The annual bonus and the long-term incentive plan, whose vesting period covers 3 years from the year of award, are based on company and personal performance. Our analysis shows variable compensation is weighted heavily towards financial metrics such as increases in EPS and revenues, as well as targets for ratios, which together accounted for 78% of total conditional payout – see Figure 6. Meanwhile, climate targets such as “the roll-out of action plans relating to the Group’s sustainable development objectives” in the annual bonus and “the change in the Group’s CO₂ emissions in absolute value” in the LTIP accounted for 6.9% of variable conditional pay in 2024.



²² For a more detailed description of the methodology, see Carbon Tracker, [Crude Intentions III](#) (2024).

Risk Analysis

FINANCIAL IMPACT

Air Liquide stated it employs a structured risk management approach to identify and address climate transition risks, overseen by multiple departments including Finance, Sustainable Development, Group Control and Compliance, Legal, Safety, and Industrial Systems.

External Policy Drivers

Air Liquide continues to recognise carbon pricing mechanisms (CPMs) as a significant climate transition risk. The company operates in regions with GHG quota systems, notably the EU Emissions Trading Scheme (ETS). The key mitigation factor remains contractual: long-term contracts (typically 15 years or more) include provisions to pass through CO₂ costs to customers, and the company states this significantly reduces its financial exposure²³. For all investment projects (across all geographies, including those without a current carbon price) Air Liquide assures it integrates a CO₂ price sensitivity analysis using the local current price and a minimum of EUR 100 per tonne or more, chosen according to geography and context. The company also stated that it is currently reviewing its internal policy to raise this minimum price in line with updated CO₂ pricing projections.

The [September 2024 Climate Transition Plan](#) adds further granularity, noting that internal sensitivity studies show a carbon price in the range of EUR 100 to EUR 250 per tonne (consistent with a 1.5°C trajectory) would encourage customers to shift toward supply of low-carbon hydrogen. On the EU ETS specifically, the company notes that since its implementation, EU carbon pricing has not altered customer demand nor the profitability of Air Liquide's operations, and that the Group receives a higher-than-EU-average of freely allocated quotas due to the efficiency of its assets.

The company's own risk assessment rates the financial exposure to direct CO₂ pricing costs as "Low," primarily because of contractual pass-through provisions. However, this assessment relies heavily on the assumption that pass-through mechanisms will remain in place indefinitely across all contracts and geographies. It does not fully account for scenarios in which CPMs expand significantly faster than expected, or in which contract renewal negotiations reduce the pass-through ratio.

On the opportunity side, Air Liquide's renewable electricity procurement is now substantially more advanced than in prior periods. Since 2018, the company has signed 30 long-term renewable energy supply contracts (PPAs) for an estimated annual quantity of 5,831 GWh per year at full capacity. In 2024, zero-carbon sources (renewable and nuclear) accounted for 40.3% of the Group's purchased electricity, up from 35.7% in 2023, and renewable sources alone reached 23.1%, up from 19.8%²⁴. The company regards the shift to zero-carbon electricity as both an emissions reduction lever and a competitive positioning tool.

²³ For more details see: [Air Liquide 2024 Universal Registration Document](#).

²⁴ See [Air Liquide 2024 Annual Report](#) p. 54.

Physical Impact Drivers

The 2024 Universal Registration disclosures introduce a dedicated treatment of climate-related physical risks. In 2021 the company created a specific "climate physical risks" category in its Group risk universe, followed by a scoping study in 2022 and an in-depth exposure analysis in 2023.

According to the company, using an external expert data platform, Air Liquide assessed 670 industrial assets (e.g., Air Separation Unit - ASU, HyCO²⁵, cogeneration, biogas, Industrial Merchant, Electronics) covering >75% of Group sales against ten peril types under two high-emission IPCC scenarios: SSP2 4.5 (2.7°C by 2100, "business-as-usual") and SSP5 8.5 (4.4°C by 2100, "worst case"). The analysis distinguishes between:

- **Acute risks:** event-driven perils such as storms, hurricanes, flooding and wildfires, particularly relevant for coastal sites and hurricane-exposed regions (e.g., US Gulf Coast, South Asia).
- **Chronic risks:** longer-term shifts including rising sea levels, chronic heatwaves, changing rainfall patterns and resource scarcity.

Crossing geographic exposure with potential asset-level impacts, the company identified four priority perils: temperature (acute rise), heat (change in temperature pattern), fire and drought; owing to their specific consequences for industrial gas production processes.

However, Air Liquide does not disclose the potential financial impact of these, but rather states that no significant financial impact from physical climate risks has been identified on asset useful life or value, client portfolio, cash flows, or provisions. Value-chain physical risks (e.g., supply-chain disruptions from extreme weather affecting truck deliveries) are acknowledged but they are not quantified from a financial impact perspective either.

Market Impact Drivers

According to the company, market dynamics remain the primary source of both risks and opportunities in Air Liquide's transition. The company's 2024 Climate Transition Plan characterises market risk as broadly positive for the Group: the demand for low-carbon industrial gas at a higher price is set to grow, driven by both persistence of industrial gas use in existing end-markets (chemicals, energy, steel) and the emergence of new demand segments (electric vehicle manufacturing, electronics, low-carbon hydrogen for mobility). A summary of the market risk/opportunity assessment is presented in Table 2.

²⁵ Unit that simultaneously produces hydrogen (H₂) and carbon monoxide (CO).

Table 2: Air Liquide's market risk/opportunity assessment 2024
Source: Air Liquide Universal Registration Document 2024 and Climate transition plan 2024

Driver	Risk Assessment	Opportunity Assessment
CO ₂ emission price increase	Low: contractual pass-through provisions	High: low-carbon manufacturing growth potential
Mandates/regulation on products	Moderate: IEA alignment and positive regulatory signals	High: accelerated scale-up of nascent value chains
Technology substitution	Low: positioned in all new low-carbon industrial gas technologies	High: demand scale-up for low-carbon hydrogen and industrial gases
Changing customer behaviour	Low: diverse customer base, resilient contractual structure	High: more industrial gases and services to meet new demand
Reputation/stigmatisation	Low: advocacy strategy and stakeholder alignment	High: strong stakeholder alignment capability

Specific market opportunities disclosed include:

- **Low-carbon hydrogen:** Air Liquide plans to invest EUR 8 billion (USD 8.3 billion) by 2035 in the field of low-carbon and renewable hydrogen. The Group is already present in 6 out of 7 United States clean hydrogen hubs. Major announced projects include the ELYgator 200 MW electrolyser in Rotterdam and a planned 250 MW joint-venture electrolyser with TotalEnergies in Zeeland, with combined investment exceeding EUR 1 billion. A historic project in Baytown, Texas, would see Air Liquide build and operate four large modular air separation units producing 9,000 tonnes of oxygen per day, reducing the production-related carbon footprint by two-thirds.
- **Carbon capture:** The D'Artagnan project (with Dunkerque LNG) would handle 1.5 MTCO₂ per year initially, rising to up to 4 MTCO₂ annually, with more than EUR 160 million in EU grants if it proceeds. The Stockholm Exergi BECCS project would deploy a Cryocap™ LQ unit with a capacity of 3,500 TCO₂ per day.
- **Biomethane and sustainable fuels:** Air Liquide continues to position itself across the biomethane value chain and now provides RECTISOL technologies for the production of Sustainable Aviation Fuels (SAFs).

Overall, the disclosed opportunities arising from increased demand for sustainable products and services appear to far outweigh the potential climate related risks in terms of financial impact. However, it should be noted that many of these opportunities depend on assumptions about the pace and predictability of regulatory frameworks (particularly in hydrogen and CCUS), customer willingness to pay a low-carbon premium, and the timely availability of infrastructure (e.g., CO₂ transport and storage, renewable electricity grids). The company itself acknowledges that external factors, including society's overall climate ambition, favourable policy and regulations, customer willingness to decarbonise, and availability of clean energy sources, are key variables that introduce uncertainty to the realisation timeline of these investments.

RISK MANAGEMENT

External Policy Risk Management

Air Liquide has deepened its risk management governance since the prior assessment. The company now operates a formalised three-step approach to transition risks: identification of potential risk sources, establishment of risk assessment procedures, and preparation of risk mitigation plans. Two distinct processes support this: forward-looking control of investments (via the Resources and Investments Committee, i.e., RIC²⁶) and reviews of existing activities.

On investment control, every material investment undergoes a carbon price sensitivity analysis, and whenever annual Scope 1 and 2 emissions for an investment (or the customer's annual emissions) exceed specific thresholds, projects must first pass through an Emissions and Energy Risks Committee (E-Enrisk), where technology, reputation, and market risks are assessed. The Group's emission exposure is also centrally managed via a yearly carbon budget, allocated to regions and revised annually in line with climate objectives. The Environment and Society Committee of the Board reviews this trajectory at least three times a year, with a joint session with the Audit and Accounts Committee once per year.

For existing assets, Air Liquide states that all its primary production units can be decarbonised at competitive prices within 1.5°C transition scenarios, arguing that the IPCC implied carbon prices in such scenarios exceed the levelised abatement costs of its main levers (ASU electrification, zero carbon power sourcing, cogeneration conversion and HyCO CCUS) before 2035. On this basis the company reports no 'locked in' emissions or stranded primary production assets, asserting that each can be decarbonised at acceptable cost along a 1.5°C pathway. However, Air Liquide has not disclosed the underlying abatement cost estimates, carbon price assumptions or asset level economics supporting this internal comparison, limiting investors' ability to independently assess the robustness of this conclusion.

Air Liquide is presenting a theoretically achievable and financially rational path to 1.5°C. However, it relies on the concurrent realisation of several external conditions: deployment of infrastructure for renewable energy, access to carbon storage sinks, and the necessary evolution of regulatory and political frameworks to support the emergence of new low-carbon value chains. The company acknowledges these dependencies explicitly.

²⁶ Find more about the role of RIC on p. 47 of [Air Liquide's 2024 Universal Registration Document](#).

Physical Impact Management

Air Liquide's approach to managing physical climate risk operates at three levels:

1. **Investment screening:** Physical risks (water availability, frequency of extreme events, etc.) are now appraised during the review of investment requests alongside financial criteria, to ensure that adaptation measures are integrated into equipment design. Prospective sites will evaluate their exposure to the 10 identified perils, with a dedicated vulnerability assessment triggered whenever exposure is high.
2. **Operational resilience:** Sites regularly exposed to acute risks (e.g., hurricane-prone locations on the US Gulf Coast) already have crisis-prevention and business-continuity systems in place; these are "regularly updated and improved." Chronic risks are embedded in production-unit design in the same way as energy efficiency and carbon footprint considerations.
3. **Vulnerability assessments (in progress):** The company is developing vulnerability assessments for its priority perils to quantify direct damage, production decreases and business interruption. These assessments will follow best practices already applied for specific hazards and will extend to future investment siting decisions.

Additionally, the Group's property and business-interruption insurance programme covers losses from natural disasters. However, no quantitative climate-adaptation targets have been set, and the adaptation strategy and processes are still being developed by a dedicated expert team.

Market Impact Management

On the market side, Air Liquide's strategy is now backed by concrete projects across three categories disclosed in its 2024 Climate Transition Plan:

1. **Low-Carbon Manufacturing:** Hydrogen, oxygen, CO₂ capture and management to decarbonise industries (chemicals, metals, cement and lime, fertiliser).
2. **Low-Carbon Energy:** Ammonia, e-Methanol, biomethane, Sustainable Aviation Fuels, hydrogen to decarbonise global energy markets.
3. **Mobility:** Hydrogen to decarbonise heavy-duty mobility and fleets in the near term, and maritime/aviation in the future.

According to Air Liquide, the company's innovation process is designed to lower the risk of unsuccessful technology investment while maintaining a competitive pipeline. Air Liquide spent EUR 309 million (USD 320 million) on innovation in 2024, and held more than 500 patent families on hydrogen.

In conclusion, Air Liquide's risk management framework has slightly matured since the prior assessment. Based on the company's disclosures, the key residual risk lies in the external conditions upon which its risk management mechanisms depend, i.e., the pace of grid decarbonisation, carbon storage infrastructure development, and regulatory coherence across geographies.

Strategic Assessment

CAPITAL ALIGNMENT

Air Liquide's commitment to achieving carbon neutrality by 2050 is supported initially by the **ADVANCE** strategic plan. A plan in which the company committed to approximately EUR 16 billion (USD 16.6 billion) in investment decisions over 2022–2025, with 50% of industrial investment decisions (above EUR 5 million) directed to energy transition solutions. In 2024, Air Liquide invested a record EUR 4.4 billion²⁷. Separately, the company has earmarked EUR 8 billion (USD 8.3 billion) by 2035 specifically for low-carbon and renewable hydrogen.

A notable evolution from the prior assessment is that Air Liquide now states that investments to decarbonise the Group's assets and investments to capture growth opportunities in the energy transition are not subject to separate investment budgets but rather they are fully integrated into the Group's industrial investment policy and processes. This aims to frame decarbonisation not as a cost centre but embedded within value-generating projects (particularly upon contract renewal where low-carbon premiums can be contractually passed to customers).

Moreover, in 2024, the Group issued a second green bond of EUR 500 million (USD 518 million) (following an inaugural EUR 500 million green bond in 2021), financing projects in low-carbon hydrogen, CO₂ capture, and low-carbon air gases. A third green bond was issued in early 2025 under competitive financial conditions.

Innovation spending amounted to EUR 309 million (USD 320 million) in 2024, slightly up from EUR 308 million in 2022 as referenced in Planet Trackers last year assessment. The company now holds more than 500 patent families related to hydrogen.

However, despite these improvements, the concern raised in the previous assessment persists to a degree: Air Liquide does not consistently quantify the expected carbon emission reductions attributable to specific capital commitments. The company's Climate Transition Plan identifies decarbonisation levers and their indicative 2035 impact ranges (e.g., 3–4 MTCO₂e from CCUS, 5–7 MTCO₂e from zero-carbon sourcing, 5 MTCO₂e from efficiency and asset management), but it does not provide a project-by-project link between investment amounts and tonnes of CO₂ avoided. The integration of CAPEX and carbon budgets through the RIC process is a positive governance step, but investors still cannot independently verify whether the pace and quantum of spending is sufficient to close the gap to the 33% Scope 1 and 2 target by 2035.

²⁷ For more details see pp. 60-61 of [Air Liquide's 2024 Universal Registration Document](#).

TRANSITION APPRAISAL

Air Liquide remains deeply integrated into the industrial sector through its Gas & Services business, which accounts for approximately 95% of revenue and the majority of its emissions footprint (with 60% coming from operating activities). The company's role as both a significant emitter and a decarbonisation enabler makes its transition trajectory particularly consequential for the industry as a whole.

In terms of **emissions trends**, Air Liquide reports that Scope 1 and 2 emissions (restated, and market-based) have declined by 11.1% compared to the 2020 baseline, confirming the inflection point planned around 2025. However, total Scope 3 emissions remain substantial and are not yet covered by a medium-term quantitative reduction target, with the company citing methodological limitations and limited influence over value-chain emissions. Until upstream Scope 3 emissions are addressed with measurable targets, alignment with the Paris Agreement's broadest ambitions remains incomplete.

Regarding **policy and governance**, Air Liquide has strengthened its structures through the publication of a standalone Climate Transition Plan and by embedding climate objectives more deeply into investment governance, including CO₂ budgets cascaded to regional operations and an Emissions and Energy Risks Committee for material investments. Sustainability KPIs in executive compensation continue to be noticeable but not yet material, though the company argues its growth strategy is fundamentally tied to the energy transition. Concerns about affiliations with trade associations that may not fully support climate action, flagged in the previous assessment, have not been substantively resolved.

In the area of **risk analysis**, Air Liquide now provides a more structured picture. The 2024 disclosures introduce a dedicated physical risk programme built on scenario analysis under SSP2 4.5 and SSP5 8.5, covering ~670 industrial assets across 10 peril types. Priority perils (temperature, heatwaves, fire and drought) have been identified and vulnerability assessments are under development. This marks an improvement, though the work remains at an early stage: value-chain physical risks are only partially assessed, no quantitative adaptation targets have been set, and no material financial impact from physical risks has yet been disclosed. On transition risks, the company continues to rely on its contractual cost pass-through provisions to limit net exposure, but does not quantify the potential financial impact of a broader carbon-pricing scenario across all operational emissions.

For **capital alignment**, Air Liquide has continued to accelerate investment, with total industrial and financial investment decisions reaching a record EUR 4.4 billion (USD 4.6 billion) in 2024 and the investment backlog standing at EUR 4.2 billion (USD 4.3 billion). Energy transition projects represent more than 40% of the 12-month opportunity pipeline. The company has also issued a second green bond (EUR 500 million or 518 million) to finance flagship decarbonisation projects. While these figures reflect serious financial commitment, the company still does not consistently link its transition investments to quantified emission reduction outcomes, making it difficult for investors to track the carbon effectiveness of deployed capital.

In conclusion, Air Liquide has improved some its climate transition disclosures and has begun to deliver on its emissions trajectory. The introduction of a standalone Climate Transition Plan, scenario-based physical risk analysis and a more granular investment governance framework represent positive progress. However, the absence of medium-term Scope 3 reduction targets, the early-stage nature of the physical risk adaptation programme, and the insufficient linkage between capital allocation and measurable emission reductions remain areas requiring attention.

Planet Tracker expects Air Liquide to align with a 2°C pathway by 2030²⁸.

²⁸ Based on the data accessed by Planet Tracker until December 2025.

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ABOUT PLANET TRACKER

Planet Tracker is a non-profit financial think tank producing analytics and reports to align capital markets with planetary boundaries. We aim to create a significant and irreversible transformation of global financial activities by 2030. By informing, enabling and mobilising the transformative power of capital markets we aim to deliver a financial system that is fully aligned with a net-zero, nature-positive economy. Planet Tracker proactively engages with financial institutions to drive change in their investment strategies. We ensure they know exactly what risk is built into their investments and identify opportunities from funding the systems transformations we advocate.

PLANET TRACKER'S CLIMATE TRANSITION ANALYSIS

As part of its Petchems programme, Planet Tracker is examining the transition plans of chemical companies covered by the Climate Action 100+ list (<https://www.climateaction100.org/whos-involved/companies>). Our goal is to provide investors with the key information and analysis they need to be able to hold leading chemical companies to account for the quality of their climate transition plans and their execution against those plans. We also encourage investors to use this information to engage effectively with these companies with the ultimate aim of driving the sustainable transformation of the chemical industry.

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