

Advancing

towards a
sustainable
future

Air Liquide
Sustainability Report 2022



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CHIEF EXECUTIVE OFFICER'S MESSAGE

Advancing towards a sustainable future



Inventing a sustainable future has always driven us to innovate for our customers, patients and employees. As a global company, it is our responsibility to take concrete actions to address the environmental and societal challenges we all face, particularly in a context of profound transformation and uncertainties. From the climate emergency to healthcare transformation and creating a more inclusive society, all of our stakeholders expect us to take decisive measures with real impact. This is the purpose of our people, this is the purpose of everything we do.

With our molecules and technologies, we provide solutions that matter. For the environment, we are acting now by developing and offering our customers a wide range of effective and low-carbon solutions: hydrogen, CO₂ capture, biomethane, etc and we are accelerating in this field by investing massively

in these technologies. And beyond fighting climate change, we are also committing to water management and biodiversity preservation. For healthcare, we are acting by contributing, alongside healthcare professionals, to the transformation of the sector for the benefit of the patients and the sustainability of the healthcare systems as well. All this is possible thanks to the way we work with all our stakeholders. Every interaction with them is valuable and helps us move forward, day after day. As we progress, we also remain aware of the challenges in front of us before we reach our objectives.

Sustainability has become central to our license to operate and a prerequisite for any business development. But more importantly, it has become a profound conviction, which inspires and engages all of our 67,000 employees throughout the world. By combining financial and sustainability performance, Air Liquide

has opened a new chapter in its history with its ADVANCE strategic plan. With this clear roadmap, we are acting for a more sustainable future. Our engagement is strong and with the energy and commitment of our teams and the support of our shareholders, I am confident that we will advance together and progress for the benefit of all.

François Jackow
Chief Executive Officer

Advancing today, for a *sustainable tomorrow*

Our key figures

Air Liquide: a world leader, a global player

~67,100

employees

€29.9bn

in revenue

73

number of countries we operate in

>3.9m

customers & at-home patients

~50%

industrial investments dedicated to energy transition

350

new patents filed in 2022

Our activities

Gases, technologies and services for Industry and Health



Large industries

Industrial gases for heavy industry supplied in large quantities in the framework of long-term partnerships.



Industrial merchant

Industrial gases supplied in small and medium quantities, application technologies, small equipment and related contracts serving a wide range of manufacturing customers.



Electronics

Ultra pure gases in large quantities and development of new molecules.



Healthcare

Medical gases, products and services to support patients and healthcare professionals from the hospital to the home.



Global markets & technologies

Molecules, equipment and services to drive the energy transition and deep tech markets.



Engineering & construction

Design and construction of plants and equipment for industrial gas production.

Advancing

Our molecules, solutions and technologies are key to address some important issues, in particular to fight climate change. Understanding the opportunities we see, but also the challenges we face, is critical to ensuring we operate sustainably in the long-term, deliver on our objectives and contribute to the greater good.

Decarbonizing our own assets

We commit to be carbon neutral by 2050, by targeted emission reductions across all our assets and operations. In order to achieve that, we have clear plans: deploy new technologies and efficiencies, procure more renewable energy and invest in carbon capture projects.

Providing customers with low-carbon products for existing processes

We are collaborating with our customers to find solutions that can reduce their CO₂ footprint such as decarbonized gases for their existing processes.

Providing customers with technical solutions to transform their processes

Our solutions provide many opportunities to fundamentally transform the way our industrial customers approach production; to make the same end product but with a significantly reduced CO₂ footprint. When no alternatives exist, for hard-to-abate industries like cement, we can still capture the CO₂ emissions and collaborate with partners to store it long-term. This helps our customers meet their own sustainability goals.

Leading the development of the hydrogen ecosystem

Hydrogen has a key part to play in the energy mix of a decarbonized society. We see huge opportunities to bring renewable and low-carbon hydrogen to decarbonize industry and transportation.

Shaping the future of healthcare

As a major supplier of medical gases and home healthcare services to patients and healthcare providers, we strive to improve the quality of life of people living with chronic diseases and enable access to medical oxygen where needed.

Challenges

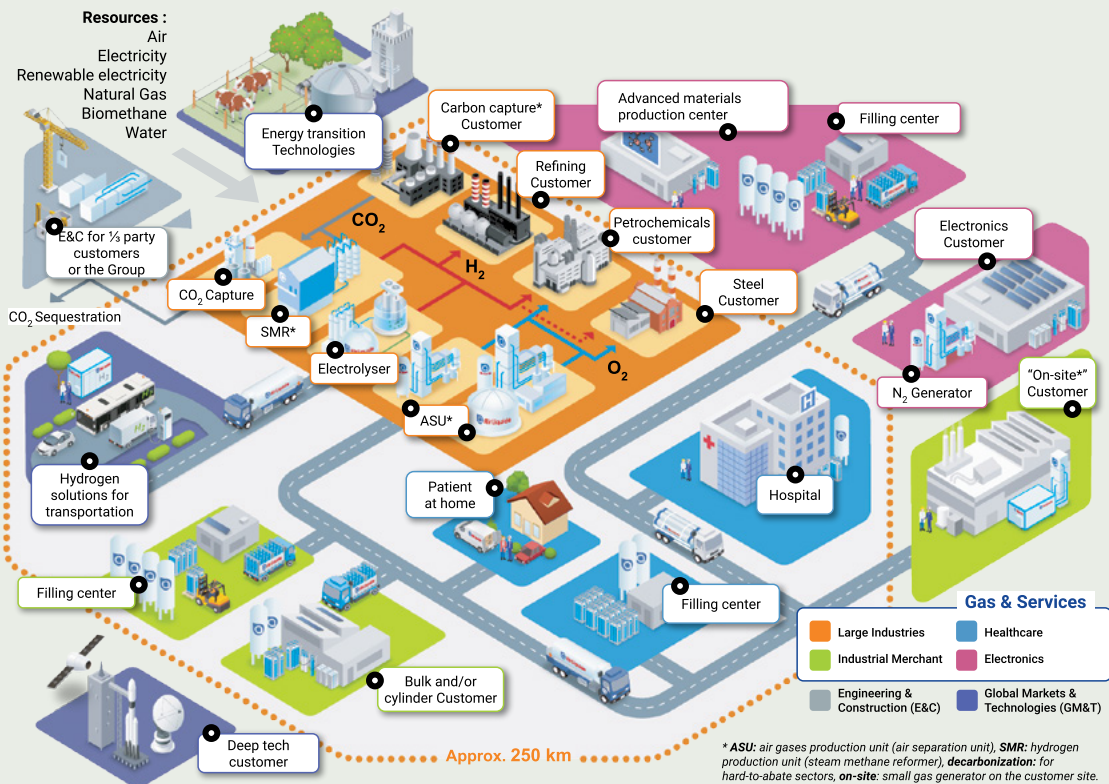
Along this exciting journey to accompany the energy and environmental transition, the transformation of healthcare and technological progress, our world will face some challenges. In the industry, it could be the availability of new technologies, access to renewable energy, uncertainties linked to first-of-their kind investments or evolving regulatory frameworks. In healthcare, engaging all stakeholders will be key to delivering an outcome based system. At Air Liquide, we are convinced that solutions exist and we are committed to moving forward in a collaborative spirit.



Creating **long-term value** for all our *Stakeholders*

A unique model

 <p>Long-term vision and clear strategy that combines financial and extra-financial performance</p>	 <p>Operational excellence and optimization of production and distribution chains</p>	 <p>A wide variety of customers and applications</p>
 <p>Global presence and local activities close to our customers</p>	 <p>Long-term contracts, indexed to energy prices, providing financial visibility</p>	 <p>Very strong capacity for innovation in an open ecosystem with a strong involvement in the markets of the future</p>



Advancing for our stakeholders

Being sustainable and impactful over the long term is only possible because of the trust of our employees, customers and patients, shareholders, suppliers, and all stakeholders with whom we maintain a relationship based on dialogue, responsibility and transparency. It is by forging connections and fostering inclusive exchanges that we can contribute to a more sustainable world.

For All

Safety is a prerequisite for all our activities and part of our DNA. Our zero-accident ambition considers all our stakeholders, to protect them and limit the impact of our operations. Ethics and protection of human rights are also strong prerequisites that benefit all.

98%

of employees signed the Group's Code of conduct

For our Shareholders

Our Shareholders have always been an integral part of our history and remain one of our key focuses. We are committed to deliver transparent information, global and long-term performance, both financial and extra-financial, and an attractive remuneration.

~750,000

individual Shareholders receiving regular dividends

For the Public Sphere

We engage with public authorities in a constructive and transparent manner, following ethical rules and applying complete neutrality. All of our actions respect the official lobbying regulations enforced in the countries in which we are present.

1st

release of the main professional organizations of which Air Liquide is a member

For our Employees

We offer all our employees working conditions focused on safety in the workplace, respect for people, personal development opportunities, a competitive level of compensation reflecting each person's performance, no discrimination whatsoever and a culture of diversity, open-mindedness and transparency.

74%

of employees completed at least one training in 2022

For our Suppliers

Our relationship with suppliers is based on mutual trust and long-lasting and balanced relationships. We attach great importance to the ability of our suppliers to offer long-term partnerships and to ensure high levels of safety, reliability, competitiveness and innovation, while guaranteeing that ethics and sustainable development are also taken into account.

~50%

of our key suppliers were assessed for sustainability in 2022

For our Customers and Patients

In an increasingly dynamic and competitive environment, we are focused on anticipating market developments and listening to our customers, the patients we serve and the healthcare professionals that look after them. We bring innovative and competitive technologies, products and services and deliver on our commitments as a trustworthy partner.

89%

of customers are satisfied or very satisfied

For the Society

We are mindful of the changing world and want to act in the public interest. We have developed close relationships and dialogue with all our local stakeholders, NGOs and associations or authorities, which enables us to make a positive impact on the communities in which we operate, as well as on society as a whole.

60,000

Ukrainian refugees helped thanks to a combined action of volunteer Group employees and the Air Liquide Foundation

➔ Read more about the Air Liquide Business Model in our **2022 universal registration document**

ACT for a *sustainable future*

In March 2021, Air Liquide unveiled an ambitious Sustainable Development strategy in the framework of **ACT**, which covers three main priorities: **Abatement of CO₂ emissions**, **Caring for patients** and acting as a **Trusted partner**. Taking it one step further, in March 2022, Air Liquide announced its new 2022–2025 strategic plan, **ADVANCE**, which inseparably links financial and extra-financial performance.

ACT: our sustainability priorities

For the *Environment*

Contribute to a low-carbon society and the environment as a whole

Reducing our CO₂ emissions

- by 2025, -30% reduction in Carbon Intensity⁽¹⁾
- by 2035, a -33% reduction in absolute Scopes 1 & 2, with an inflection point around 2025
- by 2050, reach carbon neutrality

Accelerating in hydrogen development

- by 2035, ~€8bn invested in low-carbon hydrogen

Developing low-carbon solutions for our customers and industries

1. Please see reference on page 13.

For *Health*

Improve the quality of life of patients and access to medical oxygen

Improving the quality of life of patients with chronic diseases at home in mature economies

Facilitating access to medical oxygen in low- and middle-income countries

For *All*

Strive to act as a trusted partner with all our stakeholders

Engaging with our employees: creating a safer, more collaborative and inclusive work environment

- by 2025, 35% women among Managers and Professional population
- by 2025, 100% of employees to have common basis of care coverage

Building a best-in-class governance to create close relationships with Shareholders

➔ Read more: **pages 12-17**

➔ Read more: **pages 18-21**

➔ Read more: **pages 22-27**

ADVANCE towards a *global performance*

Our strategic plan, ADVANCE, places sustainable development at the heart of our strategy, fully embedding our sustainability priorities.

ADVANCE

PRIORITY #1

Delivering strong financial and extra-financial performance

The Group is rising up to an ambitious challenge: continuing our dynamic growth and improving profitability while meeting our commitments to reduce CO₂ emissions and investing in the markets of the future.

PRIORITY #2

Decarbonizing the planet

The Group is playing a leading role in the decarbonization of industry and creating a low-carbon society in which hydrogen plays a decisive role. We are committed to decarbonizing our own operations while helping customers to do the same.

PRIORITY #3

Unlocking progress via technology

Thanks to our capacity to innovate and technological expertise, we are contributing to the development of five markets of the future: mobility, electronics, healthcare, Industrial Merchant and high technologies.

PRIORITY #4

Acting for all

As a civic-minded company, Air Liquide strives to ensure that everything we do is in the interests of our employees, customers and patients, shareholders and partners and, beyond that, of society as a whole.

Implementing

our strategy
for a
**sustainable
future**

Fabienne Lecorvaisier

Executive Vice President and member of the Executive Committee, in charge of Sustainable Development, Public and International Affairs, the supervision of Societal Programs and General Secretariat.



“In 2022, we once again maintained stability in our absolute CO₂ emissions versus 2020 and it demonstrates our efforts to initiate the reduction of emissions – especially when you consider that our business combined growth⁽¹⁾ was around +16% during the same period.”

1. Group revenue combined comparable growth, excluding currency, energy (natural gas and electricity) and significant scope impacts.

“The ADVANCE global strategy is further evidence that sustainability is more than a stated ambition. It is a commitment with concrete actions and an integral enabler for long-term value creation.”

What does the new strategic plan for 2025, ADVANCE, mean for Air Liquide’s sustainability ambitions?

In 2021, we announced our robust sustainability action plan. Building on those ambitions this year, we have integrated the three pillars of the action plan into the ADVANCE strategic plan for 2025, **placing sustainable development at the heart of Group’s strategy**. This means the measure of success for our strategic plan includes how we deliver on our commitments to sustainability, placing it at equal importance to growth and profitability for the first time.

As a consequence, we have also made reduction of CO₂ emissions one of our strategic objectives to highlight its importance to us.

The ADVANCE global strategy is further evidence that **sustainability is more than a stated ambition**. It is a commitment with concrete actions and an integral enabler for long-term value creation.

What progress has been made in regards to the three pillars of ACT over the past year?

We have kept a very strong momentum this year. First, we implemented **the governance necessary to deliver** our commitments and defined the KPIs needed to measure our progress.

We are taking real actions to make a positive impact for the environment and society as a whole. We have developed an approach to manage CO₂ like we **manage investments and each Air Liquide entity now has an annual CO₂ budget** that it is allowed to spend to develop its business. We review these figures every quarter, considering not just our emissions for the year but our trajectory to 2025 and 2035 emissions as well.

We have also done a lot to **enhance global awareness**, including reinforcing our climate champion network¹, our employee engagement survey and holding our annual global sustainability day in November 2022.

These actions and accomplishments, alongside the many others shown in this report, are proof that we are walking the talk. Moreover, Environment, Social and Governance (ESG) ratings agencies are recognizing our progress.

I am very proud of what our teams and colleagues have delivered so far, and am confident that we will continue our progress.

What are your key areas of focus for 2023?

Our priorities are to raise the interest of our customers and suppliers so they choose our decarbonization solutions, and to work with various public authorities to ensure regulations and incentives are positioned at the right level to encourage companies to decarbonize.

Having committed to objectives for **Scopes 1 and 2** emissions, this year we will develop a **Scope 3** emissions reduction strategy. We are aware of the importance of the entire value chain on reaching our sustainability objectives, which leads us to make a pledge to have **75% of our 50 largest customers committed to carbon neutrality by 2025 and 100% by 2030**.

We also need to extend our actions on **water management and biodiversity**. We have assessed our biodiversity risks and mapped our assets in key biodiversity areas. We are now committed to a clear biodiversity plan and developing objectives to ensure we are considering the whole spectrum of our impact on the planet.

None of these areas are easy to tackle but we have the determination and the capability to continue to deliver.

1. The Climate Champions, contact points of the Sustainable Development Department, are responsible for managing the Group’s CO₂ emissions reduction objectives in the various clusters (group of countries).

Delivering results in 2022

In 2022, supported by the announcement of ADVANCE, Air Liquide accomplished significant progress and confirmed its alignment with its short-term and medium-term sustainability objectives.

Advancing for the environment

→ Read more: [pages 12-17](#)

Progress against objectives



By 2025, a **-30% reduction in Carbon Intensity¹** vs 2015.

2022 result:

-25%

vs -24% in 2021.



By 2035, a **-33% reduction in absolute Scopes 1 & 2 CO₂ emissions** vs 2020 with an inflection point around 2025.

2022 result:

-0.3%

vs +1% in 2021.



By 2050, reach carbon neutrality.



New Scope 3 Commitment

75% of Top 50 customers committed to 2050 Carbon neutrality by 2025 and 100% committed by 2035.

Additional key achievements in 2022

- SBTi validation of target to reduce Scopes 1 & 2 CO₂ emissions by 2035².
- Included in the DJSI Europe Index (index of top performing companies in Sustainable development).
- 308 million euros of innovation expenses, including 100 million euros dedicated to energy transition.

1. Please see reference on page 13
2. Please see reference on page 13

Water and biodiversity

Objectives for Water Management

By 2025, 100% implementation of a water management plan for high water use operations in high water stress areas.

2022 result:

78 sites identified: Tools & Guidelines prepared, Pilots launched

Implementation of a global standard at the Group level, beyond established existing processes and procedures, which ensures that discharged water quality meets or exceeds the applicable local criteria.

2022 result:

Group Technical Standard drafted

Commitments for the preservation of biodiversity

By 2025, develop and implement an aggregated biodiversity indicator.

2022 result:

Mapping of Air Liquide assets in Key Biodiversity Areas completed

By 2024, reinforce biodiversity assessment criteria into the investment decision process for all new projects.

2022 result:

Assessment of biodiversity related risks completed

Advancing for health

→ Read more: **pages 18-21**

Progress against objectives



In mature economies, contribute to improve quality of life of patients with chronic diseases at home.

2022 result:

49%

patients with personalized care plans vs 38% in 2021.



In low- and middle-income countries, facilitate access to oxygen.

2022 result:

1.8m

persons vs 1 million in 2021.

Additional key achievements in 2022

- Developed 90 new patient-centric initiatives in conjunction with 222 partners.
- Medical oxygen access to 132 clinics in South Africa.

Advancing for all

→ Read more: **pages 22-27**

Progress against objectives



By 2025, **35% women** among Manager and Professional population.

2022 result:

31.5%

vs 31% in 2021.



By 2025, **100% of employees to have common basis of care coverage**, including death and disability benefits, health coverage and a minimum 14 weeks of paid maternity leave.

2022 result:

42%

of employees vs 34% in 2021.



By 2025, **100% of employees** to have access to volunteer opportunities through Citizen at Work.

2022 result:

43%

of employees, launched in 2022.

Additional key achievements in 2022

- 74% of employees participated in at least one day of optional training.
- +400 innovative partnerships with academics, industrial partners and start-ups.



Advancing
for the
environment

2022 results

By 2025, a -30% reduction in Carbon Intensity¹ vs 2015

-25%

By 2035, a -33% reduction in absolute Scopes 1 & 2 emissions vs 2020 with an inflection point around 2025

-0.3%

Carbon neutrality by 2050

On track

It has been another year of momentum for our environmental objectives. We have achieved strong progress through initiatives and actions across our own assets, with our customers and in our ecosystem.

In an important step this year, our target to reduce absolute Scopes 1 & 2 CO₂ emissions by 2035 was validated by the Science Based Targets initiative (SBTi) as qualified and aligned with climate science². We were the first in our industry to obtain validation from the SBTi, which defines and promotes best practices in target setting and independently assesses companies' targets. This approval represents another milestone towards our ambition to reach carbon neutrality by 2050.

This year also saw us moving in the right direction in a number of key strategic areas, namely securing access to renewable energy, carbon capture, the development of innovative and efficient technologies and furthering hydrogen as a competitive, low-carbon solution.

Renewable energy is a key lever of decarbonization and we are contributing to its development by signing Power Purchase Agreements (PPAs). By sourcing renewable electricity directly from the producers of new capacities with our long-term PPAs, we foster investment from energy producers and contributing to greater renewable electricity availability around the world.

Carbon capture is another rapidly emerging key lever for the energy transition. It involves capturing the CO₂ from industrial processes and either transporting it for storage on-shore or off-shore or utilizing this captured CO₂ in other industrial processes such as production of chemicals.

Hydrogen will also play a decisive role in the emergence of a low-carbon society. Our unique hydrogen expertise and technology know-how makes us a key player in the implementation of hydrogen projects, enabling Air Liquide to offer customized solutions to meet the needs of customers in many sectors of activity.

Finally, we have also raised our ambitions in both water and biodiversity. In 2022, we initiated the rollout of our water management policy across the Group, which provides guidance related to the impact of our activities on water availability and quality. We have also reinforced our actions toward biodiversity preservation by committing to develop and implement an aggregated biodiversity indicator by 2025, and to reinforce our biodiversity assessment criteria into the investment decision process for all new projects starting in 2024.

Some of the many projects we have undertaken across these focus areas are included on the following pages.

1. In kg CO₂-equivalent/euro of operating income before depreciation and amortization and excluding IFRS 16 at 2015 exchange rates on Scopes 1 and 2 of greenhouse gas emissions on a "market-based" methodology (see methodology for calculating scopes in 2022 Universal Registration Document, pages 426 and 427, as well as reconciliation, page 61).

2. Air Liquide announced its greenhouse gas emission reduction targets for Scopes 1 and 2 in March 2021 on a 2020 baseline. The objectives submitted to SBTi by Air Liquide aim for Scope 1 and Scope 2 emissions in absolute terms, at a 35% reduction in 2035 compared to a base year of 2021, considered as the first year with full deployment of market-based reporting.

Our actions

Stepping up our renewable power sourcing in South Africa and Italy



In 2022, we signed three significant Power Purchase Agreements (PPAs) that will provide renewable electricity to Air Liquide's industrial production assets. By sourcing renewable electricity, we are accelerating the decarbonization of our assets and of our customers.

In 2022, together with Sasol, we signed two PPAs with Enel Green Power for the long-term supply of renewable power with a total capacity of 220 MW to Sasol's Secunda site, in South Africa, where we operate the biggest oxygen production site in the world. These PPAs are the first results of the Request for Proposal (RFP) process launched jointly with Sasol in April 2021, for the procurement of a total capacity of 900 MW of renewable power. Our efforts along with Sasol to procure renewable power through these two PPAs will significantly contribute to the decarbonization of the Secunda site and in particular to the targeted reduction of CO₂ emissions associated with the oxygen production by 30%-40% by 2031.

Also this year, we signed a 10-year contract with Shell Energy Europe Limited for the purchase of renewable electricity in Italy. From 2023, we will purchase 52 gigawatt-hours per year

of solar energy, enabling us to cover a large part of the electricity consumption for the production of industrial and medical gases in the northeast of Italy.

These agreements represent a major step up in our proactive approach in renewable electricity sourcing. Securing access to renewable electricity is a key element of our decarbonization roadmap. It allows Air Liquide to not only significantly reduce its carbon footprint, but also to meet the growing demand from our customers for competitive low-carbon solutions.



17.5%
of electricity consumed by the Group was renewable in 2022





600,000+

tonnes per year of CO₂ emissions reduced at Lhoist starting in 2028

Developing new carbon capture solutions in Europe



Carbon capture is another essential lever in the decarbonization of our industry. We are using carbon capture to decarbonize our assets, as well as to help our customers decarbonize their own assets.

In 2022, we signed a number of agreements to develop new carbon capture projects and solutions for “hard to abate” industries. In France, we concluded a Memorandum of Understanding (MoU) with Lhoist to decarbonize its lime production plant using our innovative and proprietary Cryocap™ carbon capture technology. Lime production primarily generates CO₂ from decomposition of limestone and Lhoist’s site near Dunkirk is France’s largest lime production plant. This project will enable Lhoist to reduce the CO₂ emissions of the plant by more than 600,000 tonnes per year starting in 2028.

Also in France, we’re joining forces with EQIOM to transform its existing plant into one of the first carbon-neutral cement plants in Europe. We will support this by supplying oxygen for oxy-combustion to EQIOM’s production process and by leveraging Cryocap™ Oxy to capture and liquefy the CO₂ emissions. The implementation of this project in close proximity to the port of Dunkirk would also contribute to the development of a new carbon capture and storage ecosystem in Europe.

Both of these projects are vitally demonstrating the possibilities of decarbonization. As such, they have been recognized by, and granted awards from the European Innovation Fund, one of the world’s largest programs for promoting innovative low-carbon technologies.

Our actions

Boosting biomethane activity in the US and China



1.6 TWh

biomethane production capacity

75 GWh

production capacity per year in Huai'an City, China

Innovation and technology are two of our major strengths that have always enabled us to play a role in developing the markets of the future, particularly within the biomethane market.

We are continuing the development of our biomethane activities with the construction of Air Liquide's largest biomethane production unit located in the USA and with plans for our first biomethane production unit in China. We have technologies and competencies throughout the biomethane value chain, starting with biogas production from waste, to its purification into biomethane, liquefaction, storage and transportation to distribution, contributing to a circular economy.

The new production unit in Illinois, USA, has a capacity of 380 GWh per year.

It will allow us to provide low-carbon solutions to our customers in the industrial and transportation sectors and to accompany them in the reduction of their emissions. Our first production unit in China will be located in Huai'an City, in the Jiangsu Province, with a production capacity of 75 GWh per year.

These will bring the worldwide biomethane production capacity of the Group to 1.6 TWh.





200 MW

initial capacity of
Air Liquide's Normandy'Hy
hydrogen electrolyzer

Collaborating to accelerate the development of low-carbon and renewable hydrogen



We firmly believe that hydrogen is a cornerstone of the energy transition and offers tremendous growth potential as a competitive low-carbon solution for many applications in the industrial, energy and mobility sectors. We are focused on addressing two major challenges: the decarbonization of “hard to abate” industries and the clean transportation revolution.

In 2022, we joined forces with Lotte Chemical to scale up the hydrogen supply chain for mobility markets in South Korea. Together, we are co-investing in a new generation of large-scale hydrogen filling centers. Leveraging our expertise in design, manufacturing and operation of key hydrogen technologies, and Lotte bringing access to large quantities of hydrogen, this joint venture will support the growing shift towards a hydrogen economy and clean mobility in South Korea.

Air Liquide has received the approval of the European Commission, to launch its Normand'Hy large scale renewable hydrogen production project. This electrolyzer, of an initial 200 MW capacity, which is dedicated to decarbonizing industry and mobility, will be one of the first of its size in operation globally. The supply of renewable hydrogen from this electrolyzer will contribute to the decarbonization of the Normandy industrial basin by giving access to a low-carbon hydrogen network to major industrial companies such as TotalEnergies. By leveraging our assets in basins where we are already established, we are well positioned to decarbonize our existing assets, as well as support our industrial customers in their decarbonization journey.

These projects are examples of how hydrogen plays a key role in the decarbonization of industry and the emergence of clean mobility.

Advancing for health

The needs of society matter to us and healthcare systems are faced with sustainability challenges. In mature economies, aging populations and evolution in lifestyles are leading to an increase in chronic diseases. In low- and middle-income countries, access to care is the biggest challenge.

We believe we can play a role in transforming healthcare and bringing better quality of life to the millions of patients we serve. As a major supplier of medical oxygen and home healthcare services, we want to contribute to shaping the future of healthcare as we encourage the shift towards home healthcare. This is beneficial for both patients, healthcare providers and the healthcare system as a whole.

As the first in the industrial gas sector to give indicators for sustainability initiatives within our healthcare activities,

we focus on two main objectives. In mature economies, our goal is to increase patients' quality of life and contribute to the sustainability of healthcare systems.

Our approach to healthcare is based on the principles of value-based healthcare, which favors personalized care programs for patients in their homes. It focuses on understanding patients' needs and measuring the outcomes that matter the most to them, and adapting support in order to maximize the patients' benefit whilst minimizing cost. We are also developing patient-focused initiatives in partnerships with patient associations, healthcare professionals and organizations to raise awareness on the burden of chronic diseases, empower patients and help them live a full life despite the disease.

In low- and middle-income countries, we are not only supplying medical oxygen, but also providing and maintaining equipment and training local healthcare providers to make the initiatives as sustainable as possible in the long-term.



2022 results

Contribute to improve the quality of life of patients with chronic diseases living at home in mature economies

49%

share of patients with personalized care plans

Facilitate access to medical oxygen for populations in low- and middle-income countries

1.8 million

persons facilitated with access to medical oxygen

Our actions



In July 2022, VitalAire™ organized and facilitated three webinars, titled “Lives”, in collaboration with Casa Familiar Rural, a Brazilian NGO focused on providing professional training on rural agriculture for students. Two Air Liquide Brazil physiotherapists conducted the “Lives” webinar and talked about the respiratory care the students will need when in contact with soil dust, humidity and allergens that may cause respiratory symptoms.

5

hospitals taking part in VitalCare clinical study

Patient-focused initiatives



In Portugal, our collaboration with two scientific societies – Portuguese Sleep Association (APS) and Portuguese Pneumology Society (SPP) – has made it possible to design the VitalCare model, an omnichannel service of personalized support for people with sleep apnea. A clinical study with five hospitals, which started in November 2021, aims to demonstrate the benefits of this

model on treatment compliance, quality of life and experience with therapy, compared to traditional support.



In Brazil, VitalAire™, the Group’s local home healthcare subsidiary, engages its in-house physiotherapists to share their specialized knowledge with patients, NGOs, healthcare professionals and hospitals. VitalAire facilitates regularly organized conferences, workshops and/ or webinars, hosted by its physiotherapists, to discuss topics such as understanding of pathologies, respiratory care, medical device utilization, medical studies and educational activities.

A new model for sustainable access to medical oxygen in Kenya

As a concerned player in the healthcare sector, we also want to have an impact in countries where the Group has no activities but where the healthcare needs are significant. To achieve this, we have developed an innovative oxygen service, called *Access Oxygen™*. It is based on the idea that collectively we can find viable, long-term solutions. With *Access Oxygen™*, we bring together several players who want to take action: a charitable organization finances medical equipment, a local entrepreneur provides all the services (support for healthcare staff, delivery of cylinders, maintenance of oxygen concentrators, etc.), with the support of Air Liquide (expertise and training, digital tools).

In July 2022, the NGO Center for Public Health and Development, a local healthcare operator in Kenya, received funding from an international foundation to launch a pilot project of five health care facilities. The funding covers the purchase of medical equipment and service fees for a period of six months. Thanks to this collaboration, these five health care facilities located in the Bungoma region have had access to reliable oxygen service since September 2022. We estimate that approximately 50,000 people now have access to medical oxygen in this region. Our goal is to deploy the model on a large scale in Kenya.

~50,000

people now with access to medical oxygen in Bungoma county (Kenya)



Supply of medical oxygen to 132 clinics in South Africa

VitalAire™ South Africa, the Group's health care subsidiary, is collaborating with Unjani clinics, a network of first aid clinics, to extend the availability of medical oxygen to all clinics in the network. The Air Liquide *Access Oxygen™* service is deployed in rural and suburban areas of South Africa.

Air Liquide finances the equipment, and VitalAire™ provides training and helps Unjani medical staff develop their know-how on oxygen therapy and related equipment. The 132 clinics of the Unjani network, now equipped with the *Access Oxygen™* kit, provide access to oxygen for medical use to more than 700,000 people throughout the country.

It should be noted that this network also contributes to the national program for the empowerment of young black women in South Africa.

~700,000

people with access to medical oxygen in Unjani Clinics (South Africa)



Advancing for all

Our long-term performance is reliant on the quality of our relationships with employees, customers, patients, Shareholders, suppliers and local communities around the world.

Our 67,100 employees are actively shaping the future and we are committed to creating a safe, inclusive and engaging environment where each individual can thrive. As a responsible corporate citizen, we also believe in having a positive impact on society as a whole.

Safety is a fundamental value and an integral part of our operational excellence and culture. In 2022, we remained committed to efficiently reducing exposure to professional and industrial risks for all our employees and stakeholders, with a zero-accident ambition.

In 2022, we accelerated our progress to promote diversity and inclusion, and learning and training. We are creating the conditions for equal opportunity for all, which fosters a creative, innovative and positive workplace culture. We also continue to support our employees and help them grow as individuals by providing opportunities to connect, learn and share knowledge.

As part of the ADVANCE strategy we reaffirmed our commitment to provide a common basis of care coverage to all employees by 2025. With our presence in 73 countries of diverse cultures, we face many different situations in care coverage for employees. In 2022, 42% of employees are now benefiting from this common basis of care coverage, including death and disability insurance, healthcare and a minimum of 14 weeks of paid maternity leave.

We also make an impact on society as a whole through the Air Liquide Foundation and the Citizen at Work program. While the Foundation supports projects in countries where the Group is present, according to its missions (Fundamental research, Job integration and Solidarity), the Citizen at Work initiative encourages and supports our employees' involvement in their local communities through volunteering. As of the end of 2022, the Citizen at Work program is available to 43% of Group employees with a target of 100% by 2025.

2022 results

35% of women managers and professionals by 2025

31.5%

100% of our employees to have common basis of care coverage, including death and disability insurance, healthcare and a minimum of 14 weeks of paid maternity leave, by 2025

42%

100% of our employees to have access to volunteering opportunities through Citizen at Work by 2025

43%

Our actions

Promoting a strong culture of inclusion

Diversity & Inclusion is a strong focus of Air Liquide. We consider it a source of strength and creativity, and a gender-diverse and inclusive workforce enables us to build a positive and equitable work environment for all.

An essential part of inclusion and diversity is integrating people with disabilities into work at all levels and to the benefit of all parties. In 2022, we hosted an annual HandivAirsity Week in France, on the occasion of the European Disability Employment Week. This year's event focused on changing the perception of disabilities and

enhancing an inclusive environment for all. The week of events included special speakers, interactive sessions and collaboration opportunities for employees to share and discuss.

Also in 2022, Air Liquide celebrated its 120th anniversary by launching a book project featuring 120 inspirational stories of women with different profiles, stories and from different countries around the world. The "Inspiring Women: 120 Inspiring Stories for the 120 Years of Air Liquide" book recognizes the power of storytelling. Through the sharing of stories and experiences, we are



encouraging women to pursue opportunities in all facets of the Group, including roles in Science, Technology, Engineering and Mathematics (STEM) and operations.

These examples show how we believe promoting an open, inclusive culture, where everyone can thrive and can make a significant impact in our world.



47%

of high potential employees are women



74%

of employees participated in at least one day of optional training

Raising sustainability awareness and engagement

We believe in lifelong learning where employees continuously create, acquire and transfer knowledge. We create an environment of learning and feedback in order to drive a sustainable future.

To achieve our sustainability objectives, we have to ensure our employees have the information and resources needed to understand them, the progress we are making and how their own functions are playing a part in delivering results.

On November 15, 2022, the Group hosted a worldwide "Sustainability Day" for our employees to learn, share and discuss our progress on sustainability. This internal event centered around corporate and local events featuring sustainability actions and initiatives taking place around the world. As a second part of Sustainability Day,

we also conducted our first Group-wide sustainability survey to gather feedback from employees on their understanding and engagement with sustainability. Reaching more than 78% of the Group, the data collected provides insight on how we can further improve employee engagement on sustainability topics. The results of the survey revealed that our employees want to be further engaged in learning and training on sustainability.

Another example of how we prioritize a culture of continuous learning is through our first Learning Festival, which took place in October 2022. This knowledge-sharing event featured two weeks of dedicated peer-to-peer learning, with all content across more than 100 sessions and 45 micro-learning videos provided by 120 internal facilitators and mini tutorial creators. 2,500 people

from 67 countries attended, creating new interactions and bonds between our employees from around the world.

Our actions

Providing assistance to refugees from the conflict in Ukraine



The Air Liquide Foundation has been financially supporting and providing volunteers for projects of partner-NGOs across the European Union to deliver health, educational and other social services to refugees from the conflict in Ukraine.

The Foundation and the Group entities worked hand in hand. Our employees in Ukraine's nearby countries were able to alert the Foundation of local needs while the Foundation contacted its partner NGOs and applied its quick and rigorous selection process to ensure the quality of projects. As of December 2022, 41 projects had been supported, with an estimated 60,000 recipients benefiting from our grants.

The Foundation drew on its experience from previous humanitarian crises such as its "Covid relief" program that supported 34 NGO projects across the world for 30,000 recipients.

41

NGO projects supported in 2022



16

new schools joined the High School Welding Education Initiative in 2022



Welding education initiative expanding across the US



For many years and all around the world, our employees have been volunteering during or outside working hours to support their local communities. We believe we can increase our positive impact on society and encourage our employees who volunteer through our Citizen at Work initiative.

Guided by the Citizen at Work program, Airgas, an Air Liquide company, continues to expand its High School Welding Education Initiative in the United States, which offers students between the ages of 15 and 18 the opportunity to develop skills that will contribute to a future career. Airgas provides the schools with all the tools they will need to have a successful

program, from consumables for welding, safety personal protection equipment, to hands-on mentors and local volunteers. In 2022, it was expanded to 16 new schools across the country, along with 20 schools renewing their commitment to the program. Over the past years, this program has positively impacted 4,200 welding students and nearly 450 teachers across the nation and assisted 72 schools.

The High School Welding Education Initiative is a great example of how, through our Citizens at Work initiative, we are making an impact in communities around the world.

Extra-financial ratings

In 2022, the Group responded to key extra-financial rating agencies and organizations presented below. These are known for their rigorous methodology and the quality of their reports. Ratings and distinctions obtained by the Group in 2022 for some key ESG assessments are as follows:



CDP

Air Liquide remained a Level A leader in its category, scoring an **A-** on both climate and Water performance.



Chemscore

Air Liquide ranks **#4 out of 54** of the world's leading companies in the chemical sector for responsibly managing the environmental impact of its product portfolio.



MSCI

Air Liquide has maintained its **A rating**, ranking in the top 22% of companies in terms of social responsibility.



EcoVadis

For the sixth consecutive year, Air Liquide has won the **Gold EcoVadis Sustainability medal**, ranking in the top 3%.



Sustainalytics

Recognized as "ESG Industry Top Rated", Air Liquide received a "**low risk**" rating.



Moody's ESG

Air Liquide ranked in the **top 3%** of assessed companies.



FTSE4Good

FTSE 4Good

Air Liquide remains a **constituent of the FTSE4Good index series** in 2022.



ISS ESG

Air Liquide ranks in the top 10% of companies in the running, earning ISS "**Prime**" status.



Powered by the S&P Global CSA

S&P Dow Jones Indices

Air Liquide is now **included in the DJSI Europe index** in recognition of its commitment to social and environmental responsibility.

Reporting for *Stakeholders*

Sharing our 2022 extra-financial performance
and our environmental and societal reporting.



Readers can find a downloadable version of the reporting section at airliquide.com/2022-sustainability-tables.

Act for a sustainable future

		2022 results
Act for a low-carbon society	By 2035, reduction of -33% in absolute Scopes 1 & 2 emissions vs. 2020, with an inflection point around 2025	-0.3% vs 2020
	By 2025, a -30% reduction in carbon intensity compared to 2015	-25% vs 2015
Act for health	Contribute to improve the quality of life of patients with chronic diseases living at home in mature economies	49% ^(a)
	Facilitate access to medical oxygen in low- and middle-income countries	1,778,000 persons
Act as a trusted partner, with and on behalf of our stakeholders	35% women managers and professionals by 2025	31.5% ^(b)
	100% of our employees to have common basis of care coverage, including death and disability insurance, healthcare and a minimum of 14 weeks of paid maternity leave by 2025	42%

(a) Share of patients with personalized care plans.

(b) The share of women among "Managers and Professionals" is rounded off in increments of 0.5%.

Safety indicators

Safety indicators of the entire group

	2013	2014	2015	2016	2017	2018	2019 ^(f)	2020	2021	2022
Number of Group employees and temporary workers lost-time accidents of at least one day ^(a)	151	144	152	137	198	161	158	108	138	123*
Accident frequency of Group employees and temporary workers ^(b)	1.6	1.6	1.6	1.4	1.6	1.3	1.2	0.9	1.1	0.9*
Accident severity rate ^(c)	<0.1	<0.1	<0.1	<0.1	<0.1	0.17	<0.1	0.12	<0.1	<0.1
Number of accidents of subcontractors ^{(d) (e)}	110	92	94	91	90	93	109	67	83	73*
Frequency of accidents of subcontractors	2.2	2.3	2.2	2.0	2.1	2.2	2.4	1.4	1.6	1.5
Frequency rate of serious avoidable accidents involving injuries (in millions of km traveled)	–	–	–	–	0.013	0.030	0.022	0.019	0.021	0.023

(a) Fatal work accidents since 2015: none in 2022, none in 2021, two in 2020, none in 2019, three in 2018, none in 2017, one in 2016, none in 2015.

(b) Number of accidents with at least one day's absence from work per million hours worked, involving Group employees and temporary workers. Accidents defined in accordance with the International Labour Organization recommendation. Hours worked are defined according to local labor regulations.

(c) Average number of days off work per thousand hours worked. Accidents defined according to the International Labour Office recommendation.

(d) Employees working under a contract with Air Liquide, on a Group site, or on a customer site, or as drivers of a delivery vehicle.

(e) Fatal work accidents since 2015: one in 2022, four in 2021, one in 2020, two in 2019, five in 2018, none in 2017, one road accident in 2020, one road accident in 2015.

(f) With Airgas, the data for the previous years concerns Air Liquide exclusively.

* Indicator verified by the independent verifier.

In 2022, the frequency rate of work-related accidents with lost time for Air Liquide employees and temporary workers decreased to 0.9 at the end of 2022, compared to 1.1 at the end of 2021. Continued awareness and implementation of prevention actions will further improve safety and significantly and sustainably reduce this lost time accident frequency rate.

In 2022, the Group recorded the death of one subcontractor on the road.

The Group has made and will continue to make every effort to analyze all accidents that have occurred in order to learn from them and thus prevent them from happening again.

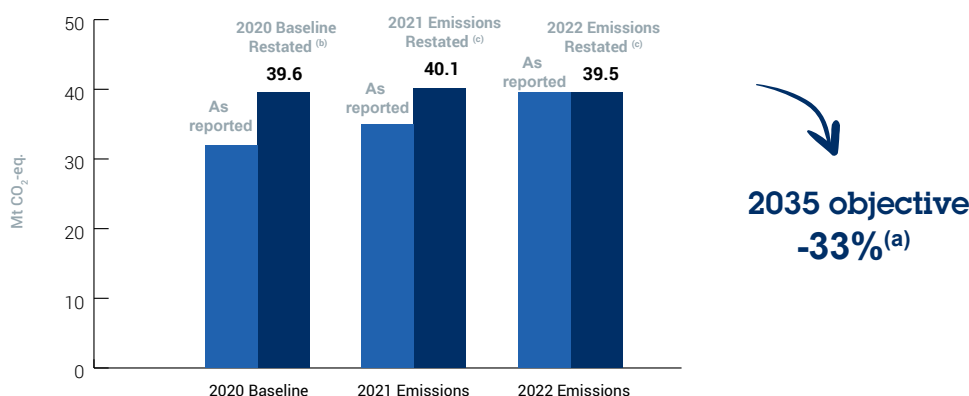
The Group's climate objectives and indicators for the management of its assets

Objective one: reduce emissions in absolute value by -33% by 2035 vs 2020

	2016	2017	2018	2019	2020	2021	2022
CO ₂ emissions, as reported ^(a) (in thousands of tonnes of CO ₂ -equivalent emissions.)	29,363	30,867	33,058	33,166	32,529	36,364	39,306
CO ₂ emissions, restated ^(b) (in thousands of tonnes of CO ₂ -equivalent emissions.)					39,564	40,085	39,464
Performance: restated CO ₂ emissions vs 2020						1.3%	-0.3%

- (a) Emissions are reported using the "market-based" methodology and taking into account significant perimeter changes (upwards and downwards) as of their effective date.
 (b) Emissions are reported using the "market-based" methodology, restated, from 2020 and each subsequent year, to include the emissions of the assets for the full year, taking into account (upwards and downwards) changes in scope having a significant impact on CO₂ emissions. Thus, the change in restated emissions reflects the actual change in the Group's emissions on a equivalent perimeter.

The Group's total CO₂-equivalent emissions, compared to the restated 2020 baseline, remained stable for the second consecutive year (-0.3% compared to 2020), despite the strong growth in Group's activity. This reflects the strong commitment by the Group to manage its CO₂ trajectory and the associated actions, which are under deployment.



- (a) All absolute emissions figures in million tonnes of CO₂-equivalent Scopes 1 and 2 emissions, in a "market-based" methodology, (see methodology for calculating the Scopes in 2022 Universal Registration Document, pages 426 and 427).
 (b) Baseline restated to include 2020 emissions of assets, taking into account (upwards and downwards) changes in perimeter since 2020 that have had a significant impact on CO₂ emissions.
 (c) 2021 and 2022 emissions restated to include in the 2021 and 2022 emissions figures, taking into account (upwards and downwards) changes in Scope that have had a significant impact on CO₂ emissions, to provide a figure comparable to the restated 2020 baseline.

Objective two: reduce Carbon Intensity by -30% by 2025 vs 2015

	2015	2016	2017	2018	2019	2020	2021	2022
CO ₂ emissions, as reported ^(a) (in thousands of tonnes of CO ₂ -equivalent emissions.)	29,414	29,363	30,867	33,058	33,166	32,529	36,364	39,306
Carbon intensity ^(b)	7.3	6.5	6.0	5.8	5.5	5.2	5.5	5.5

- (a) Emissions are reported using the "market-based" methodology, integrating significant changes in scope that have an impact on CO₂ emissions during the year from the effective date.
 (b) In kg CO₂-equivalent/euro of operating income recurring before depreciation and amortization at 2015 exchange rate and excluding IFRS 16 for greenhouse gas emissions Scopes 1 and 2 reported using the "market-based" methodology.

Following the takeover of the Sasol Air Separation Units in South Africa on 24 June 2021, the increase in carbon intensity of the Group in 2021 reflected only a half-year impact, as from the date of acquisition. The 2022 emissions reflect a full year's impact; nevertheless, the control of the CO₂ emissions trajectory and the Group's financial results have allowed the carbon intensity to be stabilized as of 2022. Given the ambitious decarbonization plan of the Group, including for the Sasol project, this does not compromise the -30% carbon intensity reduction objective to reach an intensity of 5.1 (using market-based methodology) by 2025 vs 2015 baseline.

Drivers

	2016	2017	2018	2019	2020	2021	2022
Driver 1: Purchases of renewable electricity (TWh) ^(a)	5.0	5.6	6.2	5.6	6.0	6.8	7.5
Driver 2: Energy efficiency (ASU) ^{(b) (c)}	-0.5%	1.9%	2.2%	1.6%	0.5%	-0.1%	0.3%*
Driver 2: Energy efficiency (HYCO) ^{(b) (d)}	–	0.6%	-0.2%	0.1%	-0.1%	-2.0%	-4.4%*
Driver 3: Operated or decided Electrolyzer capacity ^{(e) (f)}	–	–	–	–	–	65	83
Driver 4: Carbon footprint of air gases (N ₂ , O ₂ and Air) delivered in bulk, cylinders or On-Site products (Industrial Merchant activity) ^(g)	302	300	301	282	289	269	276

(a) Air Liquide has upgraded the way power procured for its assets is accounted for in its industrial reporting systems, with more granularity enabling a better and using when available, a residual mix for electricity from the grid. Together with the shift to “market-based” reporting for Scope 2 emissions which provides a more accurate primary energy mix for power procured, this leads to a restatement of the amount of renewable energy in the mix. Going forward, Air Liquide’s ambitious decarbonization strategy includes increase in renewable power sourcing.

(b) These indicators are calculated taking into account the 2015 baseline. By definition, the reference year is equal to 0%. Efficiency can be affected by reliability, maintenance, number of turnarounds, startups and ramps ups.

(c) The efficiency of ASU is measured by the volume of air gases produced per unit of energy consumed. Produced gases (oxygen, nitrogen, argon) accounted in m³ of gaseous oxygen equivalent.

(d) Efficiency corresponds to the volume of hydrogen produced per unit of energy consumed. Hydrogen and carbon monoxide.

(e) Units: MW.

(f) After the revision of the reporting process for small units, the 2021 figure was revised downward in 2022 due to changes in scope, the exclusion of units that were previously double counted as well as units that were found to no longer be in operation.

(g) Units: kg CO₂-eq. per tonne.

* Indicator verified by the independent verifier.

The variation in efficiency for hydrogen production is mainly due to maintenance shutdowns and strong variations in volumes depending on the month of the year. Several medium-sized electrolysis projects have been approved in 2022. However, several studies are underway for new large-scale electrolysis projects such as Normand’Hy and ELYgator.

Scopes calculation methodology

Scope 1

The majority of Air Liquide’s Scope 1 emissions are from its hydrogen production and cogeneration units. Scope 1 emissions are the difference in carbon content between the natural gas consumed by these units and the carbon content of their products. Air Liquide also records direct emissions from the combustion of fuel in its truck fleet, as well as gas losses from its CO₂ and nitrous oxide production units.

Scope 2

Air Liquide now accounts for its Scope 2 emissions on a market basis. Since 2021 the Group has improved the way it accounts for indirect emissions from electricity and steam purchases by moving from a location-based approach based on the average emissions intensity of the national grid to a much more precise and specific approach known as the “market-based” method, linked directly to supply contracts. In the absence of contractual information, when all or part of a site’s electricity supply comes from the grid, a residual emission factor is used, in accordance with best practices. In the absence of reliable data on the residual mix, the grid emission factor is used, the latter accounting for approximately 40% of emissions. By using this method, the Group is adopting the Scope 2 emissions accounting method recommended by the GHG Protocol. The Group’s electricity procurement initiatives, particularly those to voluntarily procure renewable electricity, are now directly reflected in the reported Scope 2 emissions figures.

Scopes 1 and 2

	2018	2019	2020	2021	2022
Scope 1: total direct greenhouse gas emissions (GHG) (in thousands of tonnes of CO ₂ -eq.) ^(a)	16,082	16,239	15,345	15,536	16,273*
Scope 2: total indirect GHG (in thousands of tonnes of CO ₂ -eq.) ^(b)	16,976	16,927	17,184	20,829	23,033*
Total emissions as reported (in thousands of tonnes of CO₂-eq.)	33,058	33,166	32,529	36,364	39,306^{(c)*}
Total restated emissions (in thousands of tonnes of CO₂-eq.)^(d)	–	–	39,564	40,085	39,464

(a) (b) and (c) Actual Group emissions taking into account significant perimeter changes (up and down) having an impact on CO₂ emissions during the year as of their effective date.

(a) Reporting taking into account a minimum of 95% of the Group's emissions. The methodology and reporting of excluded sources are subject to a continuous improvement process.

(b) Total of indirect GHG emissions generated by the production of electricity and steam purchased outside the Group. Emissions are reported using the "market-based" methodology.

(c) Corresponding emissions using "location-based" methodology are 38,330 kt CO₂-eq.

(d) Emissions are reported using the "market-based" methodology, restated, from 2020 and each subsequent year, to include the emissions of the assets for the full year, taking into account (upwards and downwards) changes in scope having a significant impact on CO₂ emissions.

* Indicator verified by the independent verifier.

The Group's direct emissions (Scope 1) increased from 15.5 million tonnes of CO₂ equivalent in 2021 to 16.3 million tonnes reflecting the integration of the TotalEnergies hydrogen production unit in Gonfreville, France as of 15 June 2022, and an increased use of cogeneration units due to the energy context.

The Group's as reported indirect emissions (Scope 2) increased from 20.8 million tonnes of CO₂ equivalent in 2021 to 23 million tonnes in 2022, an increase of 10%. This variation is due to the inclusion of new assets in the scope, in particular the assets acquired from Sasol, which were integrated into the CO₂ emissions reporting scope on 24 June 2021, which impacted the full year in 2022. The corresponding emissions will be reduced in the future thanks to an ambitious plan to procure renewable electricity. As demonstrated by the 220 MW long-term contract of renewable power signed by Air Liquide and Sasol with Enel Green Power, this plan is being concretely implemented.

As reported emissions by hub ^(a)	Scope 1	Scope 2
Europe (in thousands of tonnes of CO ₂ -eq.)	5,334	3,695
Americas (in thousands of tonnes of CO ₂ -eq.)	8,072	2,568
Asia Pacific (in thousands of tonnes of CO ₂ -eq.)	1,138	8,880
Middle-east & Africa (in thousands of tonnes of CO ₂ -eq.)	1,729	7,890
Total (in thousands of tonnes of CO₂-eq.)	16,273	23,033

(a) Actual hubs emissions including assets acquired during the year as of their acquisition date.

More than 80% of the Group's direct emissions in Europe and Americas are due to cogeneration units and hydrogen production capacity.

Indirect emissions are related to installed capacity in various regions and to the local power generation mix. The amount of coal-based power generation in Asia and South Africa explains the relative importance of Scope 2 emissions in these geographies, which represent more than 70% of the Group's indirect emissions.

On a comparable basis, it is important to note that the Group's emissions have remained stable for the second consecutive year, while activity is growing strongly.

Scope 3

Scope 3 emissions correspond to Air Liquide's indirect emissions from its value chain (outside of Scope 2 emissions) and are separated into 15 different categories that can be split between the upstream and the downstream of the value chain.

Scope 3 categories ^(a)	2021 (in thousands of tonnes CO ₂ -eq.)	2022 (in thousands of tonnes CO ₂ -eq.)
1 – Purchased goods and services	3,286	3,161*
2 – Capital goods ^(b)	523	1,035*
3 – Energy (not included Scopes 1 or 2)	7,591	8,749*
4 – Upstream transportation and distribution	83	541*
6 – Business travel	30	49*
7 – Employee commuting	70	73*
9 – Downstream transportation ^(c)	358	Not relevant ^(c)
11 – Use of sold products ^(d)	9,236	7,282*
13 – Downstream leased assets	1,070	1,244*
TOTAL SCOPE 3 EMISSIONS (in thousands of tonnes of CO₂-equivalent emissions.)	22,247	22,134*

(a) See methodology in 2022 Universal Registration Document page 427.

(b) The variation between 2021 and 2022 is due to a better allocation of purchasing categories between categories 1 and 2 of Scope 3.

(c) These emissions were previously reported by Air Liquide in Scope 1 up to 2020, in category 9 in 2021 and will be reported in category 4 from 2022 to better align with the GHG Protocol.

(d) From 2022 onwards, these emissions also include downstream emissions related to acetylene sales and residual natural gas sales at refueling stations not yet fully converted to biomethane. In addition, emissions related to sales of biogenic CO₂ are no longer included in the total; they represent 0.5 MtCO₂-eq.

* Indicator verified by the independent verifier.

The Group's Scope 3 emissions are mainly related to energy (category 3) as well as the use of products sold, especially CO₂ and N₂O. The Energy category increase in 2022 is due to an increase in the Group's energy consumption during the year and to the impact of the assets acquired from Sasol and including the CO₂ emissions reporting scope on June 24, 2021, which was taken into account for the full year in 2022. In category 11, the increase of emissions related to acetylene sales and residual natural gas sales at refueling stations not yet fully converted to biomethane leads to a marginal increase, which is far more compensated by two effects: on the one hand, the withdrawal of emissions related to biogenic CO₂ sales and, on the other hand, the implementation of methodologies allowing to take into account more precisely the part of the products sold that is actually re-emitted during their use by customers.

In total, Scope 3 emissions are nonetheless slightly down, despite significant growth in sales.

Environmental footprint of transportation

Transportation: Industrial Merchant business

	2018	2019	2020	2021	2022
Kilometers traveled by all vehicles delivering gas in liquid or cylinder form (in millions of km)	601	596	559	593	590*
Estimate of CO ₂ emissions generated by these vehicles in the Industrial Merchant business (in thousands of tonnes)	666	660	483	572	590*
Change in distance traveled per tonne of liquid industrial gas delivered (oxygen, nitrogen, argon, carbon dioxide) ^(a) (truck delivery)	101.7	98.1	97.6	98.3	99.0
Estimate of truck transportation kilometers avoided through on-site customer units (in millions of km)	-58	-56	-103	-106	-146
Estimate of CO ₂ emissions avoided by these on-site customer units (in thousands of tonnes)	-59	-56	-104	-107	-155
Percentage of deliveries of air gases and hydrogen via pipeline or on-site	85%	85%	85%	86%	87%

(a) In kilometers per tonne delivered for the Industrial Merchant business. 2015 base of 100.

* Indicator verified by the independent verifier.

Transportation: Healthcare business

	2018	2019	2020	2021	2022
Transportation: Home Healthcare business					
Kilometers traveled (in millions of km)	181	187	173	148	148
Associated CO ₂ emissions (in thousands of tonnes)	35	34	30	29	28
Transportation: Medical Gases business					
Kilometers traveled (in millions of km)	33	32	33	24	23
Associated CO ₂ emissions (in thousands of tonnes)	30	29	30	26	25
Total kilometers traveled healthcare business (in millions of km)	214	219	206	172	171
Total associated CO₂ emissions (in thousands of tonnes)	65	63	60	55	53

Reporting of avoided emissions

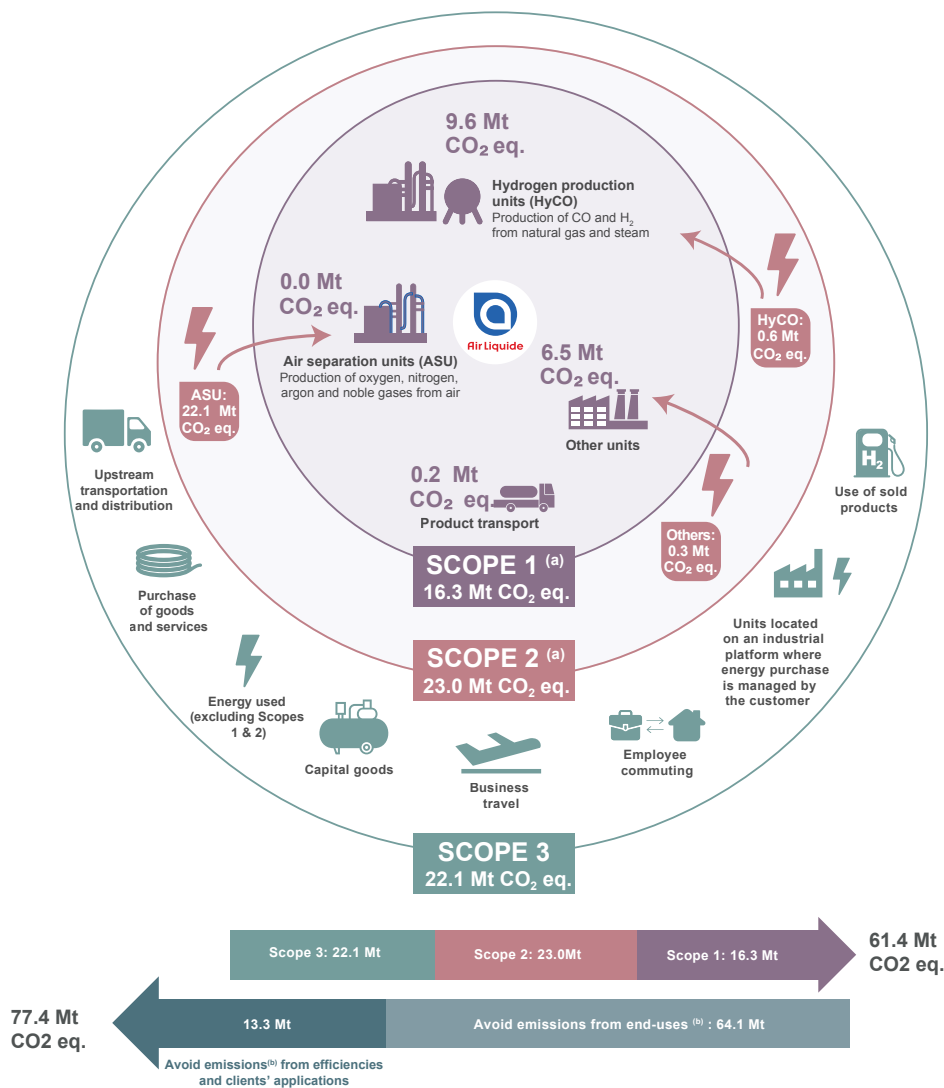
	2018	2019	2020	2021	2022
Emissions avoided due to the optimization of our assets (in millions of tonnes)	4.6	4.6	3.6	3.3	3.2
Emissions avoided to improve our customers' energy footprint (in millions of tonnes)	11.0	12.2	11.2	11.8	10.1
TOTAL AVOIDED EMISSIONS (in millions of tonnes)^(a)	15.6	16.8	14.8	15.1	13.3*
Emissions avoided due to the use of hydrogen for fuels desulfurization (in millions of tonnes)				64.2	64.1
TOTAL AVOIDED EMISSIONS INCLUDING END USES (in millions of tonnes)				79.3	77.4

(a) These avoided emissions cover only the avoided emissions directly attributable to the optimization of Air Liquide's assets and to the use of Air Liquide's solutions by its direct customers. They do not include avoided emissions included at the level of end use.

* Indicator verified by the independent verifier.

Emissions reductions to the Group's customers have decreased compared to 2021, mainly due to a decrease in oxygen supply for oxy-combustion in certain markets in the steel industry.

Based on other methodological approaches that consider the reduction of black carbon emissions through the use of ultra-low sulfur fuels and by attributing these avoided emissions to the hydrogen used for desulfurization in refineries, Air Liquide's avoided emissions amount to 77.4 Mt CO₂ (see Reporting methodology in 2022 Universal Registration Document page 434).



The data presented have been rounded up to the tenth.

Energy and efficiency indicators for the group as a whole

	2018	2019	2020	2021	2022
Annual electricity consumption (in GWh) ^(a)	36,265	35,687	36,089	40,731	42,994*
Percentage of electricity consumed by the Group which is renewable	17.0%	15.8%	16.5%	16.8%	17.5%
Percentage of electricity consumed by the Group which is low-carbon or renewable	60.9%	62.0%	62.3%	61.1%	59.5%
Annual thermal energy consumption (in LHV terajoules) ^(b)	306,111	307,022	295,235	300,545	310,257 ^{(c)*}
Change in air gas produced per energy consumption ^(e)	102.2	101.6	100.5	99.9	100.3*
Change in hydrogen produced per energy consumption ^{(d) (e)}	99.8	100.1	99.9	98.0	95.6*

(a) Includes a share of steam and compressed air purchased by the Group.

(b) LHV: Lower Heat Value, which includes the fact that energy from water vaporizing in fuel is not recovered.

(c) Approximately 86,182 GWh LHV.

(d) Hydrogen and carbon monoxide.

(e) 2015 base of 100, efficiency can be affected by reliability, maintenance, turnaround, number of startups and ramps ups.

* Indicator verified by the independent verifier.

Due to the transition to the "market-based" methodology in 2021, the values for the years prior to 2020 have been recalculated in order to harmonize the accounting of electricity sources with the methodology for calculating indirect emissions (Scope 2) and the comparability of indicators. The variation in efficiency for hydrogen production is mainly due to maintenance shutdowns and strong variations in volumes depending on the month of the year.

Water consumption

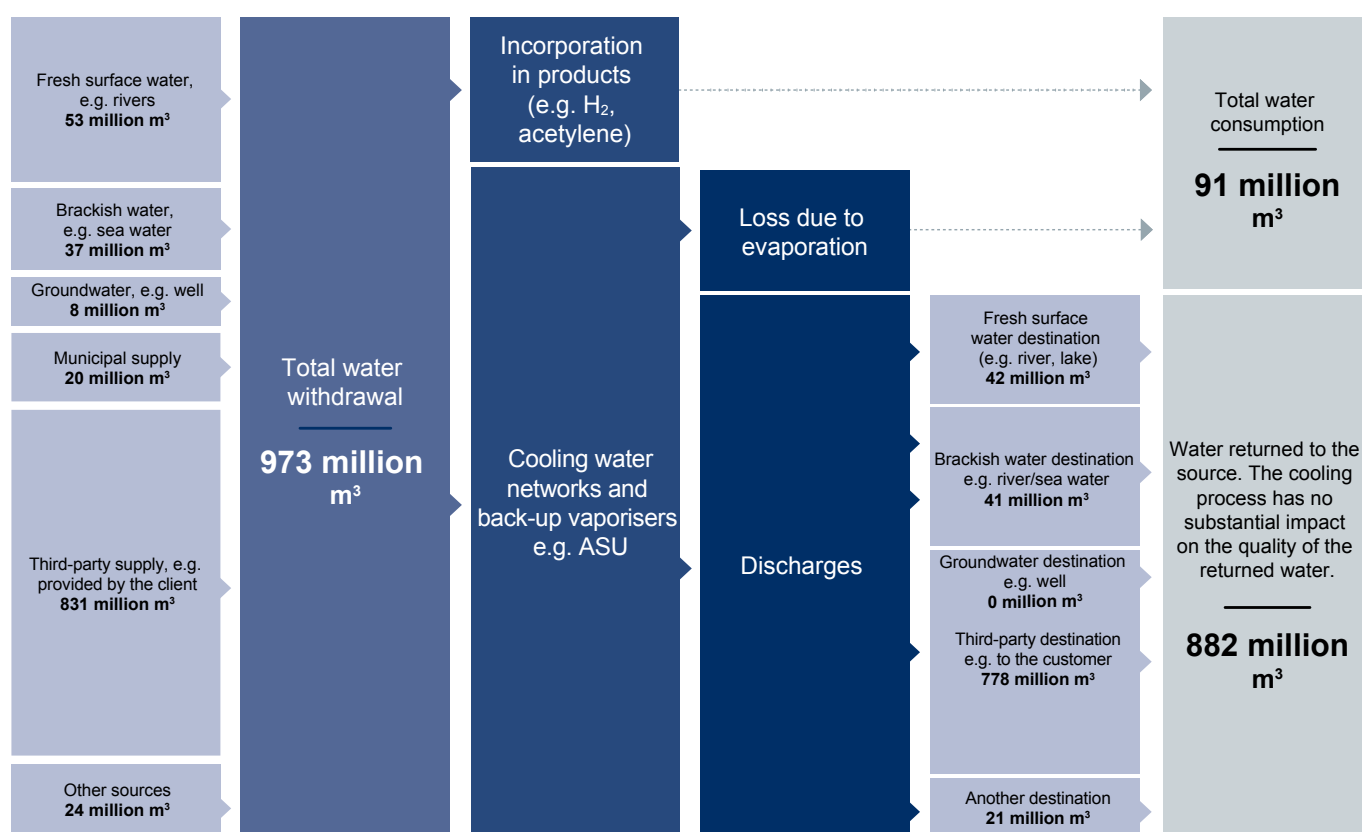
	2018	2019	2020	2021	2022
Annual water withdrawal (estimate in millions of m ³)	394	270	257	950 ^(a)	973*
Annual water consumption (estimate in millions of m ³) ^(b)	86	94	90	82	91*

(a) In 2021, a new reporting tool was implemented and new collection criteria introduced; the increase in reported water quantities for both withdrawals and discharges compared with previous years results from the inclusion of more Open Cooling Circuits, enabled by more granular reporting.

(b) Net water consumption, calculated as the difference between the water withdrawn and the water returned to the source.

* Indicator verified by the independent verifier.

The increase in reported water quantities in 2022 compared with 2021 is mainly related to acquisitions and in particular to the addition of the production units of Sasol.



Discharges into air and water

Discharges into air and water (in tonnes)

	2018	2019	2020	2021	2022
Discharges into air: NO _x (nitrogen oxides)	3,974	5,043	3,727	3,720	3,922
Discharges into air: SO _x (sulfur oxides)	<100	<100	<100	<100	<100
Volatile organic compounds (VOCs) discharged into the atmosphere (estimate)	246	299	236	206	208
Discharges to water: oxidizable matter	<1,000	<1,000	<1,000	3,734	2,841
Discharges to water: suspended solids	<1,000	<1,000	<1,000	<1,000	<1,000

Waste and by-products

Air Liquide wishes to be part of a process of continuous improvement of its environmental footprint regarding waste. To this end, in 2019, the reporting of waste and by-products changed to provide a more comprehensive view of the types of waste generated and their management.

This approach focuses on the three main hazardous waste groups at each site, allowing a better appreciation of the main environmental impacts associated with waste in each location. This new approach is to be refined in the coming years in order to provide a view that will allow this environmental footprint to be managed more effectively within the Group.

Main hazardous waste	% of sites which mentioned it as one of their three main hazardous waste categories	Treatment mode	Volume concerned
Oils	72.7%	Recycling	82.7%
Paints and solvents	9.6%	Incineration with energy recovery	60%
Batteries	59%	Recycling	74%

For non-hazardous waste, the main waste groups are metal, paper, wood and plastics. More than half of the Group's sites provide a selective collection of this waste. More than 98% of metal is recycled at all sites.

Non-hazardous waste and by-products	2018	2019	2020	2021	2022
Annual quantity of lime produced (extracted by dry equivalent) by the acetylene production units (in tonnes)	25,380	31,247	27,966	31,281	23,298 ^(d)
% recycled	>90%	>90%	>90%	>90%	>87%
Metal waste (in tonnes) ^(a)	61,680	20,632 ^(b)	6,861 ^(c)	11,755	8,450*
% recycled	>99%	>99%	>99%	>99%	>99%
Total non-hazardous waste and by-products (estimate in tonnes)	87,060	51,879	34,827	43,036	31,748

(a) Non-hazardous metal waste.

(b) Decrease in 2019 following the end of the Airgas unused cylinder cleaning process.

(c) Decrease in 2020 following the divestment of a plant and an economic situation which has caused delays in the disposal of metal waste.

(d) In 2022, a new methodology for calculating the amount of lime generated by acetylene production was implemented. The decrease in the amount of lime compared to previous years is the result of the application of this new methodology.

* Indicator verified by the independent verifier.

European taxonomy

In 2022, Air Liquide identified 17 activities eligible for the climate change mitigation objective out of 94 activities listed in the delegated acts, of which manufacture of hydrogen was the most significant. They are presented in the tables of the 2022 Universal Registration Document, page 378 – 385.

As of December 31, 2022, turnover eligible to the Taxonomy (for the two objectives of climate change mitigation and climate change adaptation) totaled 5.2 billion euros (equivalent to 17.5% of total consolidated revenue).

An eligible activity that complies with the three following conditions and for which the requirements of the Taxonomy regulation can be documented is referred to as "aligned":

- it contributes substantially to one or more of the environmental objectives;
- it does not significantly harm any of the environmental objectives;
- it is carried out in compliance with minimum safeguards.

As at December 31, 2022, turnover aligned with Taxonomy (for the two objectives considered according to Taxonomy regulation) totaled 0.3 billion euros (equivalent to 1.2% of total consolidated revenue and to 6.6% of eligible revenue). Eligible non-aligned activities are either activities that do not meet one of the above mentioned requirements, or for which such compliance could not be reasonably documented, mainly due to lack of sufficient guidance for alignment or difficulty to access required data at the requested granularity.

Turnover from activities not covered by Taxonomy, referred to as “non-eligible”, totaled 24.7 billion euros (82.5% of total consolidated revenue), and notably include the production of oxygen, medical gases and home healthcare. Indeed, the activities associated with production of air gases, including the activities mentioned above, generate almost no direct greenhouse gas emissions.

These ratios related to the turnover capture the situation of the existing production units. However, by 2035, Air Liquide aims at investing around 8 billion euros to serve the low-carbon and renewable hydrogen markets. These investments start to be made in the frame of ADVANCE strategic plan, which also foresees 8 billion euros of investment for the energy transition, as illustrated by the share of aligned capital expenditure among eligible capital expenditure, that stood at 30.0% as at December 31, 2022.

Taxonomy’s key performance indicators (KPI)

The tables presented in the European Taxonomy section of the 2022 Universal Registration Document correspond to the activities listed for the objective of climate change mitigation. No activity was identified as eligible to the objective of climate change adaptation.

The following table recaps the eligibility and alignment ratios for Taxonomy’s key performance indicator. The detailed tables are presented in 2022 Universal Registration Document from page 378 to page 385.

Proportion (%)	Turnover	Capital expenditure	Operating expenses
KPI – Eligible activities	17.5%	9.5%	9.0%
KPI – Aligned activities	1.2%	2.8%	2.5%
Ratio of aligned/eligible activities	6.6%	30.0%	27.7%

Human resources indicators

Group employees^(a)

Employees	2018	2019	2020	2021	2022
Group employees	66,000	67,200	64,445	66,436	67,109*
Women	17,300	17,500	17,242	18,324	18,739*
as a %	26%	26%	27%	28%	28%
Men	48,700	49,700	47,203	48,112	48,370*
as a %	74%	74%	73%	72%	72%
Joining the Group ^(b)	16.5%	17.4%	11.1%	20.0%	21.1%
Leaving the Group ^(c)	15.2%	16.4%	19.7%	17.7%	20.2%
% of employees having resigned during the year ^(d)	8.0%	7.5%	5.8%	9.6%	10.3%

(a) Employees under contract, excluding temporary employees.

(b) Hiring or integration due to acquisitions. The percentage is based on the number of employees as of 31 December of the preceding year.

(c) Retirement, resignations, layoffs (approximately 20% of departures), departures due to disposals, etc. The percentage is calculated based on the number of employees as of 31 December of the preceding year.

(d) Calculated on the number of employees as of 31 December of the preceding year.

* Indicator verified by the independent verifier.

Human resources indicators for the Group

	2018	2019	2020	2021	2022
Parity and diversity					
Gender mix					
% of women among managers and professionals	29%	29%	30%	31%	31.5 ^{(a)*}
% of women among managers and professionals hired during the year	36%	38%	36%	38%	38%*
% of women among employees considered high-potential	41%	41%	43%	46%	47%
% of women in positions defined as "Executives"	19%	19%	21%	24%	24.8%
Number of nationalities					
Among expatriates	49	55	51	48	65
Among senior executives	30	34	34	35	35
Among employees considered high-potential	53	55	55	53	57
Number of nationalities among senior executives/number of countries where the Group is present	38%	43%	44%	47%	48%
Training					
% of total payroll allocated to training	Approx. 2%	Approx. 2%	Approx. 1%	Approx. 1%	Approx.1%
Average number of days of training per employee, per year (order of magnitude)	2.7 days	3.0 days	2.1 days	2.7 days ^(h)	3.2 days ^{(b)*}
% of employees who received training at least once during the year (order of magnitude)	63%	70%	65%	74%	74%
Performance review					
% of employees who had an annual performance review meeting with their direct supervisor during the year	80%	78%	83%	83%	78%*
% of employees who had a career development meeting with the HR department during the year	13%	14%	12%	13%	13%
Remuneration					
% of employees with an individual variable component as part of their remuneration	53%	56%	59%	60%	59%

	2018	2019	2020	2021	2022
Absenteeism					
Absence rate of Air Liquide employees (estimate)	2.3%	2.1%	1.9%	1.4%	1.5%
Employee loyalty					
Average length of service in the Group	10 years	10 years	10 years	10 years	10 years
Retention rate of managers and professionals over one year ^(c)	93%	93%	95%	93%	92%
Social performance					
% of employees with disabilities ^(d)	1.1%	1.2%	1.2%	1.2%	2.6%
% of employees with access to a representation/dialogue consultation structure	86%	80.4% ^(e)	81%	82%	86%
% of employees who participated in an internal engagement survey (MyVoice) during the year ^(f)	36%	74%	80%	83%	77%
Employee shareholders					
% of capital held by the Group's employees ^(g)	1.7%	1.7%	1.7%	1.9%	2.0%
% of Group employees that are shareholders of L'Air Liquide SA	43%	40%	40%	48%	46%

(a) The share of women among "Managers and Professionals" is rounded off in increments of 0.5%.

(b) 24 hours per year when counted in hours (base: 1 day = 7.5 hours), does not take into account training courses if they do not total a minimum of one day (e.g. e-learning).

(c) This rate is calculated as follows: 100% - (Number of resignations among managers and professionals/Total number of managers and professionals).

(d) For countries where regulations allow this data to be made available.

(e) Decrease in 2019 related to the acquisition of new entities with no existing structures.

(f) Implementation of MyVoice in 2020. Previous years represent the % of employees who participated in a commitment survey over the last three years.

(g) As defined by article L. 225-102 of the French Commercial Code.

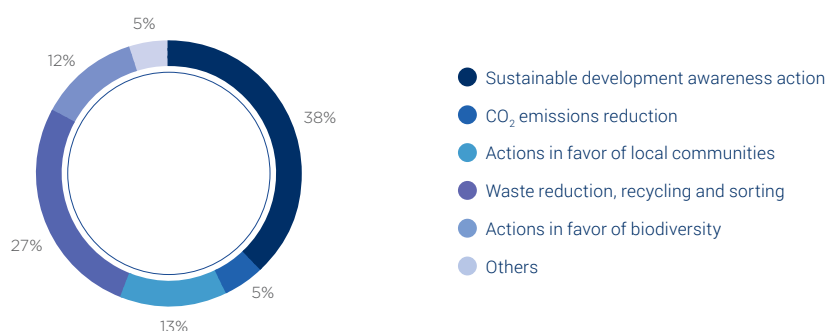
(h) The figure reported in 2021 was incorrect, a new calculation allowed to rectify it.

* Indicator verified by the independent verifier.

Employee commitment and training

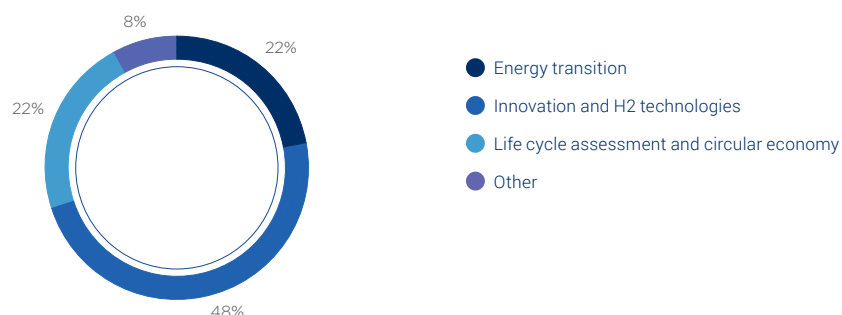
Sustainability Ambassadors implement local initiatives to raise awareness and share best practices among colleagues regarding sustainable development. In 2022, their action covered areas such as waste and recycling and CO₂ emissions reduction, among others.

Initiatives in 2022



In order to train employees on the sustainability objectives announced by the Group, Air Liquide University launched training modules on the themes of energy transition, innovation and circular economy.

Training in 2022



Our commitment to sustainable development and human rights

Air Liquide has been a signatory of the United Nations Global Compact (UN Global Compact) since 2014. The initiative calls on companies to make a voluntary public commitment to respect its Ten Principles relating to human rights, international labour standards, the environment and the fight against corruption. Through its activities, its engagement and its environmental and social actions, Air Liquide contributes to certain Sustainable Development Goals (SDGs) that the United Nations has set up to eradicate poverty, protect the planet and guarantee prosperity for all by 2030. The diagram below illustrates the contribution of the SDG Group. Page references in chart can be found in 2022 Universal Registration Document.



Air Liquide's commitments

The 10 principles of the United Nations Global Compact

Human Rights

1. Businesses should support and respect the protection of internationally proclaimed Human Rights, and
2. Make sure they are not complicit in Human Rights abuses.

International labor standards

3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
4. The elimination of all forms of forced and compulsory labor;
5. The effective abolition of child labor;
6. The elimination of discrimination in respect of employment and occupation.

Environment

7. Businesses should support a precautionary approach to environmental challenges;
8. Undertake initiatives to promote greater environmental responsibility; and
9. Encourage the development and dissemination of environmentally friendly technologies.

Anti-Corruption

10. Businesses should work against corruption in all its forms, including extortion and bribery.

Extra-financial reporting guidelines



Air Liquide believes the major climate-related challenges of our society can be overcome.

This is why Air Liquide has been an active member of the Task Force on Climate-related Financial Disclosures (TCFD), a working group that brings together institutional investors, audit firms and listed companies whose aim is to formulate recommendations on information to be provided, on a voluntary basis, relating to the financial risks associated with changes to the climate. Air Liquide has also declared its support for the TCFD.



The Sustainability Accounting Standards Board (SASB) is a non-profit organization created in 2011, producing sustainable development reporting standards by industry sector.

The SASB takes the following elements into account when establishing its standards: environment; social capital; human capital; innovation and economic model; and leadership and governance.



GRI is an international independent standards organization that helps businesses, governments and other organizations understand and communicate their impacts on issues such as climate change, human rights and corruption.

GRI provides companies with a comprehensive sustainability reporting framework that places an equal weight on environmental, social and governance factors. The GRI Standards reporting framework is widely adopted around the world.

Readers can find cross-reference tables of extra-financial reporting guidelines in chapter five of the [2022 Universal Registration Document](#).

“In the publication of the 2022 Sustainability Report, we showcase our commitment to sustainable development through our actions. Our momentum towards our sustainability ambitions is strong, and we are taking real actions to make a positive impact for the environment and society as a whole.”

Ashutosh Misra

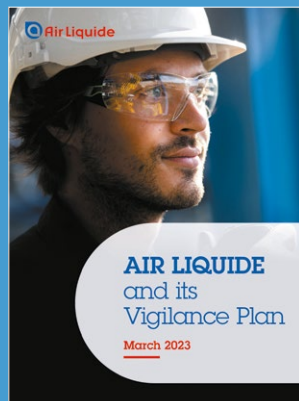
Group VP Sustainable Development



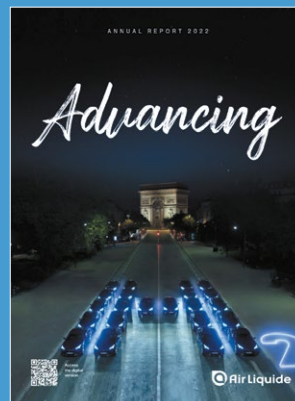
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VIGILANCE PLAN



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A world leader in gases, technologies and services for industry and health, Air Liquide is present in 73 countries with around 67,100 employees and serves over 3.9 million customers and patients. Oxygen, nitrogen and hydrogen are essential small molecules for life, matter and energy. They embody Air Liquide's scientific territory and have been at the core of the company's activities since its creation in 1902.

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