

*Creative Oxygen*

A photograph of four business professionals in an office setting. In the foreground, a woman with dark hair, wearing a red blazer, looks intently at a document. Behind her, a man with glasses and a grey beard, wearing a light blue shirt and dark tie, looks on. To the right, another man in a blue shirt is smiling and pointing with a blue pen. The background is a neutral, light-colored wall.

# 2013 SUSTAINABLE DEVELOPMENT REPORT



# 2

## 2013 Sustainable Development Report

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## > INTRODUCTION

### “Creative Oxygen”

In combining a molecule of oxygen, the foundation of the Group's development, with the power of the inventiveness of its employees, which enable it to constantly enhance its products and operations, Air Liquide reaffirmed in 2013 its ambition to be the leader of its industry delivering long term performance and acting responsibly.

The Group is focusing on long term profitable growth for its businesses by contributing, with its partners, to the challenges of our planet's energy transition, to better use fossil fuels and to renewable energy. It must also take up the challenges of an ever-increasing urbanization of the global population and the fundamental demographic changes that advanced economies as well as developing economies are undergoing.

The 2013 Sustainable Development Report illustrates this ambition. It is based on over 170 indicators which demonstrate the Group's contribution to its customers' performance and its patients' quality of life, its relationship of trust with its shareholders and partners, the commitment of its teams and the high standards of its industrial operations.

It highlights record performance in safety. The Group has developed a Code of Conduct for its suppliers. It has maintained and often improved the efficiency of its industrial operations in a contrasting economic context, and pursued a sustained policy of investment. It has improved the performance of its customers and the quality of life of its patients. It draws on its unique base of institutional shareholders and more than 400,000 individual shareholders who enable it to develop a long-term strategy. The remit of the Air Liquide Foundation has been extended for a further five years, having already supported over 150 projects with the involvement of some 200 employees.

Just like financial reporting, this extra-financial reporting has been reviewed each year since 2003 by the Statutory Auditors. They conduct a mission of analysis and verification on a selection of indicators not only at corporate level but on industrial sites and Human Resources Departments of the subsidiaries. This year, 12 sites and departments were audited. Since 2003, 92 sites and departments have been verified. Air Liquide was one of the first CAC 40 companies to have this review done by the Statutory Auditors and to include the Sustainable Development Report in the Reference document. In 2012, this review became a legal obligation in France.

## > IMPROVING THE PERFORMANCE OF CUSTOMERS AND THE QUALITY OF LIFE OF PATIENTS

Air Liquide contributes to the performance of its customers and to its patients' quality of life. The Group is attentive to the satisfaction of its customers and patients and puts action plans in place to continually improve on this satisfaction.

- Air Liquide allows its industrial customers to carry out their production in a generally safer, cleaner and more economical manner. The Group supports its customers in their national and international development.
- In hospitals, Air Liquide provides its patients with medical gases and contributes to the fight against nosocomial infections. The Group also allows patients suffering from chronic illnesses to live better at home, by facilitating their medical monitoring outside the hospital environment.

### Revenue linked to life and the environment

Over 40 applications of industrial and medical gases preserve the environment for the Group's customers and the life of patients: these applications represent **43% of revenue** <sup>(a)</sup>.

Air Liquide has consolidated these "blue" sales since 2005 <sup>(b)</sup>. The Group decided in 2010 to report annually on this indicator, originally calculated every two years. "Blue sales" are calculated **for each of the Group's activities**: Large Industries, Industrial Merchant, Healthcare, Electronics and Engineering & Technologies.

Some examples of applications which preserve the environment for customers and life for patients within the Group's different activities:

For customers of the **Large Industries** activity:

- using hydrogen in refineries to remove sulfur from hydrocarbons, thus reducing the emissions of sulfur oxide, which are responsible for acid rain;
- using oxygen in blast furnaces to reduce the consumption of coke, whose production and usage is very polluting.

For customers of the **Industrial Merchant** activity:

- packaging in a modified atmosphere to protect foods and reduce chemical additives;
- inerting with nitrogen for the safety of industrial installations;
- fusing glass by using pure oxygen, which considerably reduces emissions of nitrogen oxides, one of the gases that causes acid rain;
- treating water in purification stations;
- using rare gases like krypton to improve the insulation of double-glazed windows.

For patients of the **Healthcare** activity:

- using oxygen in hospitals and home healthcare;
- using hygiene products in the fight against nosocomial infections;
- manufacturing adjuvants for vaccines.

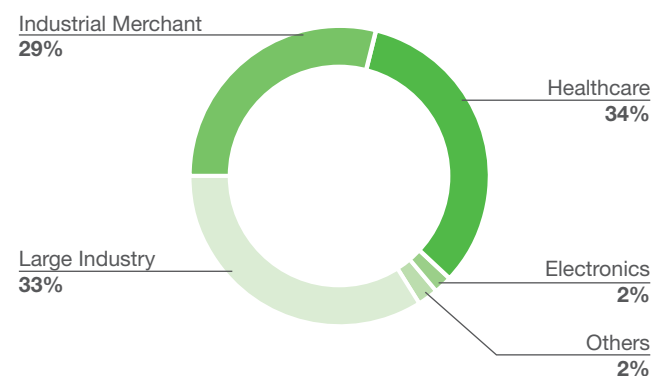
For customers of the **Electronics** activity:

- using industrial gases in the photovoltaic industry.

For customers of the **Engineering & Technologies** activity:

- selling hydrogen production units to third parties for refining, to limit sulfur emissions into the atmosphere;
- selling equipment for valorizing biogas.

#### Breakdown of 2012 blue sales by Business Line



(a) 2012 data. 2013 data will be available mid-2014.

(b) Air Liquide describes these specific sales as "blue" to evoke the color of the sky since air is the main raw material in the Group's production units and it is also the blue of the atmosphere that we must preserve.

## Improving the performance of customers and the quality of life of patients

The percentage of Air Liquide's "blue sales" noticeably increased between 2005 and 2012, going from 33% to 43% of the Group's total revenue. This growth illustrates the development of the applications linked to preserving life and the environment in Air Liquide's global revenue.

In addition, over 60% of the Group's Research & Development budget is earmarked for work on preserving life and the environment and is a "blue sales" growth driver for the future, based on the following key themes:

#### ■ Environment:

- energy efficiency,
- hydrogen, as a clean energy carrier,
- development of the industrial gases range for the photovoltaic industry,
- CO<sub>2</sub> capture and storage,
- second-generation biofuels;

#### ■ Healthcare and hygiene:

- new medical gases to relieve pain and for anesthesia,
- products to avoid nosocomial infections,
- home healthcare activity products and services for patients suffering from chronic illness.

Detailed information on these innovative initiatives for our customers and our patients is presented in the Innovation section of Chapter 1 of the Reference document.

## Air Liquide and its customers: proximity and expertise

### AN ORGANIZATION THAT SERVES A WIDE RANGE OF CUSTOMERS

Air Liquide serves a **wide variety of industrial customers, estimated at more than a million** who come from sectors ranging from steel to the food industry as well as electronics, pharmaceuticals and craftsmen. Their expectations are extremely varied and change constantly, with ever greater requirements. In each market sector, Air Liquide aims to support its customers by acquiring the deepest understanding possible of their business. This allows the Group to **offer its customers innovative services and solutions**.

The Group's organization enables each entity, in each geographic region, to meet the specific expectations of local customers, thus building a **close and trusting relationship** with individual customers. More than just a product, customers demand **flexibility, responsiveness, service, availability and a real partnership over the long term**.

### CUSTOMER SAFETY IN PRODUCT USE

Air Liquide makes sure that its customers and subcontractors know how to use its products and equipment correctly and are aware of the related risks, especially through specific **training programs**.

In addition, the Group constantly updates safety information on its products through **product safety data sheets** and also responds to requirements of national and international directives (REACH – Registration, Evaluation, Authorization and Restriction of chemical substances; GHS – Globally Harmonized System of Classification and Labelling of Chemicals). This information is available from **the Air Liquide Gases Encyclopedia**, which can be accessed on the Group's website at the following address: <http://www.airliquide.com/our-offer.html> and also accessible from a cell phone via an Air Liquide app.

### DIALOGUE WITH CUSTOMERS ON SUSTAINABLE DEVELOPMENT

Air Liquide also responds to its customers' growing requirements regarding its sustainable development approach. This allows the Group to contribute to its customers' own sustainable development approach. Over the last four years, in addition to many questions asked at a local level, over 60 customers have questioned the Group on this subject, including through detailed questionnaires. This has meant that the Group's Sustainable Development Department has provided support to local entities to respond to this new type of request from its customers. The data on the carbon content of Air Liquide's products in the main countries presented in this report respond to requests from customers on this subject.

## Protecting vulnerable lives

Our society is faced with many healthcare challenges: people living longer, an increase in chronic illnesses, pandemics and nosocomial infections. Air Liquide responds to the requirements of patients and healthcare professionals worldwide, making every effort to anticipate their needs. Throughout the world, Air Liquide aims to protect vulnerable lives by offering effective products and services and providing considerate support for patients.

### LOOKING AFTER THE PATIENT THROUGHOUT THE CARE PROCESS

#### Providing patients in hospital and at home with medical products and services that contribute to protecting vulnerable lives

Vulnerability may be a consequence of age, illness or loss of independence. In the course of its activities, Air Liquide is constantly faced with vulnerability: patients undergoing painful medical procedures in emergency units or operating theatres, patients exposed to the risk of nosocomial infections, patients with chronic illnesses and multiple pathologies, and elderly people.

Air Liquide aims to protect lives by developing products, services and patient support programs.

#### Protecting patients and supporting healthcare professionals: Air Liquide, a major player in medical gases for hospitals

Air Liquide is one of the world leaders in **medical gas production and distribution and related services for hospitals**. The Group supplies oxygen for operating theatres, intensive care units and patients' rooms, as well as therapeutic gases for anesthesia and pulmonary arterial hypertension. Air Liquide also provides a therapeutic gas for pain relief, used in some countries during childbirth (Portugal and Great Britain for example) and for procedures carried out at dental surgeries.

Air Liquide furthermore offers a range of **hygiene products used for disinfection and the fight against nosocomial infections**. Air Liquide supplies disinfectants for hospitals, medical instruments and hand-cleansing for medical staff. The Group also supplies skin cleansers for pre-operative preparation for patients and antiseptics for wound-healing.

Air Liquide currently supplies 7,500 hospitals and clinics worldwide.

#### Nosocomial infections worldwide

According to the World Health Organization, 5 to 10% of people hospitalized in advanced economies contract a nosocomial infection, and this proportion can exceed 25% in some developing economies.

#### Protecting patient autonomy: the human and social dimension of Air Liquide's Home Healthcare activity

Air Liquide's Home Healthcare activity cares for over 1 million patients around the world who have chronic illnesses which require medical respiratory equipment, perfusion or nutritional assistance for their treatment at home. It has a very strong human dimension because it focuses on having patients and their families accept a treatment that is sometimes long term and accompanied by constraints. Air Liquide's employees provide home support to patients suffering from chronic pathologies such as respiratory insufficiency, sleep apnea, diabetes or Parkinson's disease. Air Liquide's multidisciplinary teams of pharmacists, nurses, nutritionists and technicians are dedicated to providing these services as cost-effectively as possible. Innovative education and support programs aim at **improving the patients' quality of life** by helping reinforce **treatment follow-up** and **increasing their autonomy**.

The Home Healthcare activity sits at the heart of the healthcare system between the patient, hospital, doctors, nurses, health insurance organizations and pharmacists. The Group supplies products and medical equipment necessary to start treatment at the patient's home following the medical prescription, and trains the patients and their families in the proper use of devices (oxygen therapy, ventilator, insulin pump, etc.). Air Liquide therefore makes a **major contribution to the care chain by ensuring the patients' follow-up at home over the long run**. It is an activity that demands high quality service on a daily basis and is focused on the long term, with all the caregivers dedicated to improving the patient's quality of life at home.

#### Obstructive Sleep Apnea Syndrome (OSAS): a silent epidemic

OSAS is characterized by repeated pauses in breathing (apnea) whilst asleep that last more than 10 seconds due to an obstruction in the upper airways.

OSAS affects between 1% to over 6% of the adult population worldwide. eight patients out of ten are unaware of their condition. OSAS leads to drowsiness that can cause accidents and increases cardiovascular risk.

Continuous Positive Airway Pressure (CPAP) is the principal treatment for moderate and severe sleep apnea, using equipment provided to patients via Air Liquide Home Healthcare subsidiaries.

## PARTNERSHIPS IN HEALTHCARE

### Partnership with patient associations

The European leader in Home Healthcare, Air Liquide cares for some 800,000 patients in Europe suffering from sleep apnea or shortness of breath, notably those with severe chronic obstructive pulmonary disease (COPD), under long-term oxygen therapy.

#### COPD, one of the principal causes of death and disability worldwide

COPD is a lung infection characterized by a permanent bronchial obstruction which causes respiratory difficulties.

- Over 200 million people around the world suffer from COPD. It is currently the fourth-highest cause of death worldwide and could become the third-highest by 2030.
- Over a million patients suffering from severe COPD are treated by long-term oxygen therapy. It has been shown that the long-term administration of oxygen, which means more than 15 hours a day, significantly improves these patients' survival.



Since 2011, the Group's Healthcare World Business Line has worked in partnership with the EFA (European Federation of Allergy and Airways Diseases Patients Associations). This Brussels-based European organization brings together the national associations of patients with respiratory ailments, with 22 countries represented. In the framework of this partnership, Air Liquide supports the actions on information and raising awareness initiated by the EFA in public opinion and the European authorities.

As an example, in 2013, Air Liquide contributed to a publication establishing care standards for patients with COPD, incorporating the patients' viewpoint and distributing the publication to the European Commission and healthcare professionals. In 2013, Air Liquide also supported a study on patients with portable oxygen concentrators wishing to travel on a European airline.

### A commitment to patient safety during anesthesia

Air Liquide is a signatory to the Helsinki Declaration, initiated by the EBA (European Board of Anesthesiology) and the ESA (European Society of Anesthesiology). The Helsinki Declaration plans to reduce complications following anesthesia during major surgery by reiterating good clinical practices, the anesthesiologist's key role in patient safety and the importance of cooperation between healthcare manufacturers and the medical community. The Declaration underlines the major role that industry plays in the development, manufacture and supply of drugs and equipment for patient care.

### ISSUE OF SOCIALLY RESPONSIBLE BONDS

In 2012, Air Liquide issued its first SRI-labeled bonds <sup>(a)</sup> under its Euro Medium Term Notes (EMTN) program, for a total amount of 500 million euros. This operation, issued at a very competitive rate, allowed the acquisition of Gasmedi and LVL Médical to be financed for a total amount of about 650 million euros. This bond was mostly placed with investors having SRI management mandates and permitted the Group to diversify its financing sources. After numerous public authorities and supranational issuers, **Air Liquide became the first company to issue bonds meeting the criteria of SRI investors.**

Obtaining a rating from the extra-financial rating agency Vigeo about the Home Healthcare activity led to this issue being given an SRI label. This evaluation is based on the social, environmental and governance criteria of the Home Healthcare activity that concerns more than one million patients worldwide.

(a) *Socially Responsible Investment: application of sustainable development principles to investment. Approach consisting in systematically considering the three dimensions – environment, social/societal, governance – in addition to the usual financial criteria.*

### Indicators concerning the Home Healthcare activity

In the framework of this SRI bond issue, Air Liquide made a commitment to publishing during the life of these bonds, i.e., nine years, indicators specific to the Home Healthcare activity in the area of the environment, safety and employee diversity.

<b>Number of patients treated</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
Total number of patients treated by the Air Liquide Home Healthcare Division	600,000	700,000	1,000,000	1,100,000
<b>Employees</b>				
Home Healthcare business employees <sup>(a)</sup>	4,893	5,494	7,303	7,748
<b>Safety</b>				
Number of lost-time accidents of at least one day among employees	29 <sup>(b)</sup>	28 <sup>(b)</sup>	42 <sup>(b)</sup>	77 <sup>(b) (c)</sup>
Number of accidents of subcontractors and temporary workers <sup>(d)</sup>	15 <sup>(b)</sup>	7 <sup>(b)</sup>	10 <sup>(b)</sup>	13 <sup>(b)</sup>
<b>Equality</b>				
% of women among Managers and Professionals (M&P)	53%	55%	55%	56%
% of women among M&P hired during the year	62%	62%	40%	70%
<b>Training</b>				
Average number of days of training per employee and per year	2	2.1	1.6	2 <sup>(e)</sup>
<b>Kilometers driven and CO<sub>2</sub> emissions related to transportation</b>				
Kilometers driven per patient followed per year			155	147
CO <sub>2</sub> emissions related to transportation per patient ( <i>kgCO<sub>2</sub>/patient</i> ) per year			39	35

(a) Employees under contract.

(b) No fatal work accidents.

(c) Including 39 work accidents involving activities acquired at the end of 2012 and In 2013.

(d) Personnel working in the framework of a contract with Air Liquide, on an Air Liquide site, or on a customer site, or as a delivery driver.

(e) 15 hours a year according to counting in hours (base: 1 day = 7.5 hr.).



## Satisfying customers and patients

### Objectives

#### Key Indicator

Percentage of Group sales related to units where a customer or patient satisfaction survey has been conducted in the last two years.

#### 2015 objective

Increase customer satisfaction and loyalty and patient satisfaction. By 2015, customer and patient interviews and the related action plans will cover entities representing 85% of the Group's sales.

#### Achievement of the objective

In 2013, the percentage of Group sales related to units where a customer or patient satisfaction survey has been conducted with associated action plans was 76% compared to 66% in 2012.

### A RESPONSIBLE COMPANY: FROM LISTENING TO ACTION

Air Liquide's relationship with industrial customers of very diverse sizes and sectors as well as with healthcare professionals, patients and their associations in the healthcare sector, are at the heart of the concerns of the Group's teams and guide the Company's development. The **quality of this relationship concerns each entity and employee**. It is based on the definition of precise commitments that its teams endeavor to respect in their daily activities, in a spirit of professionalism and service.

#### Customer and patient satisfaction is a priority for Air Liquide.

In a context of a change in its customers and patients' expectations and a growing diversity of its customers and patients, the Group has set itself the following objectives:

- creating increased loyalty and satisfaction in customers and patients;
- understanding their expectations;
- winning new customers.

The Group has developed a **tool called "Action surveys"** for each of its Business Lines. This has been put in place at each subsidiary based on the following three stages:

- **Listening** to customers and patients: to better understand the customers' and patients' priorities, this takes the form of interviews conducted by specialized companies. After these interviews, the managers of the entities concerned meet certain unsatisfied customers. More than **9,000 interviews**

**were conducted in 2013** in all subsidiaries. Altogether, since the first pilot surveys in 2011, over **24,000 interviews** and numerous visits have been conducted in **52 countries**.

- **Building** action plans and galvanizing the Group's employees: this listening phase helps identify improvement tracks and define related action plans. **To mobilize the organization, workshops to raise awareness on the customer experience** have been rolled out. These workshops, called "Inside Customer Shoes", bring together employees from procurement, sales, production, human resources, and other departments. In 2013, the "Inside Customer Shoes" workshop was implemented in **16 countries**, such as the UK, Russia and various countries in South-East Asia, and involved over 650 Group employees.
- **Implementing action plans:** the managers are responsible for implementing the action plans and measuring their progress. Certain action plans are shared with customers. Since 2011, over 250 action plans were launched locally and 30% of these plans have already been rolled out.

To include this approach in a **continuous improvement process** and measure progress in terms of satisfaction and loyalty, these surveys are conducted every two years. In 2013, the percentage of the Group's revenue concerning the units where customer satisfaction surveys and action plans were carried out was 76%, a sharp rise compared to 2012 where this figure stood at 66%. This percentage represents the Key Indicator for the Group's customers and patients and is monitored annually.

## Percentage of the Group's revenue concerning the entities where customer satisfaction surveys were carried out

Year	2011	2012	2013	2014	2015 objective
Percentage of the Group's revenue concerning the entities where customer satisfaction surveys were carried out	39%	66%	76%		85%

### CUSTOMER COMMITMENT

The results of the "Action surveys" are generally positive with most customers satisfied or very satisfied. Product and service quality, strict respect for safety rules, the teams' behavior in contact with the customers and their efficiency, notably in emergency situations, were particularly appreciated.

These surveys also brought out concerns and incidents encountered by the customers in their relations with the Group. Priority action plans are being created to respond to these dissatisfactions.

For example, after the "Action surveys" rolled out by **Air Liquide Electronics in China, it was decided to regionalize its organization to meet the demand for proximity from customers.** Having been the pilot country for the initiative in 2011, Air Liquide China surveyed its customers again in 2013. The results of the 2013 survey show that the action plans put in place based on the outcomes of the 2011 survey improved the satisfaction and loyalty of customers, especially as a result of the new organization.

The Australian subsidiary also defined action plans involving all its organization's functions. In 2013, it launched an **internal communication campaign** called "Customer satisfaction, My job" to raise awareness among employees and respond to the points for improvement identified in the survey.

### A GROUP THAT LISTENS TO ITS PATIENTS AND HEALTHCARE PROFESSIONALS

The Group's determination to improve its listening capacities for its stakeholders includes the Healthcare World Business Line. **Air Liquide is particularly attentive to its patients' needs** in order to improve the quality of its service permanently.

The first "**Action surveys**" adapted to this business were rolled out in 2011. The subsidiaries that produce and distribute medical gases to **hospitals** conducted the surveys with the technical and procurement departments of the customer hospitals as well as with doctors who use the gases.

In the **Home Healthcare** activity, patients benefiting from Air Liquide's services as well as the doctors prescribing the treatments, but also the pharmacists distributing these products and the healthcare coverage authorities directly responded to these **satisfaction surveys**.

In 2013, surveys were conducted in countries including Brazil, Argentina, Spain and various countries in South-East Asia. A substantial survey was also organized in France, representing nearly 400 people questioned. **The results on satisfaction and loyalty were positive.** For the Healthcare sector, **nearly 4,000 patients, prescribers, pharmacists and regional healthcare authorities were surveyed in 2013 worldwide.**

## > DEVELOPING LONG TERM RELATIONSHIPS WITH SHAREHOLDERS AND OTHER GROUP STAKEHOLDERS

Air Liquide conducts its business within the framework of the relationships with its stakeholders: its shareholders, who have supported the Group with commendable loyalty for over a century, its suppliers and the communities within which the Group's operations are based.

- The Group has established a relationship of trust with its shareholders by associating them with its continuous growth and its successful business model through a strong and steady distribution policy maintained over time.
- Air Liquide requires its suppliers to show a performance and attitude that is consistent with the Group's commitments. This starts with safety and applies to their manufacturing, transportation and supply practices.
- Regarding the national and local communities within which the Group operates, it expresses its opinions where necessary and reasonable, informs them on the actions it is undertaking, and contributes to local development, particularly via the Air Liquide Foundation.

### Establishing a relationship of trust with all shareholders

#### Objectives

##### Key Indicators

- Total Shareholder Return (TSR) <sup>(a)</sup>
- Percentage of shareholders with shares held in registered form (total number of shareholders with registered shares / total number of shareholders)

##### Objective

Continue over the long-term with a comprehensive shareholder remuneration policy to ensure regular growth of their investment, within a relationship based on respect and consideration.

##### Achievement of the objective

- At December 31, 2013, the Total Shareholder Return (TSR) was 10.8% per year over 20 years for a registered shareholder, compared to 11.4% in 2012.
- At December 31, 2013, the percentage of shareholders with shares held in registered form was 51%, compared to 50% in 2012.

Being an Air Liquide shareholder means backing, over the long term, a responsible Group that shows its commitment to human, social and societal issues.

Air Liquide's Sustainable Development approach vis-à-vis shareholders is based on the following four principles:

- consideration and respect for all shareholders;
- remuneration and increased value of their investments in the long term;
- listening to and informing shareholders;
- specific services for registered shareholders.

#### CONSIDERATION AND RESPECT FOR ALL SHAREHOLDERS

Financial performance is not enough to sum up the relationship between Air Liquide and its shareholders. Air Liquide maintains a regular dialogue of proximity with shareholders: the intention is to respond to their requirements as far as possible since they are seen as long-term partners. Shareholders have underpinned and sustained the Group's growth since its origin and particularly since it was first listed on the Paris Stock Market in 1913, the 100<sup>th</sup> anniversary of which was celebrated in 2013.

To make sure that these expectations and their evolution are identified and understood, Air Liquide endeavors to get to know its shareholders in their diversity. To this end, it proposes in particular that they place their shares in registered form.

(a) Total Shareholder Return (TSR) is an annualized return rate for a shareholder who buys a share at the beginning of a period and sells it at the end of the period. This calculation takes into account the change in the share price, dividends paid, including loyalty bonuses, considering that they are also reinvested in shares, as well as free share attributions.

## Stable and balanced share ownership

It is important for Air Liquide to preserve the balance between individual shareholders and institutional investors. The Group's strategy, focused on the long term, and the soundness of its business model offer shareholders a sustainable and regular return on their investment.

400,000 individual shareholders hold 36% of the capital. French and non-French institutional investors represent respectively 19% and 45% of the capital.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Individual shareholders	39%	38%	38%	37%	38%	38%	36%	37%	37%	36%
French institutional investors	24%	25%	24%	30%	26%	26%	23%	21%	19%	19%
Non-French institutional investors	36%	36%	37%	32%	35%	36%	40%	42%	44%	45%
Treasury shares	1%	1%	1%	1%	1%	>0%	<1%	>0%	>0%	>0%
Registered capital	30%	31%	32%	37% <sup>(a)</sup>	33%	32%	34%	35%	36%	35%
Capital eligible for the loyalty bonus	24%	25%	26%	26%	26%	25%	25%	28%	29%	30%

(a) In 2007, the share of registered capital increased in particular following the entry of a large institutional investor who sold its shares in 2008.

## The Shareholders' Meeting, a privileged moment of exchange

Each year, all the Air Liquide shareholders **who hold at least one share** are invited to the Shareholders' Meeting. They are helped in their voting by all the relevant documents over a month before the Meeting, sent by mail and available on the Company's website: practical information on the voting procedure and clear explanations of the resolutions and their objectives.

For the first time, Air Liquide is proposing to invite its registered shareholders to the 2014 Shareholders' Meeting electronically. Through their personal space on the website, they will be able to apply to have all the background documentation relating to their vote sent in digital format to their email address.

Didactic animations detailing the voting procedure are also available online. Air Liquide endeavors to make all this material available in English to its non-French shareholders in similar time frames. In certain countries, systems have been set up with intermediary banks to facilitate and ensure a fluid transmission of the votes of the shareholders concerned.

Air Liquide centralizes its Shareholders' Meeting by collecting the votes of its shareholders directly. Since 2013, the Company has offered **voting by Internet** (through the Votaccess platform). By connecting to their personal space on the website, shareholders can consult all the background documentation relating to their vote, vote or request an admission card to the Shareholders' Meeting.

On the day of the Meeting, the bureau, composed of the Chairman of the Board of Directors, two polling officials and a secretary, ensure that the Meeting is held in compliance with the law. The polling officials are representatives of the two investors that hold the largest number of shares who have agreed to fulfill this function. They are asked about a month before the event and a vade mecum is given to them two weeks before the Meeting. This document describes their tasks as well as the welcome and voting procedures set up by the Company.

The Shareholder Services advisors and the Investor Relations team are also available to answer individual and institutional shareholders' questions on voting and participation in the Shareholders' Meeting, by telephone and at the Shareholders Lounge at corporate headquarters in Paris.

In 2013, some 4,000 people were welcomed at this Shareholders' Meeting.

The dates for the next Air Liquide Combined Shareholders' Meeting are:

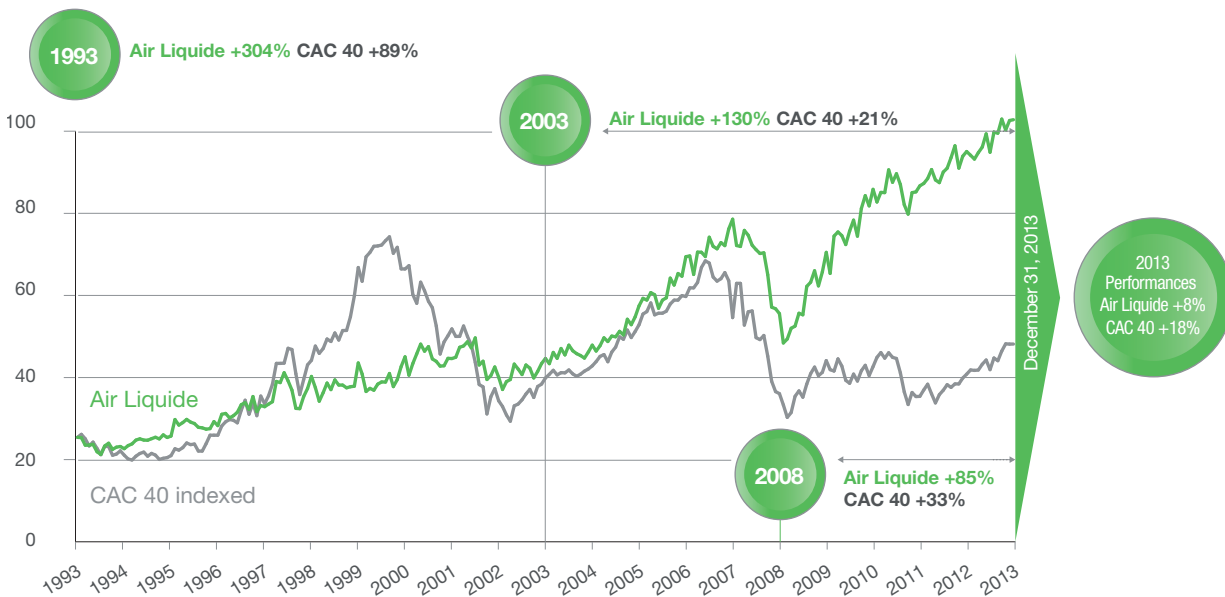
- Wednesday, May 7, 2014;
- Wednesday, May 6, 2015;
- Thursday, May 12, 2016.

## REMUNERATION AND INCREASED VALUE OF THE SHAREHOLDERS' INVESTMENTS IN THE LONG TERM

### Air Liquide, a continuous growth

The share's value is based on the rise in its stock market price over the long term and the distribution of dividends. Since its creation in 1902, Air Liquide has always shared the fruits of its growth and rewards its shareholders' confidence through a remuneration and loyalty policy that is based on regular dividend distribution, free share attribution and a loyalty bonus.

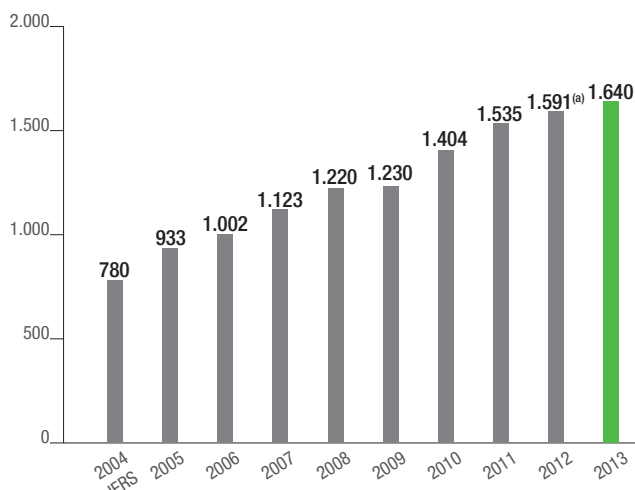
#### Stock market price over the last 20 years (in euros)



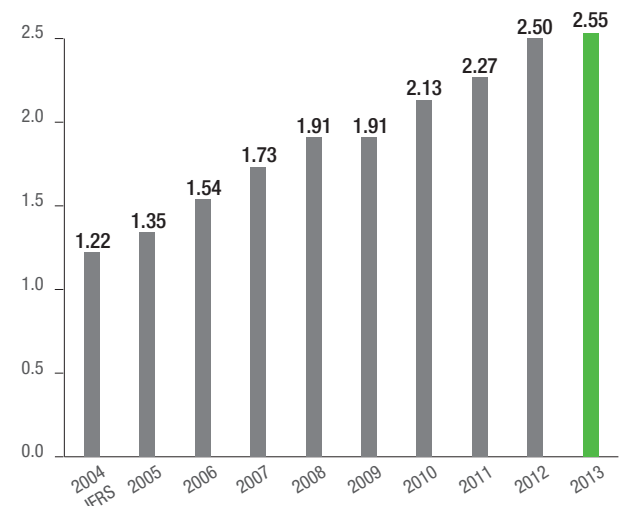
Since it was first listed on the French Stock Market in 1913, the Company has always shown a profit. The Group creates value by developing its activities and optimizing its performances over the long run. Over the last 20 years, Air Liquide's revenue has shown average annual growth of +6.1%. This growth has been profitable: the Group's net adjusted earnings per share have followed a similar trend with average annual growth of +8.2%. Over the same period, the dividend has seen average annual growth of +9.7%.

During the last 10 years, nearly 50% of earnings have been distributed to shareholders.

#### Net profit – Group share (in millions of euros)



#### Adjusted dividend per share (in euros/share)



(a) Corresponds to the amounts as of December 31, 2012 restated for the impacts of IAS19 revised "Employee Benefits".

## Developing long term relationships with shareholders and other Group stakeholders

### Return on an investment in Air Liquide shares for the shareholder

To further increase the investment value of Air Liquide shares, subscribing to registered shares permits shareholders who choose this option to benefit from a loyalty bonus: +10% on the amount of the dividends received and +10% on the number of free shares granted. This loyalty bonus is granted to shareholders whose shares are held in direct registered or intermediary registered form and who have kept them for more than two calendar years.

To benefit from the loyalty bonus, shareholders must continue to hold their shares in registered form on the day of the dividend payment and of the free share attribution.

Total Shareholder Return (TSR) is an annualized rate of return for a shareholder who buys a share at the beginning of a period and sells it at the end of the period. This calculation takes into account the share price performance, dividends paid, including loyalty bonuses, considering that they are also reinvested in shares, as well as free share attributions.

### Average annual growth of the portfolio as of December 31, 2013

For capital invested	Air Liquide – Registered shares <sup>(a)</sup>	Air Liquide – Bearer shares <sup>(a)</sup>	CAC 40 index – reinvested <sup>(b)</sup>
■ over 5 years (December 31, 2008)	+16.5%	+16.2%	+10.3%
■ over 10 years (December 31, 2003)	+12.1%	+11.6%	+5.6%
■ over 20 years (December 31, 1993)	+10.8%	+10.1%	+6.3%

(a) The TSR on registered shares is higher than the TSR on bearer shares because the registered shareholder benefits from loyalty bonuses.

(b) CAC 40 index with gross dividends reinvested.

During the last 10 years, the return rate for an Air Liquide shareholder has been on average 12.1% per year, with gross dividends reinvested in shares, free share attributions and loyalty bonuses to registered shareholders.

	2004 IFRS	2005	2006	2007	2008	2009	2010	2011	2012	2013
Earnings per share (in euros) <sup>(a)</sup>	2.52	3.03	3.22	3.62	3.99	3.99	4.52	4.93	5.11 <sup>(c)</sup>	5.28
Dividend per share (in euros) <sup>(a)</sup>	1.22	1.34	1.54	1.73	1.91	1.91	2.13	2.27	2.50	2.55 <sup>(b)</sup>

(a) Based on the average annual number of shares (excluding treasury shares) and adjusted to account for increases in capital via capitalization of reserves or additional paid-in capital, cash subscription and the two-for-one share split on June 13, 2007.

(b) Subject to the approval of the Combined Shareholders' Meeting of May 7, 2014.

(c) Corresponds to the amounts as of December 31, 2012 restated for the impacts of IAS19 revised "Employee Benefits".

### The Air Liquide value codes

Air Liquide shares are divided into four categories, called "value codes" (or ISIN codes), according to when they were recorded as registered shares. There are two permanent value codes (FR0000120073, which is also Air Liquide's stock market ISIN code, and FR0000053951, which corresponds to shares already benefiting from the loyalty bonus) and two intermediate value codes (FR0011336254 and FR0011597350, which identify the shares that will benefit from the loyalty bonus in 2015 and 2016 respectively).

## LISTENING TO AND INFORMING SHAREHOLDERS

### Listening and proximity

**Shareholder Services** is specific to Air Liquide. Directly attached to Executive Management, this team manages the accounts of some 80,000 shareholders who hold direct registered shares and supports them by offering a broad range of personalized services, without intermediaries. It is also dedicated to listening to and informing all the 400,000 individual shareholders and they are sent information all year long through different means of communication. In addition, many events and meetings that are highlights between Air Liquide and its shareholders are organized, for example the Shareholders' Meeting, regional meetings and fairs dedicated to share ownership in France and Europe.

The **Shareholders' Communication Committee**, composed of 12 Air Liquide shareholders, is regularly consulted to improve the quality of information and services provided to shareholders. Apart from plenary meetings with the Chairman and CEO, the Committee is involved through the year in working groups on subjects that are essential to the shareholders' concerns. A Committee member is part of the Air Liquide Foundation's Project Selection Committee.

The Chairman and CEO, after the Shareholders' Meeting, continues his exchanges with **shareholders in the regions** by traveling to several cities in France to present the results, the Group's prospects and to answer their questions. Finally, to strengthen this dialogue, the Director of Shareholder Services regularly meets shareholders at meetings and fairs (about 10 events a year) held in France and in Europe: Denmark, Finland, Poland, Norway, Belgium and Switzerland. In 2013, 8,000 shareholders were met.

The **Investor Relations** Department, attached to the Finance and Operations Control Department, responds to specific questions from institutional investors and financial analysts of brokerage companies. The four annual announcements of revenue or results are of course privileged moments of exchange but throughout the year this dedicated team meets investors, either at its offices at corporate headquarters in Paris or during travel to the world's major financial centers. Air Liquide organizes roadshows or takes part in conferences to go before international investors and present them with the solidity of its business model, the dynamism of its growth levers and the soundness of its strategy. On average, the Investor Relations Department meets over 300 institutions each year. It also regularly organizes Investor Days, bringing together the international financial community and Air Liquide's management for targeted strategic discussions with a theme that varies according to economic issues and current events.

### Investor Day 2013

At the Investor Day on December 11, 2013, Air Liquide presented an update on its ALMA 2015 plan to the international financial community and described its vision of the future for its markets and its strategy and growth prospects. The guests – around a hundred financial analysts, institutional investors and bondholders – were able to discuss issues with various Group directors, and take part in the Group's workshops on innovation, energy transition and the treatment of sleep apnea. They particularly appreciated the chance to drive a hydrogen-powered electric car in the Palais Brongniart (former French Stock Market) district of Paris. The Group also took this opportunity to celebrate the 100th anniversary of being listed on the stock market and launched its new strapline of "Creative Oxygen", in the presence of a wider public including many individual shareholders.

### Transparent information

Air Liquide provides for its individual and institutional shareholders through various communication means, transparent information on the Group's activities, strategy, performances and prospects.

**Pedagogy** is one of the major concerns that takes priority in the design of information documents and media like the Annual Report, the Shareholder's Guide and the Invitation to the Shareholders' Meeting. The latter document presents the resolutions submitted to the shareholders' vote in an informative way and is sent to all the shareholders who hold at least one share. Air Liquide also publishes, in the month after the event, a report of its Shareholders' Meeting, presenting in a detailed manner all the participations and discussions. These publications are available in French and English. The minutes of the Shareholders' Meeting are established during the month following the Meeting.

Moreover, Shareholder Services has designed an educational and entertaining **learning module** to better understand the stock market. The first module, "The stock market today", available on the Company's website in the Shareholders section, sheds light on the role and history of the stock market, its different players and Air Liquide's history in the Paris Stock Market. Shareholder Services also offers a free **Air Liquide Shareholder App** for iPhone and Android to follow stock market prices, use simulators and keep up to date with Group news whenever they wish. In 2013, an iPad shareholder app was also published. It is available free from the App Store and enables shareholders of registered shares to connect directly to their share account. Their personal data can be relayed directly into fiscal simulators so they can make relevant calculations. It enables everyone to find out information about the Group easily and directly, and link them to Shareholder Services.

## Developing long term relationships with shareholders and other Group stakeholders

In addition, Air Liquide welcomes its shareholders in a dedicated venue, the **Shareholders Lounge**, at the Group's head office in Paris, so that they can obtain complete information on the Company's activities, the life of the share, and for those who hold direct registered shares, how to carry out operations on their accounts.

The Shareholders Lounge also offers temporary exhibitions that are simple, didactic and interactive: an additional opportunity for shareholders to find out more about the Group's activities and initiatives and to strengthen their connection with the Group. Shareholder Services organizes online conferences, live from the Shareholders Lounge, on share ownership topics such as "How free shares are allocated" and "Registered shares made easy".

### For information

More information on Air Liquide and its share ownership is available in the **Shareholder's Guide**, available online on the website [www.airliquide.com](http://www.airliquide.com), Shareholders section.

### SPECIFIC SERVICES FOR REGISTERED SHAREHOLDERS

Specifically organized to provide answers to shareholders, the Shareholder Services, composed of 26 people, offers its expertise in share account management: how to open an account, how to place orders on the stock market, how to determine taxation of securities and how to transfer shares. Throughout the year, Air Liquide advisors answer shareholders' questions via the toll-free number mentioned hereafter (also accessible from outside France) or directly at the Shareholders Lounge.

Air Liquide directly manages the accounts of its shareholders with direct registered shares. They pay no handling fees, and broker fees are reduced to 0.18% excluding tax of the gross amount of the transaction. Air Liquide endeavors to regularly communicate


to its shareholders on the benefits of holding registered shares (privileged relationships with Air Liquide, loyalty bonus, etc.). Every year, an information campaign is organized for shareholders who have bearer shares: presentation of registered shareholding on all the communication documents and media for shareholders and a booth dedicated to registered shareholding during the Actionaria fair held every November in Paris.

Direct registered shareholders have access to a personal secure space on the Internet so that they can consult their share portfolio, modify their personal information or consult documents useful for managing their account. They can also place buy and sell orders on the stock market online and view, in real time, the operations conducted on their account and the amounts received (payment of the dividend, sale of shares, etc.).

### Contacts

#### Shareholder Services:

Air Liquide – 75, quai d'Orsay 75007 Paris, France

 **N° Vert 0 800 166 179** or + 33 (0)1 57 05 02 26 from outside France

<http://contact.shareholders.airliquide.com>

#### Investor Relations:

Air Liquide – 75, quai d'Orsay 75007 Paris, France

+ 33 (0)1 40 62 51 50

[IRteam@airliquide.com](mailto:IRteam@airliquide.com)



## Relying on responsible suppliers

Air Liquide's responsible procurement policy is an integral part of the Group's Sustainable Development approach.

Air Liquide's **responsible procurement policy** makes use of several tools:

- To start with, the **Buyers' Code of Conduct**, translated into 13 languages, sets out the ethical and sustainable development principles that govern the Group's procurement.
- In addition, sustainable development clauses are being gradually included in new Group **framework contracts**. These clauses allow for the possibility of conducting external audits at the suppliers and subcontractors concerned. They also include compulsory reporting elements from the supplier, in particular on safety, energy and water consumption, and social rights.
- Since 2009, Air Liquide's responsible procurement policy has been strengthened by a **supplier evaluation process** through a questionnaire on sustainable development, now accessible to all the Group's buyers who are systematically required to present it to major new suppliers. Certain answers are considered eliminatory such as the absence of a commitment to health and safety, of regular inspections of high-risk tools, of compliance with local legislation on the minimum wage, or of measurement of energy consumption. Air Liquide is developing this supplier evaluation approach with all its subsidiaries, with the **support of a partner specialized in responsible procurement**. The evaluation includes the environment, social issues, the ethics of business and the suppliers' own procurement policy. This supplier evaluation policy was formalized in the Group's BLUEBOOK protocol. Supplier evaluation campaigns are conducted annually by the Group. In 2013, a new campaign was conducted among 130 suppliers. In addition, a global re-evaluation campaign for suppliers identified as at risk was also conducted among around 50 suppliers.
- In 2013, a **Suppliers' Code of Conduct** was rolled-out by the Group's Procurement Department. This code, which can be found on Air Liquide's website, applies to the Group's existing and new suppliers. Air Liquide expects each of its suppliers to respect the Group's ethical principles and ensure that all their employees and subcontractors comply with this Code of Conduct.

The Code of Conduct for Air Liquide suppliers is based on the **following fundamental principles**:

- compliance with international laws and regulations, respect for human rights, social rights, and labor rights in accordance with the International Labor Office, control of certain raw materials <sup>(a)</sup>, and compliance with all legislation applicable to protection of the environment;

- ban on child labor and forced labor;
- health and safety at work;
- non-discrimination and prevention of harassment, regardless of origin, gender, beliefs or disability, in accordance with the Universal Declaration of Human Rights and its ethical principles;
- respect for the environment and preservation of natural resources, with a constant focus on continually improving their products and services to make them more environmentally friendly;
- prevention of conflicts of interest;
- prevention of corruption;
- access to information and checks that the rules set forth in the Code of Conduct are applied for tenders and qualification or performance evaluation procedures for each supplier in any format, such as a questionnaire or an audit by Air Liquide or a third party.

Other tools and initiatives are deployed in the context of the Group's responsible procurement policy. **Risk mapping** on procurement has been carried out and followed up since 2010 to evaluate the risks linked to procurement and their development over the course of time.

**Training** sessions on responsible procurement for the Group's buyers have been offered regularly as in the preceding years.

In addition, in Asia, in partnership with international companies and customers of the Group, Air Liquide organized an **information session** with 10 critical suppliers. Tailored action plans were devised according to these suppliers' level of maturity on social, ethical and environmental risks.

In 2013, **sub-contracting** for the Air Liquide Group came to a total of 1,479 million euros. Activities sub-contracted are mainly those which are too far-removed from the Group's activities or that require specific resources or that are linked to a concentrated workload at particular times. The total amount of Group procurement in 2013 was 8.7 billion euros, a significant part of which is related to energy, natural gas and naphtha procurement.

Since 2008, Air Liquide has published the number of accidents of its subcontractors and temporary workers. In 2013, there were 110 lost-time accidents of this type, including one fatality.

(a) In particular, the supplier must carefully and as far as possible identify the source and track the chain of command for various minerals like tantalum, tin, tungsten and gold involved in the manufacture of products supplied to Air Liquide.

## Creating value for the regions in which the Group operates

Each Air Liquide entity is located in communities for which respect is at the heart of the concerns of the Group's employees. Every employee is aware that each decision, each action commits them vis-à-vis customers and partners but also vis-à-vis those individuals or firms that are affected by the Group's activities. The consideration of these communities' needs is necessary to guarantee the sustainability of the environment where the Group carries out its action.

### RELATIONS WITH PUBLIC AUTHORITIES

Air Liquide has formalized a "Public Affairs" policy governing the Group's interactions with public authorities throughout the world. It deals with reducing risks related to regulatory changes, developing market opportunities and more generally bringing the Group into the public debate.

This policy specifies that Air Liquide works with the public authorities of each country in which it does business, in a transparent manner, following ethical rules and applying political neutrality. All the Group's actions respect the official lobbying regulations in force in the countries in which it is present. Air Liquide is thus registered in the "transparency register" of European institutions and has committed to following the rules enacted by this register's Code of Conduct.

Managers specialized in public affairs have been appointed in the principal countries, comprising a network of around 20 people worldwide, coordinated at Group level by the European and International Affairs Division.

The tasks of these managers are to follow public initiatives that may have an impact on the Group and to interact with the public authorities to defend Air Liquide's interests. These interactions can take place either directly or through the professional associations of which Air Liquide is a member. The Group is active in several federations and associations, for example, the European Roundtable of Industrialists, of which Benoît Potier, Chairman & CEO of Air Liquide, is Vice President. The Group also calls on outside consultants in this area.

Public affairs cover all the Group's activities. The priorities in this area remain unchanged from 2012, and form part of a long-term process:

- energy transition and the environment with the boom in alternative energies (hydrogen energy, biogases, photovoltaic, wind turbines, etc.), and energy efficiency;

- the carbon market with changes in European regulations and the development of regional markets in North America and Asia-Pacific;
- the defense of Air Liquide's shareholding model;
- at European level, the space question notably concerning current discussions on the future European space launcher;
- the defense of intellectual property and the launch of the European patent;
- the competitiveness of companies at worldwide level.

At Corporate level, the Group has dedicated a budget of approximately 3 million euros for 2013 to perform these missions successfully.

### RELATIONS WITH LOCAL COMMUNITIES

Air Liquide's teams are very committed to taking part in the local economic life near the Group's sites. This participation includes hiring employees in the area and developing close relations with training organizations and universities that can prepare people for the Group's core businesses.

In the industrial basins where over 1,000 of the Group's sites are located, the Company also wishes to develop subcontracting and local procurement to make a contribution to local economic life.

For example, Air Liquide Morocco supports a welding school in Casablanca. Its aim is to train young adults from disadvantaged backgrounds in welding techniques. Since the school's creation, about 30 young people have received a qualification certificate enabling them to more easily find a job. Likewise in India, the Cryolor Asia subsidiary has set up training in welding specifically for women from local communities.

In addition, the Group's activities as well as the means implemented to prevent and manage industrial risks are regularly presented to the populations near Air Liquide's sites. In France, the industrial sites participate in CLICs and CLIEs, local committees that provide information and regulatory consultations at the communes' initiative, with the aim of providing transparent information on their activities to representatives of the local populations.

## CORPORATE PHILANTHROPY AND THE AIR LIQUIDE FOUNDATION

## Objectives

## Key Indicator

Number of countries having carried out at least one philanthropic project directly or through the Air Liquide Foundation from 2011 to 2015.

## 2015 objective

Put the expertise of the Group's teams at the service of communities by carrying out at least one philanthropic project per country by 2015.

In this framework, the Group commits to supporting, over the long term, the Air Liquide Foundation so that it can help reach this objective through the projects.

## Achievement of the objective

In 2013, Air Liquide supported projects in seven new countries through its subsidiaries and its Foundation, which brings the total number of countries in which a corporate philanthropy project was carried out since 2011 to 37, compared with 30 countries in 2012.

Social and human commitment is an ongoing concern for Air Liquide. Since its very beginning, the Group has carried out philanthropic actions, especially in the protection of life and the environment.

Whether they are directly carried out by the Group's subsidiaries or initiated by the Air Liquide Foundation, these corporate philanthropy actions represented nearly **2 million euros in 2013**.

## Subsidiaries committed to communities

Throughout the world, Air Liquide's subsidiaries interact with their direct environment, supporting local corporate philanthropy initiatives. As well as financial support, these actions were successfully conducted with the enthusiastic involvement of Group employees.

For example, in 2013 **Air Liquide Brazil supported 10 projects for a total amount of 500,000 euros**. The projects were selected by the subsidiary's Corporate Social Responsibility Committee, which was created in 2010 and is composed of employees from a range of departments. Using the same procedures as the Air Liquide Foundation for its model, each project is sponsored by a Brazilian employee who monitors the actions of the association being supported. Among its projects, Air Liquide Brazil has taken presentations into schools on water management, waste recycling and safety. The employees also support an association which gives soccer lessons to young people as part of its program on raising awareness about nutrition and child obesity.

In **India**, employees are also involved in local communities within the **"Share and Care" campaign initiated by the subsidiary**. Every three months, a collection of clothes, toys and school equipment is organized by local associations. Then, for example, employees visited an association which cares for children with mental disorders and gave them the toys that were collected.

Employees are also involved in helping the elderly: for example, a sale of clothes and household linen was organized and groceries were bought for them with the sum raised. Another initiative saw employees at the subsidiary's headquarters in Delhi giving educational lessons to children in a home managed by Chaya France, an association that is also supported by the Air Liquide Foundation.

Through these initiatives, the employees who participate gain a real sense of pride at belonging to a Group which is involved in projects to aid local development.

## Three missions for the Air Liquide Foundation

Created in 2008, the Air Liquide Foundation shows the Group's commitment to being a responsible enterprise. Its five-year mandate was renewed in 2013, enabling the Foundation to engage in long-term action, a reflection of the Group's approach in everything it undertakes.

It has a worldwide scope and supports projects in the 80 countries where the Group operates. With a budget of nearly three million euros over five years, the Foundation has three missions:

- **environment:** support for scientific research on the preservation of our planet's atmosphere;
- **healthcare:** support for scientific research contributing to improving the respiratory function and gas metabolism in the human body;
- **micro-initiatives on local development:** the Foundation supports proximity actions (education, access to treatment, energy and water, micro-entrepreneurship, disabilities, etc.) in the regions of the world where the Group is present.

## Developing long term relationships with shareholders and other Group stakeholders

Each micro-initiative is followed by an Air Liquide employee who is a volunteer. The Group's employees who wish to, can evaluate and follow a project and get personally involved in the field. Employees are also invited to recommend projects. To date, nearly 200 employees have been involved in the Foundation as project leaders or sponsors.

Headed by Benoît Potier, Chairman & CEO of the Air Liquide Group, and composed of Senior Managers of the Group, a personnel representative and outside experts, the Foundation's Board of Directors meets twice a year to determine corporate philanthropy focuses and to examine scientific research projects. It is assisted in its functions by a Project Selection Committee, which three times a year studies the projects submitted to it. This Committee is composed of seven Group employees and a representative of the Shareholders Communication Committee. The representation of shareholders in this way is a special feature of the Air Liquide Foundation.

Project applications can be submitted via the Foundation's website, in French or English. The website address is [www.fondationairliquide.com](http://www.fondationairliquide.com).



In 2013, the Air Liquide Foundation approved 27 new projects, of which two are scientific research projects connected with the environment, three are scientific research projects in healthcare and 22 are micro-initiatives. In 2013, these projects were located in 15 countries, three of which were new. Since its creation in 2008, the Foundation has supported 153 projects of which **over 130 were micro-initiatives.**

Among the **environmental research projects** approved, the Foundation supports the work of the *Institut de Recherche pour le Développement* (IRD) on the ability of mangroves to fix CO<sub>2</sub>. Their role in the carbon cycle is critical given their formidable capacity to transform CO<sub>2</sub> present in the atmosphere into organic matter, but the carbon footprint of this ecosystem is still little understood. In 2011, the Air Liquide Foundation supported the IRD's research on the La Foa mangrove in New Caledonia, a semi-arid region. The flows and concentrations of CO<sub>2</sub> were analyzed. IRD subsequently decided to extend its research in varied climate regions (tropical in Vietnam and temperate in New Zealand), to establish a more in-depth observatory of mangroves and the Air Liquide Foundation renewed its support to IRD in 2013 to study the Can Gio site in Vietnam.

The Foundation's Board of Directors approved support for several **healthcare research projects**, including a cystic fibrosis project at the *Université Libre de Bruxelles* (ULB). This is a fatal genetic disease that is more common in western countries. As yet there is no remedy and the therapies used are limited to treating the respiratory and infectious symptoms. The research being conducted at ULB, supported by the Air Liquide Foundation, is aimed at exploring a therapeutic approach using a new class of antibodies.

In the framework of its **micro-initiatives support program**, the Foundation favors actions whose goal is the development of local communities over the long term.

In **education and training**, the Foundation supports the fight against illiteracy and school dropouts and works to promote literacy training and socio-professional reintegration for adults. In 2013, the Foundation supported around 10 initiatives in this field for an amount of 64,000 euros. These funds have enabled the renovation and construction of schools and colleges in **Morocco, Burkina Faso and Lebanon**, the development of an educational center in **Colombia**, the creation of reading areas in schools in **Argentina**, the rollout of scientific multimedia libraries in secondary schools in **Madagascar**, and the creation of a professional paramedic practices workshop in **France**.

To complement the action of **Mission Handicap** conducted in France, the Foundation accompanies projects that contribute to the coverage and social autonomy of people with a disability. In 2013, the Air Liquide Foundation provided support to five organizations with grants totaling 31,000 euros. The Foundation has thus enabled the development of a therapeutic farm for young disabled people in **Tunisia**, and fitting out a playground for a center for autistic children in **France**. Other projects concern developing access to care in France for people with a disability as well as support for training to combat illiteracy among the deaf and hard of hearing in **Guadeloupe**.

In **micro-entrepreneurship**, the Foundation assists micro-initiatives that contribute to the development of Air Liquide's local environment. In 2013, this was the case, for example, with a program to support individual entrepreneurial initiatives in Vietnam, such as craft or livestock farming business start-ups.

In the **social** sphere, the Foundation helps people to be reintegrated socially and professionally. In 2013 it supported five organizations for a total of 40,000 euros to modernize a reception center for disadvantaged people in **Argentina**, to increase the capacity of a center for street children in **India**, and in **France** to enable the overhaul of two emergency accommodation barges and develop an organic market garden to promote inclusion.

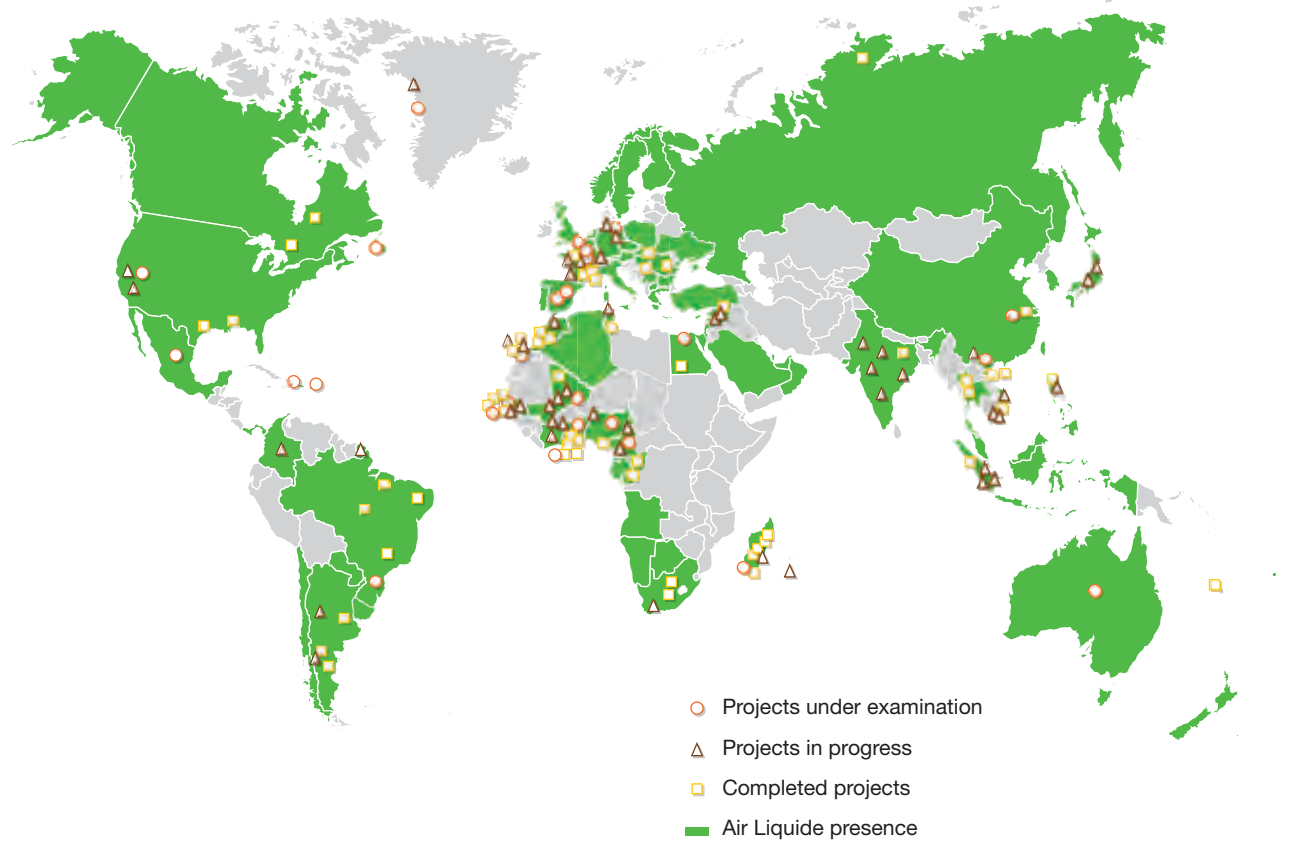
In the sphere of actions conducted to facilitate **access to water and energy** for disadvantaged populations, in 2013 the Foundation supported an experimental alternative energy development project involving biogas. The Air Liquide Foundation contributed 9,000 euros towards the installation of eight bovine waste biodigesters in the north of **Senegal**. In addition to using the gas thus obtained for cooking and lighting in homes, these biodigesters help increase the productivity of craft activities (dyeing homespun fabrics), poultry farming and agriculture (using the digested waste as fertilizer). The biodigesters also help limit pressure on the timber resource. Biogas reduces the work of collecting and carrying wood done by women. It also reduces wood smoke in kitchens, which in turn helps reduce respiratory and eye infections.

Developing long term relationships with shareholders and other Group stakeholders

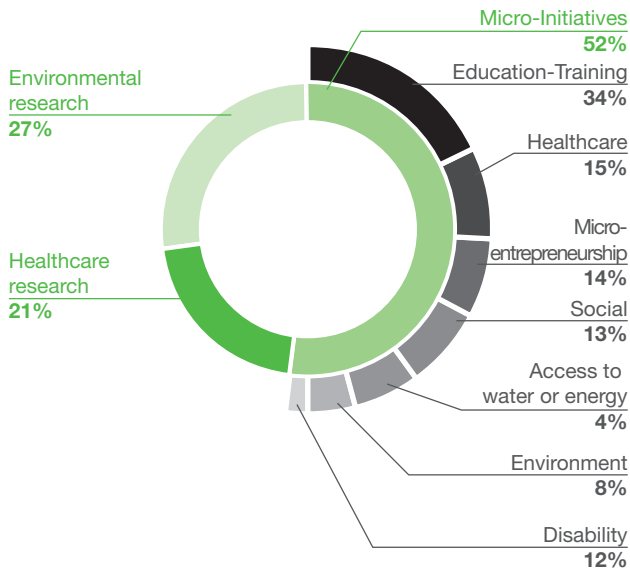
In addition to the environmental research projects on atmospheric protection, the Foundation also supports **micro-initiatives to preserve the environment**. In 2013, the Foundation lent its support to the mission **Greenland Discovery Under the Pole II**

led by the organization Why Expéditions. The Foundation supplied diving gas cylinders to a value of 20,000 euros. The aim of the expedition is to study the Arctic ecosystem over the whole of its annual cycle through 13 scientific research programs.

Air Liquide Foundation projects



The Air Liquide Foundation's actions per mission since its creation in 2008 <sup>(a)</sup>



(a) By amount contributed to the projects supported.

## > DEVELOPING THE SKILLS OF THE GROUP'S EMPLOYEES AND OPTIMIZING OPERATIONS

The Group creates value for its customers and patients thanks to its employees and industrial resources, and support from its partners. To meet challenges both now and in the future, the Group needs employees that are trained, motivated and diverse. It recognizes skills and develops professional career paths. It is guided by the ALMA business plan and requires exemplary behavior from its employees. It complies with competition law and does not tolerate any form of corruption. The Group operates safe, high-performance production facilities and keeps its environmental impact to a minimum. It continuously updates these production facilities, and invests in new projects.

### Safety and the industrial management system

#### SAFETY: THE NUMBER ONE PRIORITY

##### Objectives

##### Key Indicator

Frequency rate of lost-time accidents of the Group's employees <sup>(a)</sup>.

##### 2015 objective

Continue to improve the safety of employees with a goal of reducing each year the frequency rate of lost-time accidents.

##### Achieving the objectives

The frequency rate of lost-time accidents for Group employees was 1.6\* in 2013, an improvement on the 2012 figure of 1.7.

Safety remains a top priority for the Group's management and employees. Continuously and durably improving the health and safety in the workplace of its employees and subcontractors is one of Air Liquide's major challenges, which is expressed by the keyword "zero accident" on each site, in each region, in each entity. Employees are mobilized through active communication on this objective. In addition, safety objectives – like the other responsibility objectives – are part of the variable remuneration of the Group's Senior Managers. In particular, the variable share of the remuneration of the Executive Officers is notably linked to safety objectives.

Prevention, protection, early detection and rapid reaction are at the heart of the Group's concerns. Air Liquide has rolled out its Industrial Management System (IMS) <sup>(b)</sup> since 2005 and it has deeply changed work methods and improved processes involving safety management, reliability, protection of the environment and industrial risk management.

The Group has set up procedures, training sessions and an appropriate follow-up to encourage each employee to work responsibly and in total safety, respecting the laws and regulations in force. A central team of experts leads networks of specialists in

the field to see to the proper implementation of the IMS. Together, they provide local managers in the Group's different entities with technical and methodological support and participate in managing industrial risks.

The frequency rate of lost-time accidents in the Group continues to improve, falling from 1.7 in 2012 to 1.6 in 2013. Excluding acquisition of Home Healthcare subsidiaries in 2012 and 2013, this improvement is even more significant with a frequency rate of 1.5 in 2012 and 1.2 in 2013. The frequency rate for all industrial gas businesses was 0.8 in 2013. These results show the teams' strong ability to make safety a top priority.

The Group's safety guidelines in 2013 focused on understanding and preventing major risks linked to its business lines. For example, Air Liquide launched an awareness-raising program for all employees on technical risks that can have serious consequences. This program increases the importance of safety in everyone's daily life. Each field manager has discussions with his or her team and shares best rules, practices and daily experience related to safety.

(a) Number of lost-time accidents of at least one day per million hours worked, involving Group employees.

(b) More information on the IMS is presented in the Industrial Management System section.

\* Indicator verified by the Statutory Auditors.

## Developing the skills of the Group's employees and optimizing operations

With the support of the Group's Safety Department, an initiative entitled "Life Saving Rules" is being rolled out in many entities. The aim is to increase awareness of safety rules pertaining to the

major risks presented by industrial situations characteristic of the Group's core businesses.

### At the end of 2013, the Yanbu project recorded five million hours without a single lost-time accident

Located in Yanbu in Saudi Arabia, the project involves the construction of two hydrogen production plants with a total capacity of 300,000 m<sup>3</sup>/hour as part of a long-term supply contract between Air Liquide and Yasref, a joint subsidiary of Saudi Aramco and the Chinese company SINOPEC.

This is not only Air Liquide's largest contract for hydrogen supply via pipeline, but also its biggest industrial investment to date.

After a full safety and environmental audit of its refinery by Aramco, the Yanbu project was awarded the "Gold Banner Safety" prize. This remarkable achievement for a project of such magnitude rewards the work done by the safety and environment teams.



### Safety indicators for the Group as a whole

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number of lost-time accidents of at least one day of Group employees <sup>(a)</sup>	135	131	153	147	137	131	153	144	149 <sup>(d)</sup>	151 <sup>(b)</sup>
Accident frequency of Group employees <sup>(c)</sup>	2.3	2.1	2.3	2.1	1.8	1.7	1.9	1.7	1.7 <sup>(d)</sup>	1.6* <sup>(b)</sup>
Accident seriousness rate <sup>(e)</sup>								< 0.1	< 0.1	< 0.1
Number of accidents of subcontractors and temporary workers <sup>(f) (g)</sup>					154	148	155	118	142	110 <sup>(h)</sup>

(a) Fatal accidents since 2009: three in 2013, one in 2012, one in 2011, one in 2010, none in 2009. Among the fatal accidents, one was a road accident in 2013.

(b) Excluding the Home Healthcare acquisitions, the number of lost-time accidents of Group employees is 112, and the frequency rate of accidents of Group employees is 1.2, a major improvement over 2012.

(c) Number of accidents involving lost time, of at least 1 day, per million hours worked by Group employees. Accidents defined as recommended by the International Labor Office.

(d) Excluding acquisition of the subsidiaries LVL Médical and Gasmedi at the end of the year 2012, this rate was 1.5 with 138 accidents.

(e) Average number of days of lost time per thousand hours worked. Accidents defined as recommended by the International Labor Office.

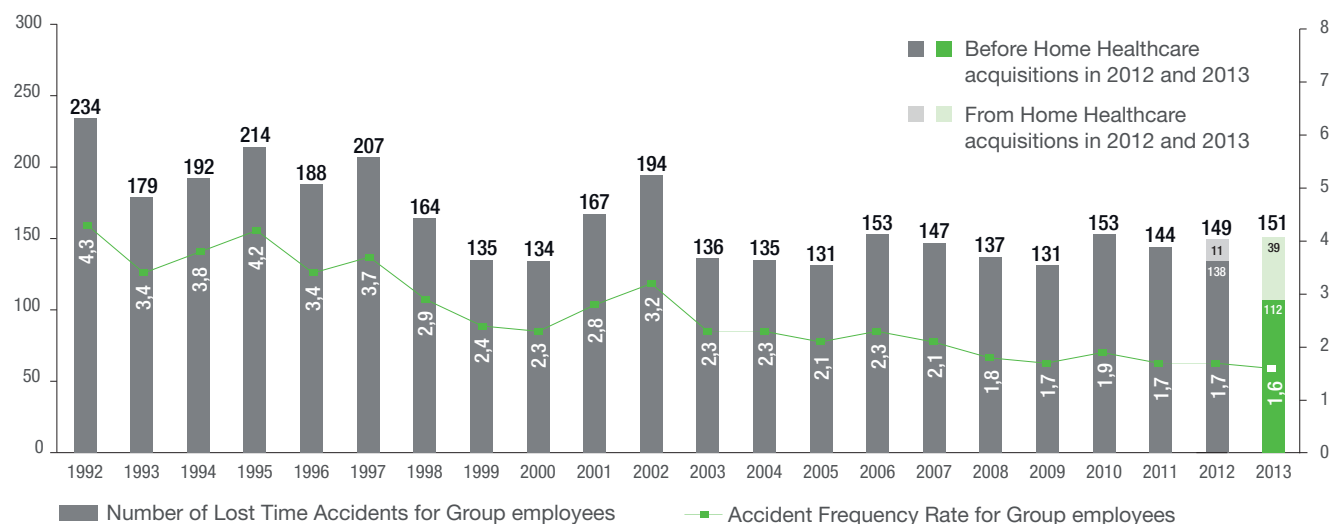
(f) Personnel working in the framework of a contract with Air Liquide or on a Group site, or on a customer site or as a delivery vehicle driver.

(g) Fatal accidents since 2009: one in 2013, three in 2012, four in 2011, four in 2009. Among them, seven are traffic accidents.

(h) Which corresponds, in an illustrative manner, to a **frequency rate of 2.2** on the basis of information available to the Group regarding the hours worked by subcontractors and temporary workers.

\* Indicator verified by the Statutory Auditors.

Number of lost-time accidents and accident frequency since 1992



INDUSTRIAL MANAGEMENT SYSTEM AND CERTIFICATIONS

One decade ago, the Group introduced an Industrial Management System (IMS) specific to its businesses. It is designed to strengthen the process for managing safety, reliability, environmental protection and industrial risk management. **It has been gradually rolled out throughout the Group.** An indicator makes it possible to track the percentage of revenue covered by the Group's IMS internal audits over the last five years. **Between 2009 and 2013, 99 entities were audited, representing 93% of the Group's business** in terms of revenue. In five years, almost the entire Group was audited for the implementation of its Industrial Management System (IMS).

The Group considers that the IMS that it specifically created is the best adapted to its businesses. Alongside this approach and to meet the requests of certain customers, the Group carries out other initiatives such as the ISO certifications.

For example, the **ISO 9001** quality certifications cover about **72%** of the Group's revenue. Likewise, the **ISO 14001** certifications, an international benchmark in environmental management, **cover 27% of the Group's revenue.**

A few years ago, the Group undertook a certification approach concerning healthcare and safety in the workplace called "**OHSAS 18001** certification", which now covers **15%** of the Group's revenue.

**Environmental incidents, like accidents involving personnel safety,** are reported by Air Liquide subsidiaries worldwide. They are analyzed in depth depending on their nature so that prevention measures can be strengthened.

The worldwide "Responsible Care" Charter is an initiative of the International Council of Chemical Associations. It formalizes the commitment of the signatories to improve the global performances of the chemical industry in health, safety and protection of the environment. Air Liquide signed it in 2010 at Group level, confirming many principles that the Company already very largely follows.

	Scope	2009	2010	2011	2012	2013
Estimate of the revenue of Group entities covered by an ISO 9001 quality certification	World	74%	71%	76%	76%	72% (a)
Estimate of revenue of Group entities covered by an ISO 14001 environmental certification	World	25%	25%	27%	29%	27% (a)
Estimate of revenue of Group entities covered by an OHSAS 18001 occupational Health and Safety management system	World	14%	12%	15%	18%	15% (a)

(a) The drop in these percentages in 2013 were due partly to the impact of selling the subsidiary Anios.



## Employees development

The Group includes 50,250 men and women in 80 countries who form multicultural teams with a host of skills. Air Liquide is involved in promoting diversity, facilitating and accelerating knowledge transfer, motivating and involving its employees and encouraging a social and human commitment.

### “OUR TALENTS” INDEX

#### Objectives

##### Key Indicator

The “Our Talents” Index Key Indicator measures the progress of the development, diversity and commitment of the Group's employees.

##### 2015 objective

Ensure employee development, diversity and commitment by raising the “Our Talents” Index from 100 in 2010 to 115 in 2015.

##### Achieving the objectives

From base 100 in 2010, the value of the “Our Talents” Index Key Indicator was 107 in 2013, compared to 100 in 2012.

Since 2012, Air Liquide has published annually a Key Indicator called “Our Talents” reflecting the results of the Group's efforts regarding the **development, diversity and commitment of its employees**. The objective is to encourage the organization to set up **progress actions** in these areas. It is calculated by integrating the indicators presented in this section, weighted as follows: one third for development, one third for diversity and one third for employee commitment.

<b>Employee development</b>	■ Percentage of employees who benefited from at least one training session during the year
	■ Percentage of employees who had an annual evaluation interview with their immediate supervisor during the year
<b>Employee diversity</b>	■ Percentage of women among managers and professionals hired during the year
	■ Number of nationalities among senior managers/Number of countries where the Group is present
<b>Employee commitment</b>	■ Percentage of employees belonging to an entity where an internal satisfaction survey was conducted over the last three years
	■ Percentage of employees holding Air Liquide shares
	■ Loyalty rate of managers and professionals

The value of the “Our Talents” index in 2013 was **107**. It is calculated based on a baseline of 100 in 2010. Air Liquide's objective is to reach 115 in 2015.

	2010	2011	2012	2013	2015 objective
“Our Talents” Index	100	102	100	107	115

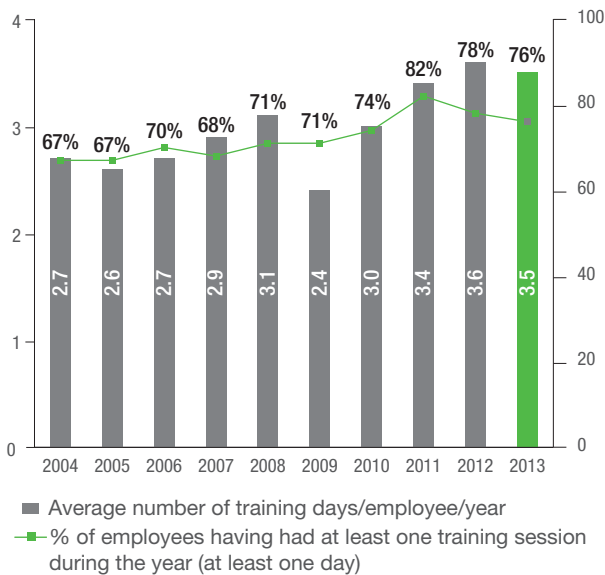
The value of the “Our Talents” index **increased substantially in 2013, from 100 in 2012 to 107 in 2013**. This increase is largely due to the major increase in the percentage of women recruited as managers and professionals and to greater employee shareholding throughout the Group. Other criteria, which are already at a high performance level, remained relatively stable.

## DEVELOPMENT

### Training

Air Liquide takes particular care to **develop the competencies and expertise of its employees**. Training is an integral part of this development. It allows employees to **work safely and improve their performance, contribution and employability**. In 2013, 75% of the Group's employees had at least one training session during the year. The average number of training days per employee, per year was 3.5 days in 2013. This represents more than 1,306,000 training hours in 2013.

### Average number of training sessions per employee, per year/percentage of employees having had at least one training session during the year



The Group has invested in better professional qualifications and training programs for young people to facilitate their integration into the business world. As a result, more than 517 young people have benefited from work-study contracts in France, combining theoretical learning in their university or school and a practical internship at Air Liquide.

Through its **Corporate University**, created in 2009, Air Liquide has developed its training programs to meet the needs of employees while including the Group's values. Based on a decentralized model that permits a very large number of employees to be trained with modern pedagogic techniques like e-learning, it has a **dual objective**:

- formalizing and rolling out the training processes, as well as disseminating good practices that go hand-in-hand with the Group's training dynamic;

- offering about 20 specific programs, ranging from integrating new employees to developing leadership abilities, as well as "professional" training programs given by the different business lines. The Group's values, principles of action and key challenges are systematically included in the different modules. Different programs continued to be rolled out to Group employees in 2013.

The **e-learning platform** provides employees with support for their training. The Air Liquide University now offers Group employees nearly **400 interactive e-learning training modules**. The content of the online training offer is enriched every year and covers many themes such as **safety, ethics** and office automation. Online language courses are also being offered. In addition, the "**Travel in Safety**" module was produced by the Group Safety Department and Air Liquide University to help with organizing employees' business and leisure trips. The **integration module "Discover"** presents new arrivals with the Group's history and key figures, and information on safety, the principles of action and the Group's core businesses. It is available in eight languages. Over **5,000 people have been trained** through this module since its launch in the different countries where Air Liquide operates. In total, the e-learning modules have already been used by more than **14,000 employees in 92 countries and 121 Group entities**.

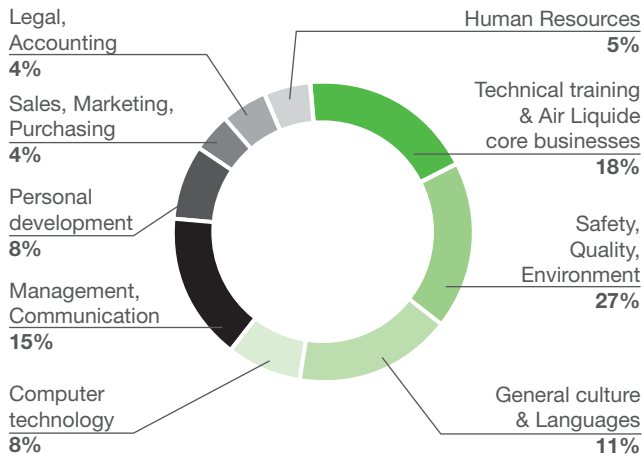
The rollout of the **ethics training** programs continued in 2013, covering the Group's different geographic regions, Asia, Europe, Africa and the Middle East, and South America. These programs are designed primarily for sales, procurement and legal teams and the Executive Committees and senior managers in Group entities. They have also been boosted by new e-learning **modules on employee Codes of Conduct and the Group's Anti-corruption Code**, as well as a module entitled "International practices and principles relating to competition". These modules include an introduction video presented by each regional or entity Director, the interactive training program, and a conclusion video presented by the Group Ethics Representative. Since their production at the end of 2012, more than **7,500 employees** have followed these ethics modules in **88 countries**, and in the future all employees must follow the employee Codes of Conduct module, with a systematic reminder every year.

**In total the Air Liquide University has trained close to 15,000 employees since its creation in 2009.**

## Developing the skills of the Group's employees and optimizing operations

Training topics <sup>(a)</sup>

The nine training topics offered to employees are as follows:

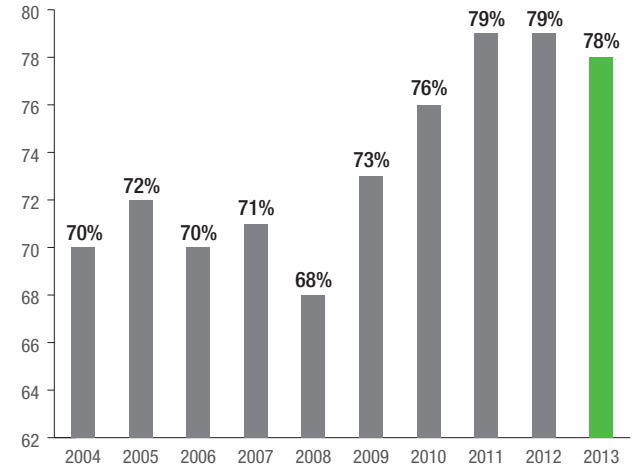


## Employee performance reviews

It is thanks to the commitment and contribution of its employees that Air Liquide can give more value to its customers and shareholders. Employee performance is monitored and measured during interviews that each employee has every year with his or her immediate supervisor but also during career development interviews that permit each employee to talk about more long-term prospects with the local Human Resources Department. The Group's Human Resources Division particularly encourages these meetings as they are one of the cornerstones of the Company's Human Resources policy.

In 2013, 78% of the employees had a performance evaluation interview with their immediate supervisor. In addition, 14% of the employees had a career interview with their entity's Human Resources Department.

## Percentage of employees having had an annual interview with their immediate superior



## Expertise recognition

Air Liquide files about 300 patents a year. Certain patented innovations significantly contribute to the Group's development. The Inventors Recognition Program rewards inventors who are responsible for successfully marketing patents. The recognition of technical expertise in the Group is also shown through the Technical Community Leaders (TCL) program, which has designated more than 2,300 experts since it was launched in 2003. In 2013, the TCL appointed more than 80 new international experts. The technical expertise and entrepreneurial spirit of Air Liquide's employees are key factors in the Group's innovation and growth.

## Mobility

Mobility corresponds to an employee's ability and commitment to change job or location, either within the same country or abroad, to meet the Company's needs and develop on a personal level.

The Group actively encourages geographical and professional mobility of its employees in all of its host countries. In fact, complete changes in job are encouraged by the Group's Human Resources department.

(a) Training breakdown for France, estimated in number of days.

## DIVERSITY

### Diversity/Equality

Air Liquide is strongly committed to **combating any form of discrimination**. Diversity is a priority of Air Liquide's Human Resources policy. The Group considers it is a source of dynamism, creativity and performance and has always desired to broaden hiring and attract the best talent. The markets in which Air Liquide is working are diverse and complex. Diversity among employees should particularly reflect the geographical diversity of its customers.

The Group's objectives are to continue to increase this diversity among its employees by notably seeking a better division of responsibilities between men and women while promoting the many cultures represented at Air Liquide.

The five poles of the Group's Human Resources policy concerning diversity are:

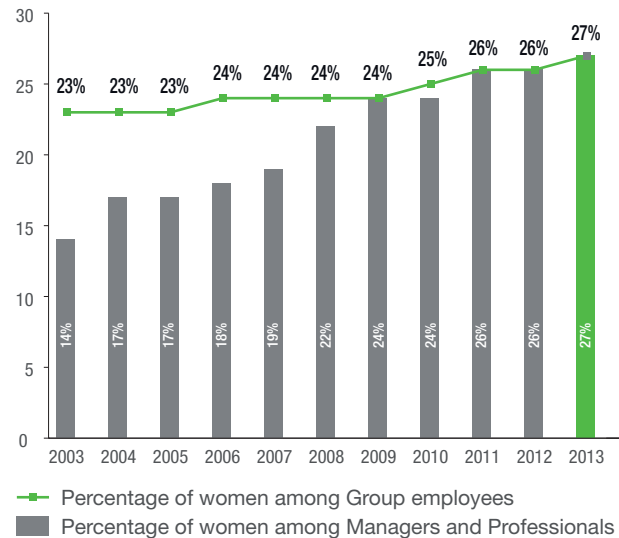
- nationality;
- gender;
- educational background;
- age;
- disability.

The international character of the Group's Senior Managers – 28 different nationalities represented in 2013—is a considerable asset from this viewpoint and continues to be a strong area of growth.

A team in the Corporate Human Resources Department is in charge of steering the diversity projects.

Equality between men and women is an essential point in the expression of this diversity. For several years, Air Liquide has had a global action plan. For example, between 2003 and 2013, the percentage of women who were hired for manager and professional positions rose from 14% to 27%. This latter percentage for women managers and professionals in the Group corresponds to the global percentage of women in the Group (27%) and illustrates the good representation of women in Air Liquide's management. In addition, women now represent 40% of employees considered high potential. 15 Executive Management positions in the subsidiaries or management of a P&L are held by women. Moreover, three women are now members of the Group's Board of Directors.

### Percentage of women among managers and professionals



These results are the fruit of a concrete, and global Human Resources strategy based on the following four priorities:

#### 1. Recruiting:

Strengthening the place of women in the Group, in particular through hiring managers and professionals.

#### 2. Developing careers and increasing responsibilities for women in the Company:

- for every management position that becomes available, Human Resources examines the application of at least one woman among the applicants;
- regular Human Resources reviews dedicated to women with high potential are conducted by the Group's Executive Committee;
- a meeting before and after maternity leave has been organized in a certain number of entities in France.

#### 3. Communicating with and involving all the managers:

In the framework of Air Liquide's policy on promoting equality, the hiring and career development of women and strengthening their place and responsibilities in the Company, a program on awareness-raising and exchanges on the benefits that equality brings has been organized in the Group since 2007, aimed at managers. More than 700 managers in the Group have followed this program, in Europe and Asia. A communication support kit, containing a video message from the Group's Chairman and CEO, was deployed by the Human Resources teams for the different Air Liquide units to implement these actions locally with their teams.

## Developing the skills of the Group's employees and optimizing operations

In addition to these many local initiatives, each year Air Liquide joins forces with **International Women's Day, celebrated on March 8**. This is also when Air Liquide takes part in the annual InterElles seminar. Created in 2001, **Cercle InterElles brings together the networks of 11 companies**: Air Liquide, AREVA, Assystem, CEA, EDF, France Télécom-Orange, GE Healthcare, IBM France, Lenovo, Nexter and Schlumberger. These technology companies, which are focused on promoting gender equality and equal opportunities, have identified issues that affect all of them. The **Cercle InterElles** network has stood out in recent years as a pioneer in the battle against stereotyping and as a supporter of gender equality in companies and of equal opportunities.

#### 4. Better balancing of professional and private life:

The **CESU** (Universal Service Employment Check), whose aim inter alia is to facilitate childcare in the home, has been implemented for certain entities in France since 2007 for men and women in the Group who have young children.

Other information on the actions Air Liquide has undertaken on balancing professional and private life can be consulted in the **"Well-being"** paragraph presented in this section.

The **Diversity Charter** that Air Liquide signed in France is available online and is an illustration of the Group's commitment to diversity. In addition, in 2013, Air Liquide co-organized a discussion and experience-sharing seminar on the subjects of equality and promoting diversity as a performance lever with the company Shell, a long-standing international customer.

### Disability

For Air Liquide, diversity and equal opportunity also mean **better integration of employees with disabilities into its teams, but also through subcontracting** to firms in the protected sector <sup>(a)</sup>, particularly in France.

In 2013, employees with disabilities represented 1.4% of the Group's employees worldwide.

In France, the general Human Resources policy on disability took concrete form through the **signing of a third agreement during the period 2013-2015** with social partners in addition to local hiring initiatives.

At the end of 2013, the percentage of workers with disabilities for all the French subsidiaries was 4.6%. Through these Company agreements, Air Liquide holds **objectives in recruitment, integration into the Company, training, continued employment, awareness-raising and subcontracting** from the protected sector.

To carry out these operations favoring people with disabilities in the field, Air Liquide's Mission Handicap calls on **employees who are "disability advisors"** divided among the main French subsidiaries. They are supported by **multidisciplinary working groups** that meet several times a year to work on different subjects connected to disabilities.

The initiatives implemented in 2013 comprised the continued **partnerships with companies specialized in hiring people with disabilities** to further integrate them into the Group, and the **continued employment of the hearing impaired** by making a platform available to them that enables them to communicate by telephone and take part in work meetings. Furthermore, a special recruitment campaign dedicated to people with disabilities and aimed at work-study contracts was undertaken.

In November 2013, as every year, Mission Handicap renewed its "Disability Month" initiative during national week for the employment of people with disabilities. For this event, Air Liquide mobilized all its employees through **awareness-raising actions** to develop a better knowledge of disabilities and to look at differences in another way including: learning sign language and hearing the personal accounts of people with disabilities.

### ENGAGEMENT/LOYALTY

#### Participation of employees in the capital of L'Air Liquide S.A.

The Group wants to have its employees worldwide more broadly participate in the capital of L'Air Liquide S.A. So, since 1986, 12 capital increase operations have been especially reserved for the Group's employees so that they can take advantage of preferential conditions.

At the end of 2013, the share of capital held by the Group's current and former employees was estimated at 2.4%, of which 1.6% (within the meaning of article L. 225-102 of the French Commercial Code) corresponds to shares subscribed by employees during employee reserved capital increase operations or held through mutual funds.

In 2013, an operation to subscribe to the capital increase reserved for employees was an opportunity for Air Liquide employees to strengthen their ties with the Group and participate in its development. This operation was a major part of Air Liquide's strategy to increase the involvement of Group employees in the Company's future. In 2013, 73 countries had the chance to participate. A total of 16,812 Air Liquide employees, representing 33.9% of those eligible, chose to become shareholders or to increase their shareholding. The demand for shares exceeded the offering; the operation was oversubscribed by more than 12%.

(a) Sector of economic activity giving priority to employing workers with disabilities.

## Remuneration

Employee remuneration is based on local market conditions, internal equity, and on employees' performance in respect of applicable legislation. It is generally made up of a basic salary plus additional remuneration elements.

The **variable portion** of remuneration is devised locally for certain categories of employees to reward performance. In general it depends on parameters such as the **Group's earnings, the entity's earnings and individual performance**, which is measured in quantitative and qualitative terms. By rewarding collective and individual performance, Air Liquide encourages everyone to collaborate and contribute to overall earnings. In 2013, 56% of employees received an individual variable portion as part of their remuneration. Most of the managers and professionals have a **variable remuneration**, which includes sustainable development objectives. In particular, 15% of managers' variable remuneration is linked to sustainable development criteria, such as safety, customer satisfaction, energy efficiency and equality.

In addition, remuneration can also include benefits such as disability-incapacity-death insurance and medical expenses. In 2013, 97% of employees benefited from some sort of **social security coverage** through the Group.

## HEALTH IN THE WORKPLACE

Air Liquide is particularly concerned with ensuring that its employees' working conditions do not present any health risks. This is notably demonstrated through **preventive actions on the ergonomics of workstations** and the implementation of **specific safety rules** in the Group's Industrial Management System (IMS). For example, thanks to an initiative targeted at the handling and carrying of heavy loads instituted in France on a CO<sub>2</sub> filling site, the risk of musculoskeletal disorders (MSD) was reduced on the workstations concerned. Air Liquide regularly organizes **awareness-raising campaigns and training worldwide on safety, health and risk management** especially in the working environment. A campaign to raise the awareness of all staff about the importance of a correct working position to prevent MSD at the office was conducted in 2013 with the support of an in-house communication tool dedicated to issues of health and safety.

In Indonesia, an educational campaign regarding noise-related risk reinforced instructions on wearing hearing protection. In France, a diagnosis on difficult working conditions for employees (physical constraints, environment and work rhythm) established that a very small number of the Group's employees work in harsh conditions. In entities where this diagnosis was carried out, the results were systematically presented to the Hygiene, Safety and Working Conditions Committee (CHSCT) and action plans were organized where necessary.

General information on health is regularly distributed. For example, in France, an information article on "nutrition and cancer" was made available on the Group's Intranet for its employees. With regard to healthy lifestyles that lead to improved health and safety in the workplace, a training program was implemented in 2013 for 4,000 drivers who are Group subcontractors. In Mexico, an anti-obesity campaign was organized in 2013 in conjunction with a foot race to educate employees about the benefits of a healthy diet. In Paraguay, anti-mosquito kits were distributed as part of a campaign to prevent dengue fever. In South Africa, local subsidiaries are continuing their awareness operations on AIDS prevention, as in Botswana.

In addition, Schülke, the subsidiary specializing in hygiene and disinfection, makes its products available to other Group entities.

As part of a campaign in France to **prevent psychosocial stress**, Air Liquide worked with the French Occupational Health Department to implement a **listening, support and counseling service** for anyone who needs it.

This initiative meets a number of objectives:

- it provides all employees with time to talk and listen, enabling everyone to speak freely with an independent consultant, if they so wish;
- it serves as a basis for manager/employee relationships;
- as necessary, it provides advice related to issues an employee may have regarding wellbeing in the workplace.

Meetings are held with a psychologist from a specialist outside firm. Air Liquide wants the system to offer employees time and space to talk about their issues in strict confidence and enable all those who so wish to maintain or regain their **wellbeing in the workplace**.

The initiative is just one of the tools used by Air Liquide's Human Resources Department to prevent occupational stress, tools that underscore its willingness to listen and take action in this regard.

## WELLBEING

In order to strengthen occupational wellbeing within Air Liquide, various initiatives were implemented in France to **promote the personal/professional life balance** of its employees, whatever their age or position. In addition, three agreements with human services providers were undertaken in 2013:

- **an e-portal allowing employees to access practical, administrative and legal information from home or the office** to facilitate daily life. It can be used by the employee and his or her family via a personal access code. Over 70% of the Group's employees in France now have access to this portal;

## Developing the skills of the Group's employees and optimizing operations

- a telephone service enables employees to call, from their office or home, specialists (for example, doctors, legal specialists, social workers, guidance counselors, etc.) who answer their questions with complete confidentiality on areas as varied as the family, housing, well-being and healthcare, unforeseen events, budget management, taxation and retirement. Air Liquide is a forerunner in this area as the Group is currently one of the only ones in France to offer its employees such a large range of services;
- nursery places in inter-company *crèches* were offered to employees of subsidiaries covered by this partnership. At the end of 2013, 44 places had already been financed by Air Liquide for its employees.

### ABSENTEEISM

After having reported on its employees' absentee rate in France in 2012, the absenteeism rate reported by Air Liquide in 2013 covers Europe. This will be expanded to the rest of the world over the next few years. The Group's absentee rate was established by counting the total number of days absent due to illness, and to commuting and work accidents, whatever their duration and cause, compared to the number of days worked per year <sup>(a)</sup>. In 2013, the absentee rate of the Air Liquide Group in Europe was 3.6%.

### ORGANIZATION OF LEGAL WORKING HOURS

In France, the general framework of work time organization was defined by all the agreements signed in 2000 and 2001 with the unions. Very few activities operate with shift work. These concern fewer than 10 plants in France, mainly in the Large Industries Business Line. On the other hand, most of the industrial activities, such as those in Healthcare, include on-call systems that are regularly discussed with the unions.

With regard to telecommuting, a pilot program negotiated and signed as a one year fixed-term agreement was set up in France several months ago at ALFI (Air Liquide France Industrie) and ALSF (Air Liquide Santé France) to meet the needs of employees as expressed during a prior survey on work-life balance. Following a dialogue phase with various stakeholders, more than **100 employees and managers** to date have chosen to work from home on the basis that it is a voluntary arrangement, involves trust and that employees retain the option to return to the workplace.

Under the supervision of the individual entities' Human Resources departments, a series of educational and training measures were conducted among employees, managers and unions to support the shift to telecommuting. Assistance was provided by a

leading consulting firm that specializes in advice and training in this area. This resulted in many additional ideas and demonstrated the benefits as well as the limitations of this method of working. Telecommuting is implemented as a tool to **improve performance and work-life balance, and provide organizational flexibility**. It is part of the development of new ways of working and managerial practices, and also helps reduce the Group's carbon footprint by cutting down on work-related travel.

### SOCIAL DIALOGUE

Air Liquide is particularly attentive to encouraging social dialogue, and today 76% of Air Liquide's employees have access to a representation, dialogue or consultation structure.

The European Works Council has 28 employee representatives from 15 countries <sup>(b)</sup>. The composition of the Council evolves with the Group's acquisitions, the expansion of the European Union and according to the rules established by the Council's constitutional agreement. The Council met twice in 2013 chaired by a member of the Executive Committee. The main themes dealt with during this discussion and consultation are safety, the news on the Group's activities, the annual financial statements, strategy and its implementation in the different countries of Air Liquide's operations.

In 2013 in France, 65 agreements were signed in total with the unions in extremely varied areas, including profit sharing and incentives for employees in the company's performance, planned management of jobs and skills (GPEC), professional equality, disability, the youth-employment contract, and flexible working.

12 collective agreements were also signed in a number of European countries. In Germany, local subsidiaries are members of the chemical sector employers association (BAVC) <sup>(c)</sup>. Negotiations are carried out directly between this association and the German unions. Several agreements were signed in 2013 in this country. They cover greater job flexibility and wider social coverage. In Austria, one of the agreements in 2013 concerned the variable portion of employee remuneration. In addition, in Spain, the collective agreement for the whole of the subsidiary was renegotiated for three years.

This set of collective agreements will gradually be extended to the entire Group.

(a) 365 days minus weekends, public holidays and statutory holidays.

(b) Austria, Belgium, Denmark, France, Germany, Great Britain, Greece, Italy, the Netherlands, Poland, Portugal, Romania, Slovakia, Spain and Sweden.

(c) Bundesarbeitsgeberverband Chemie: Federal Association of Chemical Industry Employers.

Human resources indicators concerning the Group as a whole

Employees <sup>(a)</sup>	2009	2010	2011	2012	2013
Group employees	42,300	43,600	46,200	49,500	50,250*
■ Women	10,300	11,100	12,100	12,800	13,500
As a %	24%	25%	26%	26%	27%
■ Men	32,000	32,500	34,100	36,700	36,750
As a %	76%	75%	74%	74%	73%
Joining the Group <sup>(b)</sup>	10.5%	15.1%	20.4%	19.9%	14.9%
Leaving the Group <sup>(c)</sup>	12.2%	11.9%	14.3%	12.7%	13.1%
% of employees having resigned during the year <sup>(d)</sup>	3.2%	4.0%	5.3%	4.6%	4.9%

(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 December 31 of the preceding year.

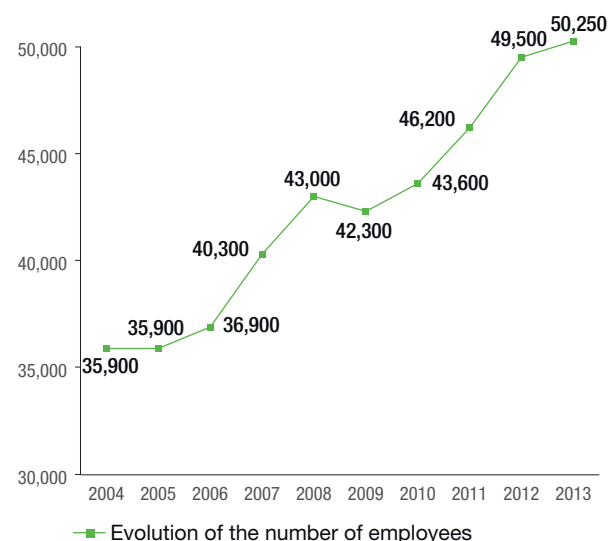
(c) Retirement, resignations, layoffs, departures due to disposals, etc. The percentage is calculated based on the number of employees as of December 31 of the preceding year.

(d) Since 2009, calculated on the number of employees as of December 31 of the preceding year.

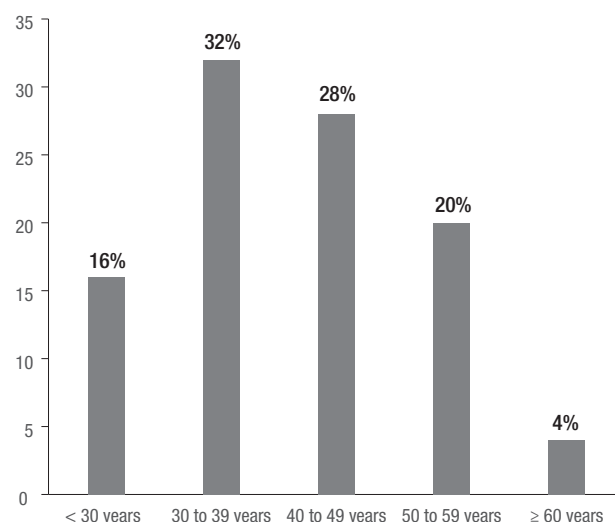
\* Indicator verified by the Statutory Auditors.

The indicators presented above are calculated on a worldwide scale. The percentages of those entering and leaving the Group include hires and layoffs.

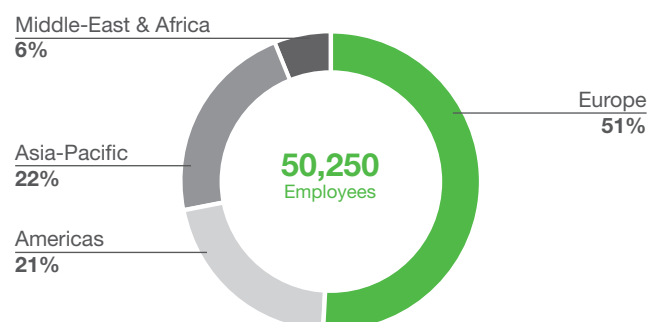
Number of employees



Distribution of employees by age bracket in 2013



2013 employees by zone





## Developing the skills of the Group's employees and optimizing operations

	2009	2010	2011	2012	2013
<b>Parity and diversity</b>					
<b>Equality</b>					
% of women among managers and professionals	24%	24%	26%	26%	27%*
% of women among managers and professionals hired during the year	29%	29%	29%	28%	36%*
% of women among employees considered high potential	36%	40%	39%	41%	40%
<b>Number of nationalities</b>					
Among expatriates	46	53	48	44	45
Among Senior Managers	25	27	28	29	28
Among employees considered high potential	47	46	46	44	46
Number of nationalities among Senior Managers/Number of countries where the Group is present			35%	36%	35%
<b>Training</b>					
% of total payroll allocated to training	Approx. 2%	Approx. 2%	Approx. 2%	Approx. 2%	Approx. 2%
Average number of days of training per employee and per year	2.4 days	3.0 days	3.4 days	3.6 days	3.5 days* (a)
% of employees who attended a training program at least once during the year	71%	74%	82%	78%	75%*
<b>Performance review</b>					
% of employees who have had a performance review meeting with their direct supervisor during the year (b)	73%	76%	79%	79%	78%*
% of employees who have had a career development meeting with the HR Department during the year (b)	14%	15%	18%	17%	14%
<b>Remuneration</b>					
% of employees with an individual variable share as part of their remuneration	50%	51%	53%	54%	56%
<b>Absenteeism</b>					
Absentee rate of Air Liquide employees				3.2% (c)	3.6% (d)
<b>Ethics</b>					
% of employees belonging to an entity with a local Code of Conduct	67%	71%	90%	91%	94%
<b>Employee loyalty</b>					
Average seniority in the Group	11 years	10 years	10 years	10 years	10 years
Retention rate of managers and professionals over a year			94.5%	95.4%	94.8%
<b>Social performance</b>					
% of disabled employees (e)	1.2%	1.2%	1.3%	1.3%	1.4%
% of employees having access to a representation/dialogue/consultation structure	82%	79%	77%	76%	76%
% of employees belonging to a unit at which an internal satisfaction survey was conducted within the last three years (f)	37%	43%	48%	55%	52%
% of employees with benefits coverage through the Group (g)	97%	98%	98%	98%	97%
<b>Employee shareholders</b>					
% of capital held by Group employees (h)	1.4%	1.6%	1.6%	1.5%	1.6%
% of Group employees that are shareholders of L'Air Liquide S.A.	More than 60%	More than 60%	More than 50%	Almost 50%	More than 55%

(a) 26 hours a year according to counting in hours (base: 1 day = 7.5 hr.).

(b) Since 2010, calculated on the basis of employees with "long-term contracts."

(c) Calculated for France.

(d) Calculated for Europe.

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

(f) Indicator for entities of over 300 employees until 2011. All entities from 2012.

(g) Primarily retirement benefits.

(h) Within the meaning of article L. 225-102 of the French Code of Commerce.

\* Indicator verified by the Statutory Auditors.

## Company ethics

The Group endeavors to take into account the interests of its different stakeholders through its decision-making processes as well as in carrying out each of its actions. This approach, inspired by the Group's Executive Management, guides the action of each entity and employee to ensure the Company's responsible growth.

### PRINCIPLES OF ACTION

Air Liquide formalized the Principles of Action guiding the Group's strategy and development in a document that explains its approach to all its stakeholders. Available in 16 languages, this document was distributed to all the Group's entities and can be viewed at [www.airliquide.com](http://www.airliquide.com) under Company/Ethics, in French and English.

### SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

#### Social and Environmental Responsibility Policy

In addition to the principles of action, the Group's policies were completed and compiled into a global protocol called the BLUEBOOK. This protocol is accessible to all the Group's employees and concerns the internal information systems that they usually use. These policies are in the form of Procedures, Codes and Reference Guides.

In the BLUEBOOK, the Social and Environmental Responsibility Policy defines the commitments made by the Group in the framework of its activities to promote the respect for and safety of men and women, the protection of the environment, ethics and participation in the economic and social development of the regions in which it operates.

This Social and Environmental Responsibility Policy has implemented a consistent Sustainable Development approach at every level of the Company and defines the guidance on this subject for the subsidiaries and departments. It is available at [www.airliquide.com](http://www.airliquide.com) under Company/Ethics, in French and English.

#### Commitment to Human Rights

Air Liquide recognizes the importance of protecting human rights in all countries in which the Group operates, and has a responsible procurement policy for conducting business with suppliers.

The Group's Corporate Social and Environmental Responsibility policy is very much inspired by compliance with the 10 principles of the United Nations Global Compact, the Universal Declaration of Human Rights, and international labor law.

This policy stipulates, for example, that Air Liquide shall respect human rights and the dignity of its employees, subcontractors, temporary workers and suppliers. In this framework, the Group's entities notably exclude any form of discrimination, harassment, the use of forced labor or child labor and any undermining of the freedom of association. Air Liquide's policy aims at respecting labor law in all the countries in which it operates, and is therefore considering taking into account the fundamental conventions of the International Labor Organization (ILO) on this subject.

### EMPLOYEE CODES OF CONDUCT

The Group's subsidiaries must implement a local Code of Conduct. This decentralized approach combines respect for local customs and regulations and Air Liquide's ethical commitment. It also helps the subsidiaries to embrace the Group's ethical principles by writing their own Codes of Conduct themselves in their working language. As a result, in 2013, 94% of the Group's employees belonged to subsidiaries that have a local Code of Conduct. The 6% of employees who do not yet have a local Code of Conduct primarily correspond to entities recently acquired by the Group and undergoing consolidation. Today, these Codes of Conduct are available in 23 languages.

These Codes of Conduct must adhere to 10 basic principles set out in the BLUEBOOK (the Group's Corporate Social and Environmental Responsibility policy):

- respect for laws and regulations;
- respect for people: health and safety conditions in the workplace, prevention of discriminatory actions, respect for third parties;
- respect for the environment;
- respect for competition law;
- respect for rules on insider trading;
- prevention of conflicts of interest: links to a competitor, customer or supplier, respect for rules on corruption;
- protection of Air Liquide's activities: protection of information, property and resources;
- transparency and integrity of information;
- internal controls and audits;
- implementation of Codes of Conduct.

These 10 fundamental principles are detailed on the Group's website, [www.airliquide.com](http://www.airliquide.com), under Company/Ethics, in French and English.

### Developing the skills of the Group's employees and optimizing operations

These Codes of Conduct demonstrate the Group's commitment to respect the regulations concerning its economic activity but also ethical principles such as social rights and the fight against discrimination and harassment.

An e-learning program on employee Codes of Conduct was launched at Group level.

In addition, since 2007, a Group Ethics Officer has been responsible for providing advice and assistance to the entities in applying their Code of Conduct. He also handles all the questions submitted by employees on implementing these Codes of Conduct.

#### RESPECT FOR COMPETITION LAW

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Instructions and codes at the Group level were established as to proper behavior concerning respect for competition law, especially in Europe and the United States. The most important rules on competition law are also included in the employees' local Codes of Conduct. For some of the Group's activities, Healthcare in particular, specific Code of Conduct have been developed on competition law as well.

Audits are jointly conducted on a regular basis by the Group's internal audit departments and an external attorney. They carry out tests and interviews to identify and correct practices at risk in this area or deviations observed.

Finally, awareness-raising meetings on compliance with competition law are regularly held throughout the Group.

Furthermore, an e-learning program was launched at Group level on competition-related practices and international principles.

#### FIGHT AGAINST CORRUPTION

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In 2009, the Group formalized an **anti-corruption Code of Conduct** that met international standards. This code has been made available to all entities and an extract is available at [www.airliquide.com](http://www.airliquide.com) under Company/Ethics, in French and English.

This anti-corruption Code of Conduct, which is linked to the Corporate Social and Environmental Responsibility policy included in the BLUEBOOK, provides a reminder of the laws on the fight against corruption and deals with relations with intermediaries, particular cases such as mergers, acquisitions and partnerships, types of payments requiring particular attention, as well as administrative and accounting traceability requirements.

To strengthen the rollout of this anti-corruption Code of Conduct throughout the Group, Air Liquide launched a **training program** in 2010 dedicated to disseminating knowledge of the anti-corruption Code of Conduct and its best practices to the Group's employees. In addition, a specific e-learning module was produced in 2013 to raise employee awareness more quickly. This training is now an integral part of the Air Liquide University program and is aimed at staff most exposed to corruption risk (sales, procurement, administrative management, and so on) and managers. These training programs are gradually being rolled out Group-wide.

Lastly, the new Supplier Code of Conduct (see under "Training" section) includes a chapter on corruption prevention.

#### HANDLING DEVIATIONS

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Currently, the most significant cases of fraud and deviation, once detected, are transmitted to the Audit Committee of the Board of Directors, along with measures for investigating and handling these situations. From the end of 2014, the Group wants to gradually implement a formal whistleblowing system worldwide.

## Conducting Group operations while protecting the environment

### Energy efficiency objectives

#### Key Indicators

- Evolution of energy consumption for air separation units per m<sup>3</sup> of gas produced.
- Evolution of energy consumption for hydrogen units per m<sup>3</sup> of gas produced.
- Evolution of the distance traveled per ton of gas delivered (Industrial Merchant activity).

#### 2015 objective

Improve by at least 2% from 2011 to 2015 the energy efficiency of the following activities: air separation units, hydrogen units, and product deliveries.

#### Achieving the objectives

- Between 2011 and 2013, energy consumption for air separation units per m<sup>3</sup> of gas produced remained stable.
- Between 2011 and 2013, energy consumption for hydrogen units per m<sup>3</sup> of gas produced improved by 0.6%.
- Between 2011 and 2013, the distance traveled per ton of gas delivered (Industrial Merchant activity) improved by 1.8%

Air Liquide made the strategic choice of allocating its resources, in particular its investments, to help reduce the direct CO<sub>2</sub> emissions of its activities on its operational scope as well as on its customers' sites. This is particularly achieved by offering customers solutions to enable them to reduce their own emissions and by steadily improving production and transportation operations.

### THE GROUP'S ENVIRONMENTAL FOOTPRINT

#### Environmental indicators concerning the Group as a whole

In its **production** activities, the main trends concerning environmental data in 2013 are the following:

- Volumes of air gas produced were up slightly compared to 2012. As a result, electrical energy consumption, which is mainly used in air separation units, also increased slightly. By contrast, related indirect CO<sub>2</sub> emissions were slightly lower due to a positive change in the electricity carbon content in countries where the Group has production plants. In addition, in 2013 the Group redefined the calculation method for indirect emissions to take account of all the electricity produced by its cogeneration.
- Thermal energy consumption and direct CO<sub>2</sub> emissions were up slightly, mainly as a result of the consolidation impact.

Presented here are the environmental elements most representative of the Group's activities. They cover a total of **517** Air Liquide production units or sites and concern:

- large air separation units;
- hydrogen and carbon monoxide units;
- cogeneration units;
- acetylene units;
- nitrous oxide units;
- carbon dioxide liquefaction and purification units;
- units in the Hygiene and Specialty Ingredients activity;
- Engineering & Construction units;
- Welding production units;
- the main Research & Development sites and technical centers.

The indicators concerning the environmental impact of the **transportation** of products of the Group's Industrial Merchant and Healthcare business lines as well as those of water management and the main **waste and byproducts** are presented to stakeholders. Other indicators are also communicated.

### The most relevant environmental indicators for the total of the 10 types of production units (517 units) and transportation on a worldwide scope

	2009	2010	2011	2012	2013
<b>Evolution of energy consumption per m<sup>3</sup> of air gas produced</b> <sup>(a) (b)</sup>	103.3	99.0	99.0	98.8	99.0*
<b>Evolution of energy consumption per m<sup>3</sup> of hydrogen produced</b> <sup>(a) (c)</sup>	98.7	98.3	98.5	98.4	97.9*
<b>Evolution of the distance traveled per ton of industrial gas delivered</b> <sup>(a) (d)</sup>	97.4	96.3	97.1	97.8	95.3*
<b>Annual electricity consumption</b> (in GWh)	21,139	24,924	26,661	27,578	28,305*
<b>Annual thermal energy consumption</b> (in LVH terajoules) <sup>(e)</sup>	183,381	204,434	213,198	229,177	232,270* <sup>(f)</sup>
<b>Annual water consumption</b> (in millions of m <sup>3</sup> )	59.9	66.1	67.2	66.4	67.5* <sup>(g)</sup>
<b>Annual emissions of CO<sub>2</sub> avoided by cogeneration and on-site customer units</b> (in thousands of tons)	-819	-870	-1,051	-987	-953
<b>Total direct greenhouse gas (GHG) emissions</b> (in thousands of tons of CO <sub>2</sub> eq.) <sup>(h)</sup>	9,386	10,181	10,549	11,272	11,846*
<b>Total indirect GHG emissions</b> (in thousands of tons of CO <sub>2</sub> ) <sup>(i)</sup>	6,297	8,006	9,085	9,546	9,257*
<b>Total direct and indirect GHG emissions</b> (in thousands of tons of CO <sub>2</sub> eq.)	15,683	18,187	19,634	20,818	21,103*

(a) Calculated from base 100 in 2007.

(b) Gases produced (oxygen, nitrogen, argon) calculated in m<sup>3</sup> of equivalent gaseous oxygen.

(c) Hydrogen and carbon monoxide.

(d) In kilometers per ton delivered within the framework of the Industrial Merchant business, for oxygen, nitrogen, argon and carbon dioxide.

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

(f) Approximately 64,500 GWh LHV.

(g) Representing less than 0.5 one-thousandth of the industrial water consumption of the countries under review.

(h) Includes CO<sub>2</sub> emissions and nitrous oxide emissions.

(i) Total indirect GHG emissions generated by the production of electricity purchased outside the Group. The indirect emissions only concern CO<sub>2</sub> emissions. Calculation takes into account the primary energy source that each country uses to produce electricity (source: International Energy Agency). In addition, in 2013 the Group redefined the calculation method for indirect emissions to take account of all the electricity produced by its cogeneration.

\* Indicator verified by the Statutory Auditors.

### Direct and indirect greenhouse gas emissions and origin of the electricity used

Companies' direct and indirect greenhouse gas emissions are usually divided into three scopes depending on their origin:

- Scope 1 includes direct emissions generated by all possible emission sources owned or controlled by the Group. This scope brings together the Group's production units as well as the transportation of products and equipment to customers and patients;
- Scope 2 is composed of all the indirect emissions related to the 10 types of production units. The indirect emissions are the emissions linked to the production of electricity procured outside the Group;

- Scope 3 encompasses the other indirect emissions generated, for example, by professional travel and commuting or the treatment of products at end of life.

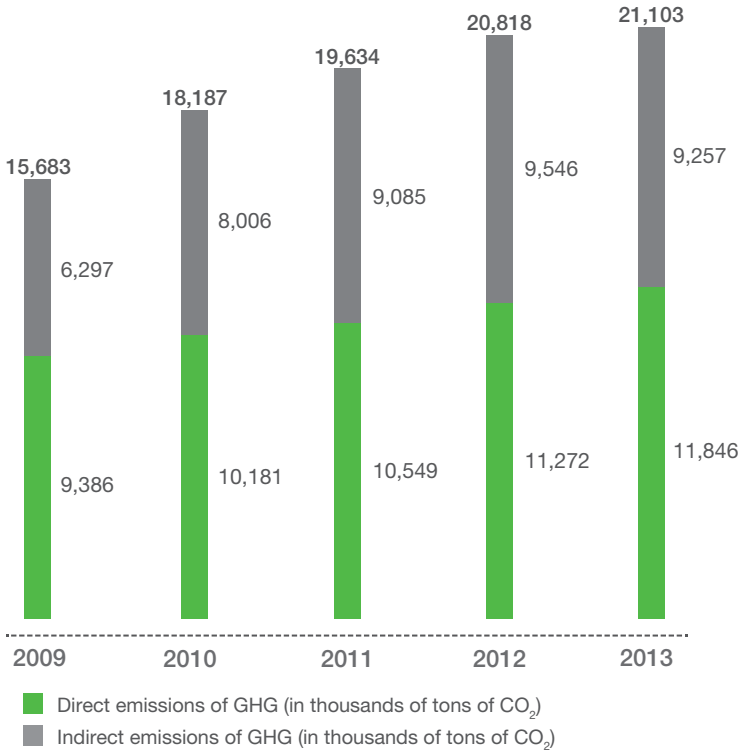
### Direct and indirect emissions of Scopes 1 and 2

Direct and indirect emissions of Scopes 1 and 2 represented 99% of the Group's total emissions in 2013.

In order to distinguish the differentiated growth dynamics between advanced economies and developing economies, since 2010 Air Liquide has segmented its direct and indirect CO<sub>2</sub> emissions between these economies.

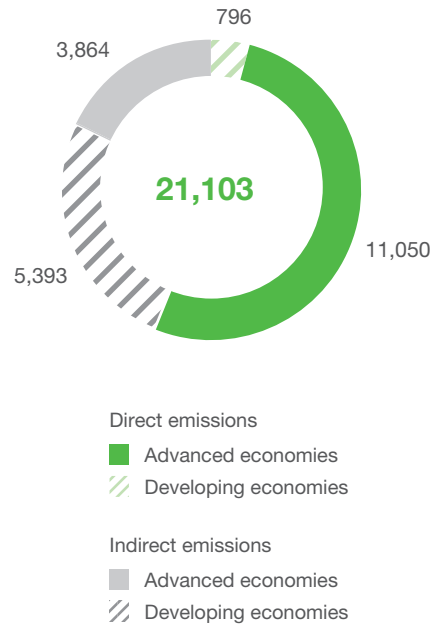
Developing the skills of the Group's employees and optimizing operations

Direct and indirect greenhouse gas emissions



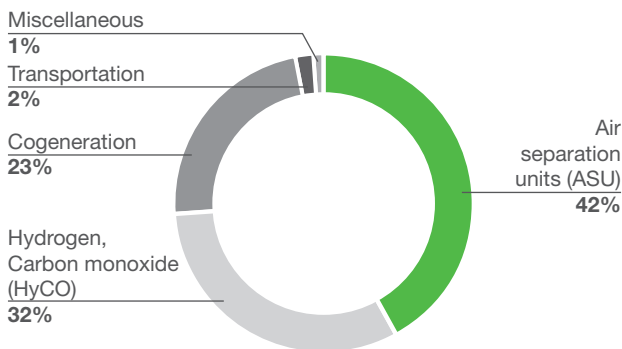
Breakdown of greenhouse gas emissions between advanced and developing economies

(in thousands of tons of CO<sub>2</sub>)



In this report, the advanced economies are defined in accordance with the financial reporting: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Great Britain, Greece, Italy, Japan, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United States. The developing economies refer to the other countries in which Air Liquide operates.

Breakdown of direct and indirect greenhouse gas emissions



Scope 3 emissions related to business travel

Business travel by plane, car or train is one of the main sources of Scope 3 CO<sub>2</sub> emissions. These were estimated at 80,000 tons of CO<sub>2</sub> in 2013 for all subsidiaries, which largely represents less than 1% of the Group's total emissions. This estimate was done based on the European subsidiaries' emissions, representing 51% of the Group's employees. The total of Scope 3 emissions was then extrapolated by hypothesizing that emissions are homogeneous in all the countries where the Group is present.

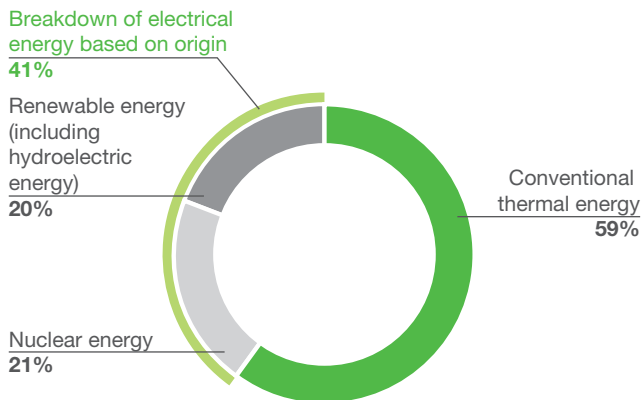
Air Liquide endeavors each year to reduce the greenhouse gas emissions generated by its subsidiaries' activities, particularly those caused by professional travel. In France, Air Liquide's objective is to decrease the CO<sub>2</sub> emissions generated by the fleet of cars leased for personnel. To reduce these emissions, the French subsidiaries decrease, each year, in their selection criteria for leased vehicles, the CO<sub>2</sub> emission per kilometer threshold. Set at 147 grams per kilometer in 2006, this threshold was 119 grams in 2013, close to the target set by the Group of 105 grams of CO<sub>2</sub> per kilometer. With a fleet of over 4,300 vehicles each traveling on average 40,000 kilometers per year, this has made it possible to avoid the emission of about 16,000 tons of CO<sub>2</sub> between 2006 and 2013.

In addition, since 2012, 10 telepresence rooms have been operational worldwide: Paris and Champigny in France, Frankfurt in Germany, Houston in the United States, Krakow in Poland, Johannesburg in South Africa, Shanghai and Hangzhou in China, and Hyderabad and New Delhi in India. These rooms enable remote meetings by guaranteeing each participant a presence similar to a physical meeting. Launched in the Engineering & Construction business line, Air Liquide will gradually expand the use of these rooms to other Group business lines, as well as to interactions with customers, partners and investors. This technology reduces the CO<sub>2</sub> emissions generated by the employees' air transportation.

## Developing the skills of the Group's employees and optimizing operations

## Origin of electricity used

Taking into account the different natures of primary energy of the countries where Air Liquide is present, it is possible to present the breakdown of the origin of the electricity used worldwide. The Blue Hydrogen® program is currently the main Group initiative on developing the use of renewable energy (see "Innovation" section of the Reference Document).

Origin of electricity used in 2013 <sup>(a)</sup>

## Energy efficiency of large production units

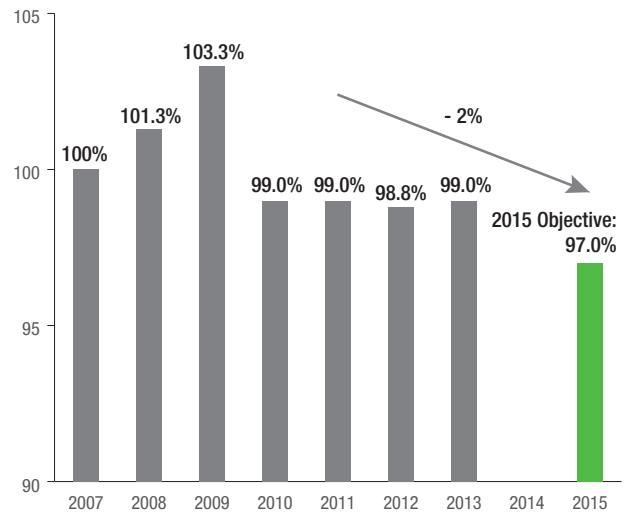
Created from an invention that considerably reduced the energy used to separate air gases, Air Liquide has always been involved in protecting the environment. **The Group has initiated an approach to steadily reduce the environmental footprint of its activities and contributes to improving that of its partners and customers.** The objective of improving by at least 2% from 2011 to 2015 the energy efficiency of its air separation units, its hydrogen units and the efficiency of liquefied gas deliveries corresponds to over 280,000 tons a year of direct and indirect CO<sub>2</sub> emissions avoided <sup>(b)</sup>.

Through its Engineering & Construction entity, the Group designs its own production units. For example, it can adapt the design of these units to the customers' needs, technological developments and energy costs. It directly and rapidly profits from the improvement of these units' energy efficiency. Air Liquide has been operating air separation units and hydrogen units for many years. It therefore benefits from a virtuous circle of steady improvement through **its control of design and operating experience of these units.** Whenever circumstances permit, old units are replaced by new ones that are more energy efficient.

In addition, the Group builds **larger and larger units** that generally provide more efficient energy through scale effects.

Air Liquide has also set up a program to **improve the reliability** of the units' operation. In addition to providing better service to customers, this has direct consequences on **energy efficiency**. Every shutdown and startup of these units creates an energy consumption sequence. Increasing reliability, i.e., reducing the number of excessive shutdowns, results in better energy efficiency in production units.

Large units are often interconnected through a **pipeline system** supplying a customer industrial basin. This group of interlinked units creates a synergy of their operation both for production and energy consumption. The steady development of the Group's oxygen, nitrogen and hydrogen pipeline systems clearly helps improve its energy efficiency. Lastly, ever more efficient **smart technologies** are being rolled out to centrally monitor and run the Group's large units so that **production can be adjusted to customers' needs**. This initiative leads to substantial savings in energy consumption.

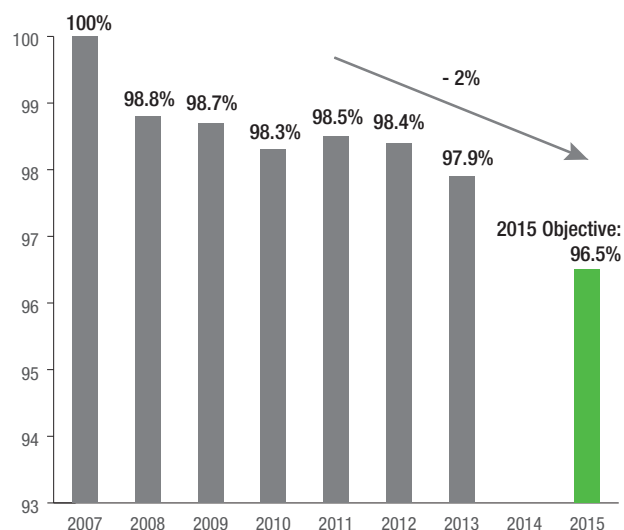
Evolution of energy consumption per m<sup>3</sup> of gas produced for air separation units

The energy consumption per m<sup>3</sup> of air gas produced, i.e., the **energy efficiency of these units was slightly down in 2013** compared with 2012 and remained close to its best level since 1998.

(a) Calculation takes into account the primary source that each country use to produce electricity (source: International Energy Agency).

(b) Estimate on the basis of CO<sub>2</sub> emissions in 2013.

### Evolution of energy consumption per m<sup>3</sup> of gas produced for hydrogen and carbon monoxide units



The energy efficiency of hydrogen units improved significantly in 2013 compared with 2012 and reached the best level ever achieved by the Group.

### Transportation

The gas produced by Air Liquide is mainly supplied via pipeline. Supplying large customers via pipeline from the Group's production units also considerably limits truck transportation. These pipeline systems, which are environmentally friendly and safe, total over **9,200 kilometers worldwide**. For air gases and hydrogen, which represent most of the volumes the Group delivers, **86% of deliveries are made via pipeline or through on-site units. As a result, only 14% of all air gases or hydrogen is delivered by truck.**

### Industrial Merchant Business Line

In 2013, trucks delivering Air Liquide liquid gases or gas cylinders in the Industrial Merchant business line traveled **420 million kilometers** throughout the world and emitted about **462,000 tons of CO<sub>2</sub>**. On-site nitrogen, oxygen and hydrogen units reduced truck deliveries, a source of CO<sub>2</sub> emissions. These on-site units were able to save the **72 million extra kilometers** traveled by trucks and therefore the emission of **72,000 tons of CO<sub>2</sub>**.

	2009	2010	2011	2012	2013
Kilometers traveled by all vehicles delivering gas in liquid or cylinder form (in millions of km)	363	361	428	428	420*
Estimate of CO <sub>2</sub> emissions generated by these vehicles in the Industrial Merchant business line (in thousands of tons)	399	396	471	471	462*
<b>Evolution of the distance traveled per ton of industrial gas delivered (oxygen, nitrogen, argon, carbon dioxide)<sup>(a)</sup> <sup>(b)</sup> (truck delivery)</b>	<b>97.4</b>	<b>96.3</b>	<b>97.1</b>	<b>97.8</b>	<b>95.3*</b>
Estimate of truck transport kilometers avoided through on-site customer units (in millions of km)	-54	-61	-70	-68	-72
Estimate of CO <sub>2</sub> emissions avoided by these on-site units (in thousands of tons)	-58	-66	-70	-68	-72
Percentage of deliveries of air gases and hydrogen via pipeline or on-site	85%	86%	86%	86%	86%

(a) In kilometers per ton delivered for the Industrial Merchant business line.

(b) Calculated from base 100 in 2007.

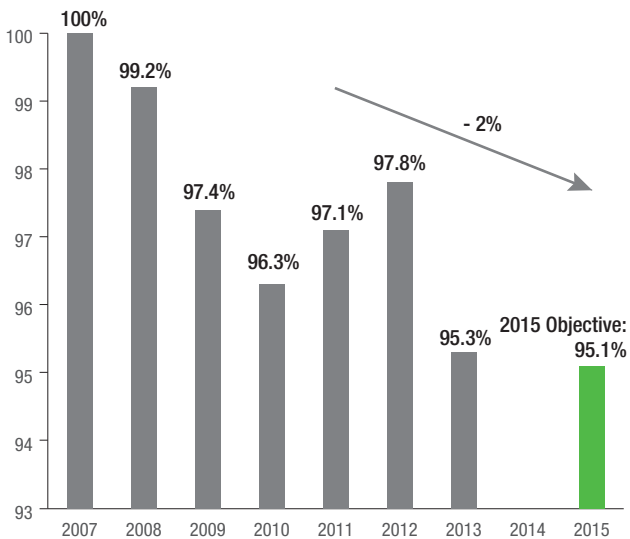
\* Indicator verified by the Statutory Auditors.



## Developing the skills of the Group's employees and optimizing operations

In addition, the Industrial Merchant Business Line has developed **software that optimizes truck deliveries** to reduce the number of kilometers traveled per ton of gas delivered. In particular, the levels of the customers' stock delivered in liquid form are automatically measured and transmitted to Air Liquide's logistics teams. These data determine the optimal delivery frequencies and itineraries to resupply these customers.

### Evolution of the distance traveled per ton of industrial gas delivered (oxygen, nitrogen, argon, carbon dioxide)



In 2013, the energy efficiency of truck deliveries of liquid industrial gases **improved significantly – by over 2%** – particularly in Europe – thanks to the success of programs to optimize deliveries and better maintenance scheduling for the Group's production units. **Over the last 10 years, the energy efficiency of truck deliveries has improved by over 6%.**

### Healthcare activity

In 2013, the total number of kilometers traveled for deliveries of gas cylinders for the **Home Healthcare activity** was **161 million kilometers**. The quantity of CO<sub>2</sub> emitted during these deliveries was **38,000 tons**<sup>(a)</sup>. The number of kilometers traveled for the delivery of **medical gases to hospitals**<sup>(a)</sup> amounted to **26 million kilometers**, which represented **23,000 tons of CO<sub>2</sub>** in 2013.

	2012	2013
<b>Transportation Home Healthcare activity</b>		
Kilometers traveled (in millions of km)	141	161
Associated CO <sub>2</sub> emissions (in thousands of tons)	35	38
<b>Transportation Medical Gases activity</b>		
Kilometers traveled (in millions of km)	20	26
Associated CO <sub>2</sub> emissions (in thousands of tons)	17	23
<b>TOTAL KILOMETERS TRAVELED HEALTHCARE ACTIVITY (IN MILLIONS OF KM)</b>	<b>161</b>	<b>187</b>
<b>TOTAL ASSOCIATED CO<sub>2</sub> EMISSIONS (IN THOUSANDS OF TONS)</b>	<b>52</b>	<b>61</b>

To reduce its environmental footprint, some subsidiaries in the Home Healthcare segment have introduced **training courses in energy-efficient driving**. These courses are aimed at technical workers, nurses, and nutritionists at some of the Home Healthcare subsidiaries to raise awareness of the objectives of environmentally-friendly driving. They bring together issues of mobility, safety, ecology and economics.

(a) Extrapolated from the main countries of the Healthcare business line.

## Water management

Fresh water used for human activities **represents less than 1%** of the water present on the earth. Its rational use is a subject of growing importance. According to the OECD <sup>(a)</sup>, the worldwide demand for water should rise more than 50% by 2050. This increasing demand generates tensions both between countries for the control of supply sources and between activity sectors (agriculture, industry and domestic use). The water stress indicator, as defined by the World Business Council for Sustainable Development (WBCSD), locally measures the quantity of renewable water available in m<sup>3</sup> per person and per year. This data enables risk zones to be identified.

Among the 276 analyzed sites, 30 were located in a very high water stress zone (<500 m<sup>3</sup> per person per year), **which represents about 5% of the annual water supply of Air Liquide's industrial sites**. More generally, about 100 of the 276 main industrial sites analyzed are located in a high or moderate water stress zones <sup>(b) (c)</sup>.

**In 2013, Air Liquide used 67.5 million m<sup>3</sup> of water** broken down as follows:

- 60% by air separation units for cooling air after compression. 70% of this water is evaporated and 30% is treated on-site or by treatment plants in neighboring municipalities;
- 40% in other industrial processes such as hydrogen production units and cogeneration units. About 80% of the water used by these units is supplied then consumed in the form of steam by Air Liquide's customers.

With regard to air separation units, there are several types of cooling systems. More than 80% of these units have semi-open recirculating systems which require back-up water. More than 10% of units have open systems. In such cases, water comes from natural resources or third-party industrial circuits. It is discharged back into the original source, without causing pollution or changing the water's physical-chemical characteristics. Lastly, some 5% of these units have closed systems that consume no water.

Air Liquide assumes its responsibility as an industrialist, **working on reducing the volumes used**. Several notable **action plans** have been implemented recently in the world in the Group's different activities:

- in São Paulo, Brazil, a city wastewater recovery and treatment system has been set up in partnership with 10 other local chemical companies to use this water in industrial processes and in this way totally replace the supply of water from rivers;
- in Tunisia, work carried out on two air separation units improved the quality of the water discharged from the cooling towers and reduced the annual amount of water supplied by 21%;
- in South Africa, a recovery system for water used to cool acetylene cylinders during their filling reduced consumption at two production sites from 4,000 liters an hour to 4,000 liters a week, a saving of about 30,000 m<sup>3</sup> per year.

These examples are disseminated via the Air Liquide internal information networks to help all the subsidiaries make progress in this area.

(a) Organization for Economic Co-operation and Development.

(b) A zone is considered in a moderate water stress situation when this volume of renewable water is between 1,000 and 1,700 m<sup>3</sup> per person and per year, and in a high water stress situation when this volume is below 1,000 m<sup>3</sup>.

(c) Study conducted by using the Global Water Tool developed by the World Business Council for Sustainable Development (WBCSD).

## Environmental incidents and consideration of risks related to climate change

**Environmental incidents** are reported by the Group's subsidiaries worldwide. A benchmark procedure from Air Liquide's BLUEBOOK, available to all Group employees, is part of Air Liquide's Industrial Management System (IMS) and defines environmental incidents based on three levels of severity. All incidents reported at Group level are subject to a systematic, in-depth analysis, depending on the nature of the incident, so that prevention measures can be stepped up. Environmental risks related to industrial processes and risks related to climate change are presented in the Risk factors section of the Reference document.

**Climatic risks** are reviewed at both Group and site level:

- Air Liquide continuously monitors risks associated with changes in legislation, particularly concerning the European Trading Scheme and other CO<sub>2</sub> quota trading systems existing or under development around the world, in order to assess the impact of any regulatory changes on the Group's activities;

- weather-related and climatic disasters, water stress and the increased frequency of cyclones constitute a risk that could disrupt the smooth running of operations. Preventive measures targeting extreme weather-related phenomena exist at the main sites located in high-risk areas.

Most of the time, **environmental incidents** in the industrial and medical gases business have a very low impact on the environment compared to the traditional chemicals industry. For example, in air gas production, any possible leak of these gases presents absolutely no danger for the atmosphere. Likewise, the water used in Air Liquide's processes is primarily used in cooling and steam production. The risk of possible pollution of the water used is therefore reduced.

In 2013, there were a total of seven environmental incidents in the Group, mainly involving air gases and oil leaks.

The amount of financial provision and guarantees earmarked for environmental risks is 13 million euros.

## Waste and by-products

Although the quantity of waste and by-products produced by the Group's industrial and medical gases business is small, Air Liquide nonetheless wanted to publish estimated figures in this regard to ensure thorough reporting. The main waste and by-products produced by the Group's production units are lime from the acetylene production units (by-product), metal waste, oils, paints and solvents. The average recycling ratio of waste <sup>(a)</sup> is over 90%.

WASTE AND BY-PRODUCTS	2009	2010	2011	2012	2013
<b>Waste and by-products that are not dangerous</b>					
■ Annual quantity of lime produced (extracted dry equivalent) by the acetylene production units (in tons)	39,400	36,900	36,800	30,400	32,500
% recycled	>90%	>90%	>90%	>80%	>80%
■ Metal waste (in tons) <sup>(b)</sup>	6,000	9,200	8,200	9,200	9,800
% recycled	99%	>99%	>99%	>99%	>99%
■ Oils (in tons)	600	750	750	825	800
% recycled	89%	90%	84%	91%	88% <sup>(c)</sup>
<b>TOTAL NON-DANGEROUS WASTE AND BY-PRODUCTS (estimate in tons)</b>	<b>46,000</b>	<b>46,850</b>	<b>45,750</b>	<b>40,525</b>	<b>43,100</b>
<b>Dangerous waste</b>					
■ Paints and solvents (in tons)	200	200	150	101	150
% recycled	30%	45%	54%	43%	63% <sup>(d)</sup>
<b>TOTAL WASTE AND BY-PRODUCTS (estimate in tons)</b>	<b>46,200</b>	<b>47,050</b>	<b>45,900</b>	<b>40,626</b>	<b>43,250</b>

(a) Calculation is based on the weight of the waste.

(b) Metal waste that is not dangerous.

(c) In addition, 12% is incinerated.

(d) In addition, 27% is incinerated.

## Secondary environmental indicators

In addition to the main environmental indicators, there are other environmental indicators for the Group that are of lesser importance and relevance for Air Liquide's business. Among them, and out of concern for transparency and exhaustiveness in reporting, Air Liquide presents below the summary table of emissions into the atmosphere of nitrogen oxide (NOx), sulfur oxide (SOx), Volatile Organic Compounds (VOC) as well as discharge to water of oxidizable matter and suspended solids.

	2009	2010	2011	2012	2013
Air emissions: NOx (nitrogen oxide) (in tons)	3,910	3,500	3,710	3,940	4,400
Air emissions: SOx (sulfur oxide) (in tons)	<300	<300	<300	<300	<250
Total volatile organic compounds (VOC) emitted into the atmosphere (estimate, in tons)	300	330	320	124	110
Total discharge to water: oxidizable matter (in tons)	<1,400	<1,600	<1,700	<1,700	<1,000
Total discharge to water: suspended solids (in tons)	<1,400	<1,400	<1,500	<1,500	<750

## "Carbon content" of Air Liquide's main products

Taking into account the characteristics of electricity supplied to Air Liquide, the Group has built a model <sup>(a)</sup> calculating the "carbon content" of its main products in certain countries where the Group is located <sup>(b)</sup>. These figures include both direct and indirect <sup>(c)</sup> emissions, those connected to production, cylinder filling and also transportation. These data are increasingly requested by the Group's customers to integrate the carbon content of industrial gases into the global life-cycle analysis of their products.

## "Carbon content" of Air Liquide's main products in 2013 (gCO<sub>2</sub>/Nm<sup>3</sup> <sup>(a)</sup>)

		France	Germany	Italy	Spain	Sweden	United States	Canada	Japan	China
<b>Oxygen</b>	Oxygen in pipelines <sup>(b)</sup>	55	294	241	231	15	370	125	321	445
	Liquid oxygen	122	522	445	423	61	659	244	585	779
	Oxygen in cylinders <sup>(c)</sup>	539	998	809	832	314	1,052	630	1,247	1,091
<b>Nitrogen</b>	Oxygen in pipelines <sup>(b)</sup>	18	97	80	76	5	122	41	106	147
	Liquid nitrogen	88	343	298	282	52	433	168	389	507
	Nitrogen in cylinders <sup>(c)</sup>	504	800	654	684	304	814	549	1,041	806
<b>Argon</b>	Argon in cylinders <sup>(c)</sup>	620	1,421	1,165	1,173	336	1,597	815	1,720	1,748
<b>CO<sub>2</sub></b>	Liquid CO <sub>2</sub> <sup>(d)</sup>	52	118	121	103	29	130	61	<sup>(e)</sup>	<sup>(e)</sup>

(a) Nm<sup>3</sup> = m<sup>3</sup> of gas at atmospheric pressure at 0°C.

(b) At 40 bar, pressure standard for these pipelines.

(c) At 200 bar, pressure standard for cylinders.

(d) Exceptionally, the data on liquid CO<sub>2</sub> are expressed in gCO<sub>2</sub>/kg.

(e) Product not distributed by Air Liquide in this country.

The average carbon content of **the hydrogen supplied by the Group's units in Europe** was **768 gCO<sub>2</sub>/Nm<sup>3</sup>**. In an aim to simplify, this calculation was made solely on the units producing hydrogen but not carbon monoxide (CO) or syngas, and the CO<sub>2</sub> emissions related to the steam production of these units were deducted by considering a factor of 176 tCO<sub>2</sub>/kt of steam.

(a) The methodology and calculations for the model of these figures were validated in 2008 by Ecofys, a consulting firm specialized in sustainable development. These calculations take into account in each country the different energy sources used to produce electricity (source: International Energy Agency).

(b) These nine countries represent about 80% of the Group's Gas revenue.

(c) Concerns the CO<sub>2</sub> emissions from electricity production consumed by Air Liquide.

## Developing the skills of the Group's employees and optimizing operations

## Biodiversity

As for biodiversity, the impact of Air Liquide's activities is limited because the Group's production units are generally located on small sites in industrial zones.

Nevertheless, Air Liquide supports the preservation of biodiversity through its Foundation, which finances biodiversity projects throughout the world.

In recent years, the Foundation has supported the following projects:

- the WWF France association project to set up a pilot site of the REDD <sup>(a)</sup> program in Sumatra's Tesso Nilo Park in Indonesia.

The aim is to **reduce deforestation** in the park and thus decrease CO<sub>2</sub> emissions into the atmosphere;

- the CNRS project <sup>(b)</sup> in French Guiana, which is conducting a study on **chemical diversity in this area of the Amazon**, to develop natural insecticides;
- the French Institute of Research for Development (IRD) project, which studies the **ability of mangroves to limit CO<sub>2</sub> emissions** in New Caledonia and in Vietnam (see details in the Corporate Philanthropy and Air Liquide Foundation section).

## DETAILS ON INDICATORS FOR EACH OF THE 10 UNIT TYPES

## 1. Air separation units

Worldwide, **307 large air separation units** were included in the Group's sustainable development reporting. These units produce oxygen, nitrogen and argon, with some sites producing rare gases like krypton and xenon.

These **factories "without chimneys"** do not use any combustion processes. **Since they discharge almost no CO<sub>2</sub>**, sulfur oxide (SOx) or nitrogen oxide (NOx), **they are particularly environmentally friendly**. They use almost exclusively electrical energy: worldwide, they use about **3,000 MW** each instant, the equivalent of the production of two nuclear power plant units. Their cooling systems require back-up water.

AIR SEPARATION UNITS	2009	2010	2011	2012	2013
Number of production units	265	287	298	309	307
Annual electricity consumption (in GWh) <sup>(a)</sup>	20,141	23,774	25,398	26,203	26,932
<b>Evolution of energy consumption per m<sup>3</sup> of gas produced <sup>(b) (c)</sup></b>	<b>103.3</b>	<b>99.0</b>	<b>99.0</b>	<b>98.8</b>	<b>99.0*</b>
Total indirect GHG emissions (in thousands of tons of CO <sub>2</sub> ) <sup>(d)</sup>	5,955	7,605	8,637	9,057	8,792
Annual water consumption (in millions of m <sup>3</sup> ) <sup>(e)</sup>	33.2	36.7	37.7	37.9	38.5
<b>Back-up water per m<sup>3</sup> of gas produced <sup>(c)</sup></b>	<b>104.1</b>	<b>102</b>	<b>97.2</b>	<b>96.8</b>	<b>95.5</b>

(a) Also including small volumes of purchased steam.

(b) Gases produced (oxygen, nitrogen, argon) calculated in m<sup>3</sup> of equivalent gaseous oxygen.

(c) Calculated from base 100 in 2007.

(d) In 2013, the Group redefined the calculation method for indirect emissions to take account of all the electricity produced by its cogeneration units.

(e) Excluding the energy consumption of units with an open and closed cycle water cooling system.

\* Indicator verified by the Statutory Auditors.

(a) The United Nations REDD (Reducing Emissions from Deforestation and Forest Degradation) program aims at encouraging the **protection of forests** through financial incentives offered to developing economies that reduce their greenhouse gas emissions from wooded areas and invest in carbon emission reduction projects.

(b) National Center for Scientific Research (France).

## Developing the skills of the Group's employees and optimizing operations

## 2. Hydrogen and carbon monoxide units

Worldwide, **42 large hydrogen and carbon monoxide units** were included in the Group's sustainable development reporting. These units also produce steam for certain customers. They primarily use natural gas as a raw material and certain amounts of water required for the reaction that produces hydrogen. Carbon monoxide is an indispensable raw material in the chemical industry for producing plastic materials. The **desulfurization of hydrocarbons** to produce sulfur-free fuels is one of the main

applications for hydrogen. These units emit CO<sub>2</sub> and nitrogen oxides (NOx) but produce practically no sulfur oxide (SOx). They also consume electricity and their cooling systems require back-up water.

In 2013, the hydrogen Air Liquide supplied to refineries throughout the world resulted in **avoiding about 960,000 tons of sulfur oxide emissions being discharged into the atmosphere**, which is close to four times of all the sulfur oxide emissions from a country like France and a significant improvement compared to the 810,000 tons of sulfur oxide emissions avoided in 2012.

HYDROGEN AND CARBON MONOXIDE UNITS	2009	2010	2011	2012	2013
Number of production units	36	39	41	43	42
Annual thermal energy consumption (in LHV terajoules) <sup>(a)</sup>	95,306	119,205	128,075	146,525	146,689
Annual electricity consumption (in GWh)	478	620	700	823	871
<b>Evolution of energy consumption per m<sup>3</sup> of hydrogen produced <sup>(b) (c)</sup></b>	<b>98.7</b>	<b>98.3</b>	<b>98.5</b>	<b>98.4</b>	<b>97.9*</b>
Air emissions: CO <sub>2</sub> (in thousands of tons)	3,923	4,875	5,202	6,067	6,455
Annual process and back-up water supply (in millions of m <sup>3</sup> )	10.2	13	11.8	13.1	13.2
Air emissions: NOx (nitrogen oxide) (in tons)	750	850	800	870	950
Air emissions: SOx (sulfur oxide) (in tons)	<250	<250	<250	<250	<250

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

(b) Hydrogen and carbon monoxide.

(c) Calculated from base 100 in 2007.

\* Indicator verified by the Statutory Auditors.

## 3. Cogeneration units

Worldwide, **17 cogeneration units** were included in the Group's sustainable development reporting. These units produce steam and electricity simultaneously. They consume natural gas and water, most of which is converted into steam for customers. The steam can be condensed by these customers and then reused in the cogeneration unit. In most cases, the electricity produced is supplied to the local electricity distribution network, in some countries this can be used to power the Group's other units.

Combustion of natural gas produces CO<sub>2</sub> and leads to nitrogen oxide (NOx) emissions, but practically no sulfur oxide (SOx) emissions.

The cogeneration units are more energy efficient concerning CO<sub>2</sub> emissions than separate production units for electricity and steam. They therefore help reduce CO<sub>2</sub> emissions in the industrial basins they supply. In 2013, **the Group's cogeneration units avoided 881,000 tons of CO<sub>2</sub> emissions** being discharged into the atmosphere, so they were about 15% more efficient than the separate production of electricity and steam.

COGENERATION UNITS	2009	2010	2011	2012	2013
Number of production units worldwide	18	17	17	17	17
Annual natural gas consumption (or thermal energy) (in LHV terajoules) <sup>(a)</sup>	87,642	84,763	84,654	82,308	85,175
<b>Annual amount of CO<sub>2</sub> emissions into the atmosphere prevented <sup>(b)</sup></b> (in thousands of tons)	<b>-761</b>	<b>-804</b>	<b>-981</b>	<b>-919</b>	<b>-881</b>
Air emissions: CO <sub>2</sub> (in thousands of tons)	4,917	4,755	4,749	4,617	4,778
Annual water consumption (in millions of m <sup>3</sup> )	13.5	13.1	14.6	12.8	13.2
Air emissions: NOx (nitrogen oxide) (in tons)	3,160	2,650	2,910	3,070	3,450
Air emissions: SOx (sulfur oxide) (in tons)	<50	<50	<50	<50	<50

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

(b) Calculation takes into account the primary energy source that each country uses to produce electricity (source: International Energy Agency).

## Developing the skills of the Group's employees and optimizing operations

#### 4. Acetylene units

Worldwide, **54 acetylene production units** were included in the Group's sustainable development reporting since acetylene is a gas used primarily in metal welding and cutting. A total of 51 of these units produce this gas by using water to decompose solid matter, calcium carbide.

Two units fill cylinders with this gas, which is supplied by another industrial company. This process produces lime, which is generally recycled (at over 90%) in industrial and agricultural applications (see paragraph on waste and by-products).

ACETYLENE UNITS	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	10	10	11	11	11
Annual water consumption (in millions of m <sup>3</sup> )	0.3	0.3	0.2	0.2	0.2
Annual calcium carbide consumption (in thousands of tons)	34	32	31	28	28
Estimate of emissions of volatile organic compounds (VOC) into the air (in tons) <sup>(a)</sup>	150	140	130	120	110

(a) Losses of acetylene and acetone into the atmosphere.

#### 5. Nitrous oxide units

Worldwide, **seven acetylene nitrous oxide production units** were included in the Group's sustainable development reporting. Nitrous oxide is used primarily as an anesthetic gas in the

healthcare sector and as a sweetening agent in the food industry. It is produced from ammonium nitrate in solid form or as a solution in water.

NITROUS OXIDE UNITS	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	5	6	6	6	6
Annual water consumption (in millions of m <sup>3</sup> )	0.1	0.1	0.1	0.1	0.1
Annual ammonium nitrate consumption (in thousands of tons)	19	21	21	22	21
Emissions of nitrous oxide into the air (in tons)	410	430	340	160	230 <sup>(a)</sup>

(a) Which corresponds to the equivalent of 68,540 tons of CO<sub>2</sub>.

#### 6. Carbon dioxide liquefaction and purification units

Worldwide, **62 carbon dioxide liquefaction and purification units** were included in the Group's sustainable development reporting. Carbon dioxide has many industrial applications but is used mainly in the food industry to deep-freeze foods or to produce carbonated beverages.

Carbon dioxide is most often a by-product of chemical units operated by other manufacturers. In some cases, it is found naturally in underground deposits, while in others it comes from the Group's hydrogen and carbon monoxide units. It is purified and liquefied in Air Liquide units, which consume electricity and cooling water. In this way, carbon dioxide is reused for other industrial applications instead of being directly emitted into the atmosphere.

CARBON DIOXIDE LIQUEFACTION AND PURIFICATION UNITS	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	411	420	450	450	400
Annual water consumption (in millions of m <sup>3</sup> )	1.7	1.8	1.8	1.4	1.4

## Developing the skills of the Group's employees and optimizing operations

## 7. Hygiene and Specialty Ingredients units

**Production units for the Hygiene and Specialty Ingredients activity** are located at **four sites** in France, Germany and China and belong to the subsidiaries Schülke (hygiene business line) and Seppic (specialty ingredients business line). Air Liquide experts work closely with hospitals to help them reduce the risk of

nosocomial infection and contamination through the products the Group has developed. Following the sale in 2013 of the subsidiary Anios, environmental indicators were generally down compared to 2012, particularly volatile organic compound emissions.

These units consume natural gas, electricity and water. Combustion of natural gas produces small amounts of CO<sub>2</sub>.

HYGIENE AND SPECIALTY INGREDIENTS ACTIVITY UNITS	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	21	22	24	19	15
Annual thermal energy consumption (in LHV terajoules) <sup>(a) (b)</sup>	234	272	266	145	200
Air emissions: CO <sub>2</sub> (in thousands of tons)	9	10	10	8	8
Estimate of emissions of volatile organic compounds (VOC) into the air (in tons)	150	190	190	4	0
Annual water consumption (in millions of m <sup>3</sup> )	0.4	0.5	0.5	0.3	0.3
Total discharge to water: oxidizable matter (in tons)	<800	<1,000	<1,000	<1,000	<200
Total discharge to water: suspended solids (in tons)	<100	<100	<100	<50	<50

(a) Including thermal energy corresponding to steam purchases.

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

## 8. Engineering & Construction units

Units for the **Engineering & Construction activity** taken into account in this reporting are located at **five sites**, in France, China, Japan and India. They are mainly units for the construction of air separation columns and cryogenic tanks.

Lurgi, a Group subsidiary, has enabled the Group to have a portfolio of engineering technologies, in particular in production processes for hydrogen and syngas, biofuels (bioethanol, biodiesel) and methanol. In addition, Lurgi is one of the world leaders in sulfur recovery processes.

UNITS FOR THE ENGINEERING & CONSTRUCTION BUSINESS LINE	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	11	11	10	8	8
Annual water consumption (in millions of m <sup>3</sup> )	0.1	0.1	0.1	0.1	0.1
Annual consumption of raw materials (in thousands of tons) <sup>(a)</sup>	4.5	4.5	4	4.6	3.7

(a) Mainly metals.

## 9. Welding units

**Units for the Welding activity** are mainly located on **13 sites** in the world.

They are welding equipment assembly (electric welding units, torches, regulators) or welding consumables (electrodes, solid and flux-cored welding wire) production units.

UNITS FOR THE WELDING ACTIVITY	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	49	52	54	49	52
Annual thermal energy consumption (in LHV terajoules) <sup>(a)</sup>	166	160	177	165	167
Air emissions: CO <sub>2</sub> (in thousands of tons)	9	9	10	9	9
Annual water consumption (in millions of m <sup>3</sup> )	0.4	0.5	0.4	0.5	0.6
Annual consumption of raw materials (in thousands of tons) <sup>(b)</sup>	116	130	136	127	123

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

(b) Metals and materials for the production of welding products.



## Developing the skills of the Group's employees and optimizing operations

## 10. Principal Research & Development sites and Technical Centers

The **principal Research & Development sites and Technical Centers** are located at **six**<sup>(a)</sup> sites in France, Germany, the United States, and Japan. Although these sites' environmental impact is

very low compared to other Group entities, it was nevertheless decided to present their environmental impact.

Over **60% of the Research & Development budget** is directly earmarked for the **protection of life and environmental issues** (saving energy, cleaner production, developing energies of the future, etc.).

RESEARCH & DEVELOPMENT SITES AND TECHNICAL CENTERS	2009	2010	2011	2012	2013
Annual electricity consumption (in GWh)	13	9	8	9	10
Annual thermal energy consumption (in LHV terajoules) <sup>(a)</sup>	33	34	26	34	39
Air emissions: CO <sub>2</sub> (in thousands of tons)	2	2	2	2	2
Annual water consumption (in millions of m <sup>3</sup> )	0.02	0.01	0.01	<0.01	<0.01

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

### PRODUCT STEWARDSHIP

Air Liquide has set up procedures aimed at decreasing its products' impact on the environment, health and safety, in particular for substances like oxygen, hydrogen and the gases used in Electronics. Product stewardship is concretely carried out by:

- the identification of physical and chemical, toxicological or ecological dangers related to certain products;
- the evaluation of risks during different phases of production, transportation and storage from raw materials to finished products;
- the implementation of systems guaranteeing customers' and patients' safety during the handling of products and their incorporation into the customers' industrial processes.

### European REACH regulation

REACH (Registration, Evaluation, Authorization and Restriction of Chemicals) is a European Union regulation (therefore directly applicable in the Union's member states) that governs the registration, evaluation and authorization of chemical products produced in or imported to the European Union. Any chemical substance imported to or manufactured in Europe of over one ton a year must be registered with the European agency ECHA. Each manufacturer or importer must have its own registration. The rule is part of the responsible product management approach developed by the chemicals industry.

The European REACH regulation went into effect on June 1, 2007 and registration and authorization procedures were spread over about 12 years for products already on the market.

Air Liquide's main products such as oxygen, nitrogen, rare gases, CO<sub>2</sub>, hydrogen and helium are excluded from the scope of REACH. Until now, four products (carbon monoxide, acetylene,

methanol<sup>(b)</sup> and lime<sup>(c)</sup>) have been registered in compliance with the schedule established by this regulation. Nitrous oxide and a few specialty gases in the Electronics business such as nitrogen trifluoride and silane were registered on June 1, 2013 for annual quantities between 100 and 999 tons.

In addition, certain products in the Healthcare Specialty Ingredients business line fall under the REACH regulation, including many Seppic products stemming from plant-based raw materials. Depending on the annual tonnage manufactured, Seppic has already registered its main products and will register all products concerned by June 30, 2018 at the latest, in compliance with the REACH regulation.

Air Liquide must also make sure that the raw materials it uses are in compliance with the REACH regulation.

**In 2013, gas sales affected by REACH represented less than 3% of the Group's revenue.**

### Principal European directives and regulations applicable to Air Liquide in the environmental field

#### Seveso 2 directive

This European directive focuses on preventing major industrial risks. It applies to any facility where dangerous substances exceed certain quantities. These facilities are divided into two categories according to this quantity: Seveso 2 "high threshold" and "low threshold". In Europe, 89 "low threshold" and 25 "high threshold" Air Liquide sites are affected, mainly because of their stocks of oxygen.

Seveso regulations apply only in Europe but if the Seveso "high threshold" criteria were to be applied worldwide, 23 other Group sites would be affected.

(a) Excluding the Research Centers of the Hygiene and Specialty Ingredients business line, which are included in paragraph 7.

(b) Methanol is the raw material used to produce hydrogen in one of the Group's units.

(c) Lime is a by-product of the Acetylene business (see paragraph on acetylene units).

## CO<sub>2</sub> emission quotas

The goal of the European directive ETS (Emission Trading Scheme), which establishes a quota system for greenhouse gas emissions in the European Union, is to decrease these emissions in compliance with the Kyoto Protocol and 2007 EU targets on climate change. Implementation for CO<sub>2</sub> in the industrial sector began on January 1, 2005. The first phase (2005-2007) only affected five cogeneration sites and two hydrogen production sites. Air Liquide's quotas for this period (about 1.2 million tons of CO<sub>2</sub> per year) covered the emissions recorded.

For the second period (2008 to 2012), the directive concerned seven cogeneration sites in France, Germany, the Netherlands and Spain and a single hydrogen production site in Belgium. Air Liquide's quotas (about 3.3 million tons of CO<sub>2</sub> per year) covered the emissions anticipated <sup>(a)</sup>.

The third period (2013-2020), defined during the revision of the ETS Directive, voted by the European Council in December 2008, broadened the scope of industrial facilities subject to the ETS. For Air Liquide, the application of this directive's measures adds the Group's large hydrogen product sites in Europe to the sites already affected.

Concerning hydrogen production units, the CO<sub>2</sub> emission quotas are mostly allocated for free. Only the emissions that exceed a ceiling calculated on the basis of the most efficient European facilities must be purchased.

Since January 1, 2013, Air Liquide has bought CO<sub>2</sub> quotas from the market or its customers for emissions from hydrogen production sites not covered by the free allocations as well as for all the emissions from the cogeneration sites.

In California, the AB32 (Assembly Bill 32) directive establishes a CO<sub>2</sub> quota system for manufacturers, with the obligation to comply with a cap-and-trade program effective January 2013, and sets emission reduction objectives of 2% per year until 2020. The volume of allocated quotas will be reduced by half as of 2018. This new regulation concerns two hydrogen production sites in this state. A similar system is in place in Canada. In addition, Australia and the European Union want to make their quota systems compatible by 2018.

## Regulation governing greenhouse gas emissions in France

Article 75 of the French law of July 12, 2010, known as "**Grenelle 2**" made it mandatory for companies with at least 500 employees to **produce an assessment of their greenhouse gas emissions**. This assessment for the French authorities was published at the end of 2012 and involved emissions in 2011. An action plan explaining the measures planned to reduce these emissions was also included in this assessment. **Seven French subsidiaries were affected:** Air Liquide France Industrie, L'Air Liquide S.A., Air Liquide Engineering, Seppic, Air Liquide Welding France, Pharmadom/Orkyn and Vitalaire. The assessment takes into account all the direct and indirect emissions related to each subsidiary's activity, including emissions at service sites. Electricity, natural gas and other energies used for heating buildings and lighting are also counted in the assessment in the same way as all the production-related emissions. The seven subsidiaries concerned emitted 1.6 million tons of CO<sub>2</sub> eq. in one year.

(a) The amount of the allocated quotas is calculated following the same consolidation rules as the environment and energy indicator reporting.

### A specific example of responsible product management: the Specialty Ingredients business line

A subsidiary of the Air Liquide Group, within the Healthcare business line, Seppic develops and markets a wide range of **healthcare specialty ingredients** – excipients and active ingredients – intended for the personal care, pharmaceutical and vaccine markets. These ingredients are increasingly being manufactured directly from plant-based raw materials. Seppic's strategy is based on "green" innovation and the constant concern for minimizing its businesses' environmental impact. To meet these goals, Seppic has created innovated tools: eco-design, product life-cycle analysis (LCA) and the global Carbon Assessment.

- **Eco-design** is an analytical method for creating new products with a low impact on the environment during their entire life cycle, but also for improving the manufacturing of existing products. The method Seppic has chosen consists in evaluating projects using a grid of 12 environmental criteria based on "green chemistry" principles like the use of plant-based raw materials, solvent-free processes and the reduction of energy consumption. Eco-design enables safer production for both the user and the environment.
- In 2012, Seppic carried out, for the first time, a **life-cycle analysis** of an entirely bio-sourced emulsifier <sup>(a)</sup> used in cosmetics and pharmaceuticals. This methodology, certified by the international standard ISO14044 specific to the LCA methodology, consists of a detailed analysis of a product's environmental impacts from raw material extraction to its end use by the consumer. The life-cycle analysis goes beyond the greenhouse gas emissions assessment because it takes other environmental impacts into account like the consumption or acidification of water resources that can be involved during certain product treatment stages. This first study conducted in 2012 on a product range attests to Seppic's desire to develop expertise in this area. LCAs will be gradually performed on other Seppic product ranges.
- Last year, Seppic also carried out a **global Carbon Assessment** of all of its operations (R&D, production, delivery, subsidiaries and head office), from obtaining raw materials to making products available to customers worldwide. This assessment is now used as the basis of a **long-term plan to further reduce greenhouse gas emissions**.
- In 2013, Seppic was chosen as the **pilot company to trial the Greenhouse Gas Management System** (GHG-MS) launched by the *Association Bilan Carbone* <sup>(b)</sup>. The GHG-MS is a solution that allows public- and private-sector organizations, regardless of their area of business, to include greenhouse gas management in their overall strategy, so that any action undertaken to reduce carbon emissions is managed effectively and on an operational basis. This solution is an international benchmark, and the tools are developed on the basis of key principles for continuous improvement and compatibility with other ISO management systems and regulatory frameworks.
- Seppic was also awarded the **Pierre Potier Prize in 2013 for its innovative Simulsol<sup>®</sup>SL7**. This annual award recognizes the top sustainable development innovations in the chemical industry. Simulsol<sup>®</sup>SL7 is a "hydrotrope", which means it makes certain compounds soluble in water-based solutions. Hydrotropes are needed to formulate many skincare, hygiene and detergent applications. Seppic's **product is innovative because its source is entirely plant-based and its manufacturing process adheres to green chemistry principles**. It also complies with the chemical industry's sustainable development principles. It contains no solvents and is quickly biodegradable.

Quality, safety and the environment are a constant focus of the management of Seppic's industrial sites, which are fully certified by ISO 9001, ISO 14001 and OHSAS 18001 <sup>(c)</sup> international standards.

(a) Molecule that stabilizes an emulsion between an aqueous phase and a phase composed of lipids.

(b) The Association Bilan Carbone (ABC) has functioned as the supporting structure of the Bilan Carbone<sup>®</sup> since October 2011, and brings together stakeholders in the public and private sector in France and internationally. The ABC and its partners work to develop and promote operational and methodological solutions that provide for a reduction of greenhouse gas emissions to support the transition toward a low carbon society.

(c) International standards with regard to the management of quality (ISO 9001), environment (ISO 14001) and safety (OHSAS 18001).

## RAISING EMPLOYEE AWARENESS OF SUSTAINABLE DEVELOPMENT

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Many initiatives are created at Air Liquide to raise employee awareness on sustainable development issues and encourage employees to promote them in their daily activities. The "Better and Cleaner" initiative, the "Car-free Day" and the "World Water Day" are a few examples.

The **"Better and Cleaner"** initiative, launched in France at the end of 2009 and expanded to all of the Group's R&D sites, continued in 2013. The program's goal is to educate Group employees about their environmental impact by making them focus on a common project aimed at reducing greenhouse gas emissions. These initiatives decrease the carbon footprint of each entity, while finding the best environmental practices developed by researchers worldwide. The best overall performances and local initiatives that are remarkable because of their contribution to a decrease in environmental impact, sustainable development or social benefits are rewarded.

In addition, on **"World Car-free Day"**, each year on September 22, the Group rolls out an awareness campaign on the environmental impact of road transportation and highlights alternative means of transportation such as carpooling. Many initiatives, in over 40 countries, show the employees' increasingly greater commitment to a more responsible approach in this area.

Each year on March 22, the **"World Water Day"** is also an occasion to raise awareness among Air Liquide employees of careful and moderate use of this resource through a communication campaign within the Group and many local initiatives.

## > REPORTING METHODOLOGY

### Protocol and definitions

In the absence of a relevant and recognized protocol for industrial gas operations, Air Liquide has created its own protocol to define its reporting methods for human resources, safety and environmental indicators. This protocol includes all the definitions, measurement procedures and collection methods for this information. In line with the Group's commitment to continuous improvement, Air Liquide is gradually making adjustments to its sustainable development indicators protocol to reflect changes in the Group.

This protocol is based on the general principles defined by the Group with regard to scope, responsibilities, controls and limits, and establishes definitions, the departmental responsibilities, tools and data-tracing methods for each indicator. This document is regularly updated. Moreover, this protocol takes into account all the Group's formalized procedures in the framework of the IMS (Industrial Management System).

### Scope and consolidation methods

Human resources and environmental indicators are consolidated worldwide for all companies globally and proportionally integrated within the financial consolidation scope pro rata according to the integration percentage.

Safety indicators are consolidated worldwide for all companies in which Air Liquide has operational control or is responsible for safety management.

Apart from these general rules, there are certain specific ones:

- information on the impact of transportation (kilometers traveled by delivery trucks, CO<sub>2</sub> emitted) is calculated on the basis of data collected in the main countries where the Group is established around the world;
- information on kilometers saved and CO<sub>2</sub> emissions avoided through on-site air gas production units pertains to fully consolidated subsidiaries;

- environmental and energy indicators for the main types of production units operated by the Group cover about 99% of the Group's revenue in Gas & Services, and 98% of the Group's total revenue;
- for environmental and energy indicators, production units are included in the reporting system from the effective date of their industrial commissioning;
- electricity consumption, and the indirect CO<sub>2</sub> emissions related to it, are only taken into account when Air Liquide pays for this electricity. Energy consumption of on-site units, as well as water consumption specific to the sale of treated water (which is not part of the Group's core business) are excluded from the consolidation scope of the data. When the Group has cogeneration units in a country where ASUs are available, the indirect emissions from the electricity of these units is not taken into account;
- the segmentation between advanced economies and developing economies for direct and indirect greenhouse gas emissions is established by the Finance Division.

### Reporting and responsibilities

The human resources, safety and environmental indicators are produced by several data-collection systems in the Group, each under the responsibility of a specific department:

- human resources indicators included in the Group's general accounting consolidation tool are under the responsibility of the Human Resources Department;

- the energy consumption and CO<sub>2</sub> emissions indicators for the main air separation units, and cogeneration, hydrogen and carbon monoxide units are tracked by the Large Industries business line using a dedicated Intranet tool;

- as a complement, the collection of environmental and safety data is carried out by the Safety and Industrial Management System Department using a dedicated Intranet tool, and includes accident reporting:
  - for all units, the data of the Group's accident reporting,
  - for the units of the Large Industries business line, other environmental indicators (atmospheric emissions, water consumption, discharge to water, etc.),
  - for the smaller units (acetylene, nitrous oxide, carbon dioxide units and Hygiene and Specialty Ingredients business), the Welding business units and the Engineering & Construction business units, the Research & Development sites and the Technical Centers, and all indicators (energy use, atmospheric emissions, water consumption, discharge to water, etc.);
- indicators on Industrial Merchant transportation are the responsibility of this business line;
- indicators on the transportation of Medical Gases and Home Healthcare are the responsibility of the Healthcare business line;
- the estimate of the percentage of the Group's revenue with respect to the implementation of the Industrial Management System (IMS), ISO9001, ISO14001 and OHSAS18001 are indicators under the responsibility of the Safety and Industrial System Department;
- indicators for the "carbon content" of the Group's main products are established by the Industrial Merchant business line from energy and transportation indicators. The carbon content of hydrogen is calculated by the Large Industries business line;
- among the subjects covered by the French "Grenelle 2" law, ground plans and the consideration of noise pollution are not relevant for the industrial gases business given the size of the Group's sites and the noise levels generated. They are therefore not mentioned in this report.

## Controls

Each department in charge of collecting data is responsible for the indicators provided. Control occurs at the time of consolidation (review of changes, inter-entity comparisons).

Safety and energy indicators are tracked monthly. In addition, audits of environmental data are carried out by the Safety and

Industrial System Department on a sample of sites representative of the various types of units monitored. Where the data reported are inconsistent or missing, an estimated value may be used by default.

## Methodological limits

The methodologies used for certain human resources, safety and environmental indicators can have certain limits:

- the absence of nationally or internationally recognized definitions, in particular for indicators on managers and professionals and social performance indicators;
- the representativeness of the measurements taken and required estimates. This is particularly the case for indicators regarding CO<sub>2</sub> emissions avoided, water consumption, kilometers avoided per on-site unit and training.

## > STATUTORY AUDITORS' REPORT

### Report of the statutory auditors, designated independent verifiers, on the consolidated social, environmental and societal information presented in the management report

*This is a free translation into English of the original report issued in the French language and it is provided solely for the convenience of English-speaking users. This report should be read in conjunction with, and construed in accordance with, French law and professional standards applicable in France.*

To the Shareholders,

In our quality as statutory auditors of L'Air Liquide designated independent verifiers, of which the admissibility of the application for accreditation has been accepted by the COFRAC, under the numbers 3-1067 and 3-1058, we present our report on the consolidated social, environmental and societal information established for the year ended December 31, 2013, presented in the chapter "2013 Sustainable Development Report"<sup>(a)</sup> of the management report, hereafter referred to as the "CSR Information," pursuant to the provisions of article L. 225-102-1 of the French Commercial Code (Code de commerce).

#### RESPONSIBILITY OF THE COMPANY

It is the responsibility of the Board of Directors to establish a management report including CSR Information referred to in article R. 225-105-1 of the French Commercial Code (Code de commerce), in accordance with the protocols used by the company (hereafter referred to as the "Criteria"), and of which a summary is included in the chapter "Reporting methodology" of the management report and available on request.

#### INDEPENDENCE AND QUALITY CONTROL

Our independence is defined by regulatory requirements, the Code of Ethics of our profession as well as the provisions of article L. 822-11 of the French Commercial Code (Code de commerce). In addition, we have implemented a quality control system, including documented policies and procedures to ensure compliance with ethical standards, professional standards and applicable laws and regulations.

#### RESPONSIBILITY OF STATUTORY AUDITORS

It is our role, based on our work:

- to attest whether the required CSR Information is present in the management report or, in the case of its omission, that an appropriate explanation has been provided, in accordance with the third paragraph of article R. 225-105 of the French Commercial Code (Code de commerce) (Attestation of presence of CSR Information);
- to express a limited assurance conclusion, that the CSR Information, overall, is fairly presented, in all material aspects, in accordance with the Criteria (Limited assurance on CSR Information).

Our verification work was undertaken by a team of fifteen people between September 23, 2013 and March 4, 2014 for an estimated duration of twenty-two weeks.

We conducted the work described below in accordance with professional standards applicable in France and the Order of May 13, 2013 determining the conditions under which an independent third-party verifier conducts its mission, and in relation to the opinion of fairness, in accordance with the international standard ISAE 3000<sup>(b)</sup>.

(a) Excluding the section "Instituting a relationship of trust with all shareholders".

(b) ISAE 3000 – Assurance engagements other than audits or reviews of historical information.

## 1. Attestation of presence of CSR Information

We obtained an understanding of the company's CSR issues, based on interviews with the management of relevant departments, a presentation of the company's strategy on sustainable development based on the social and environmental consequences linked to the activities of the company and its societal commitments, as well as, where appropriate, resulting actions or programs.

We have compared the CSR Information presented in the management report with the list as provided for in article R. 225-105-1 of the French Commercial Code (Code de commerce).

In the absence of certain consolidated information, we have verified that the explanations were provided in accordance with the provisions of article R. 225-105-1, paragraph 3, of the French Commercial Code (Code de commerce).

We verified that the CSR Information covers the consolidated perimeter, namely the entity and its subsidiaries, as aligned with the meaning of article L. 233-1 of the French Commercial Code (Code de commerce) and the entities which it controls, as aligned with the meaning of article L. 233-3 of the same Code, with the limitations specified in the Methodological Note in the section "Reporting methodology" of the chapter "2013 Sustainable Development Report".

Based on this work, and given the limitations mentioned above, we confirm the presence in the management report of the required CSR information.

## 2. Limited assurance on CSR Information

### NATURE AND SCOPE OF THE WORK

We undertook about twenty interviews with people responsible for the preparation of the CSR Information in the business lines of Large Industries, Industrial Merchant and Healthcare, and the department of Sustainable Development, Purchasing, Communication, Safety and Industrial System and Human Resources in charge of the data collection process and, if applicable, the people responsible for internal control processes and risk management, in order to:

- assess the suitability of the Criteria for reporting, in relation to their relevance, completeness, reliability, neutrality, and understandability, taking into consideration, if relevant, industry standards;
- verify the implementation of the process for the collection, compilation, processing and control for completeness and consistency of the CSR Information and identify the procedures for internal control and risk management related to the preparation of the CSR Information.

We determined the nature and extent of our tests and inspections based on the nature and importance of the CSR Information, in relation to the characteristics of the Company, its social and environmental issues, its strategy in relation to sustainable development and industry best practices.

For the CSR Information which we deemed to be the most important<sup>(a)</sup>:

- At the level of the consolidating entity and business lines, we consulted documentary sources and conducted interviews to corroborate the qualitative information (organization, policies, actions, etc.), we implemented analytical procedures on the quantitative information and verified, on a test basis, the calculations and the compilation of the information, and also verified their coherence and consistency with the other information presented in the management report.
- At the level of the representative selection of entities and sites that we selected<sup>(b)</sup>, based on their activity, their contribution to the consolidated indicators, their location and a risk analysis, we undertook interviews to verify the correct application of the procedures and undertook detailed tests on the basis of samples, consisting in verifying the calculations made and linking them with supporting documentation. The sample selected therefore represented on average 19% of the quantitative environmental information, and 18% of Group Employees.

(a) Environmental, Social and Societal information identified by an asterisk ("\*\*") in the "2013 Sustainable Development Report".

(b) "Environmental" indicators: air gases network of Tianjin (China), units of air production of Himeji (Japan), Santa Cruz (Brazil), Siderar (Argentina), Fos Tonkin (France) and Fos Audience (France), hydrogen units of Caojing (China) and Rodeo (United States), cogeneration units of Scotford (Canada) and Bayport (United States) and the Industrial Merchant sites of Villaverde (Spain) and Dagang (China).

"Safety" indicators: Air Liquide France Industrie (France), Air Liquide España (Spain), Air Liquide Brazil (Brazil), Air Liquide Argentina (Argentina), Air Liquide Industrial US LP (United States), Air Liquide Canada (Canada), Japan Air Gas (Japan), Air Liquide China (China), Lurgi AG (consolidated level) and Orkyn (France).

"Social" indicators: SEPPIC (France), Orkyn (France), Air Liquide Tunisie (Tunisia), Lurgi AG (consolidation stage), Air Liquide Canada (Canada), Air Liquide China (China), Air Liquide France Industrie (France), Air Liquide Egypt (Egypt) and Air Liquide Iberia (Spain).



## Statutory Auditors' Report

For the other consolidated CSR information, we assessed their consistency in relation to our knowledge of the company.

Finally, we assessed the relevance of the explanations provided, if appropriate, in the partial or total absence of certain information.

We consider that the sample methods and sizes of the samples that we considered by exercising our professional judgment allow us to express a limited assurance conclusion; an assurance of a higher level would have required more extensive verification work. Due to the necessary use of sampling techniques and other limitations inherent in the functioning of any information and internal control system, the risk of non-detection of a significant anomaly in the CSR Information cannot be entirely eliminated.

## CONCLUSION

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Based on our work, we have not identified any significant misstatement that causes us to believe that the CSR Information, taken together, has not been fairly presented, in compliance with the Criteria.

## OBSERVATIONS

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Without qualifying our conclusion above, we draw your attention to the following points:

- The worked hours data, used as the denominator in the calculation of the frequency rate of employee accidents, are not determined in a consistent manner regarding overtime and absences.
- The definitions of the quantitative indicators “number of employees having attended training during the year” and “number of annual performance appraisals completed” are open to interpretation and lead to a heterogeneous application by the different subsidiaries.

Paris-La Défense, March 4, 2014

The statutory auditors  
French original signed by

	Mazars		Ernst & Young et Autres
Lionel Gotlib	Emmanuelle Rigaudias	Jean-Yves Jégourel	Éric Duvaud
	Sustainable Development expert		Sustainable Development expert

## > APPENDIX

### Link between Air Liquide's Sustainable Development indicators and the indicators of the Global Reporting Initiative (GRI) <sup>(a)</sup>

Air Liquide indicators	GRI indicators
<b>Human Resources</b>	
Group employees	LA1
Distribution of employees by geographic zone	LA1
Turnover of employees (leaving the Group)	LA2
% of retention rate of managers and professionals	LA2
% of women in the Group	LA13
% of women among managers and professionals	LA13
Average number of days of training per employee and per year	LA10
% of employees who have had a performance review meeting with their direct supervisor during the year	LA12
Diversity indicator (number of nationalities)	LA13
% of employees with benefits coverage through the Group	LA3
<b>Safety</b>	
Number of lost-time accidents of Group employees	LA7
Accident frequency of Group employees	LA7
Number of lost-time accidents of subcontractors and temporary workers	LA7
<b>Energy and environment</b>	
Total annual electricity consumption	EN3/EN4
Total annual thermal energy consumption	EN3/EN4
Evolution of energy consumption per m <sup>3</sup> of air gas produced (ASU)	EN6
Evolution of energy consumption per m <sup>3</sup> of hydrogen produced (HyCO)	EN6
Evolution of the distance traveled per ton of gas delivered	EN6
Total annual water consumption	EN8
Total direct greenhouse gas emissions	EN16
Total indirect greenhouse gas emissions	EN16
Total direct and indirect greenhouse gas emissions	EN16
Consumption of materials (calcium carbide, ammonium nitrate, raw materials for the Welding business)	EN1
Emissions into the atmosphere (NOx)	EN20
Emissions into the atmosphere (SOx)	EN20
Estimate of emissions into the atmosphere (VOC)	EN20
Discharge to water (oxidizable matter, suspended solids)	EN21
Total mass of waste by type and waste treatment	EN22
<b>Transportation</b>	
Estimate of CO <sub>2</sub> emissions by truck delivery	EN29
Estimate of CO <sub>2</sub> emissions avoided through on-site units	EN29
<b>Social</b>	
% of employees belonging to a unit with a local Code of Conduct	SO3
<b>Responsibility</b>	
% of the Group sales concerning the units where a customer or patient satisfaction survey has been conducted	PR5

(a) Global Reporting Initiative (GRI): an independent body that designs and promotes guidelines aimed at improving the quality, stringency and usefulness of reporting on economic, environmental and social performance.