

Innovation for Growth and Performance

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Member of the Executive Committee
VP Innovation, Digital & IT, IP and GM&T



A World Leader in Gases, Technologies and Services for Industry & Health



80
Countries



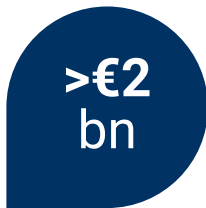
67,000
Employees



>3.7 m
Customers
and Patients



~€22 bn
of Sales in 2019



**>€2
bn**
Net Profit
in 2019



**~€5
bn**
Cash Flow
in 2019*



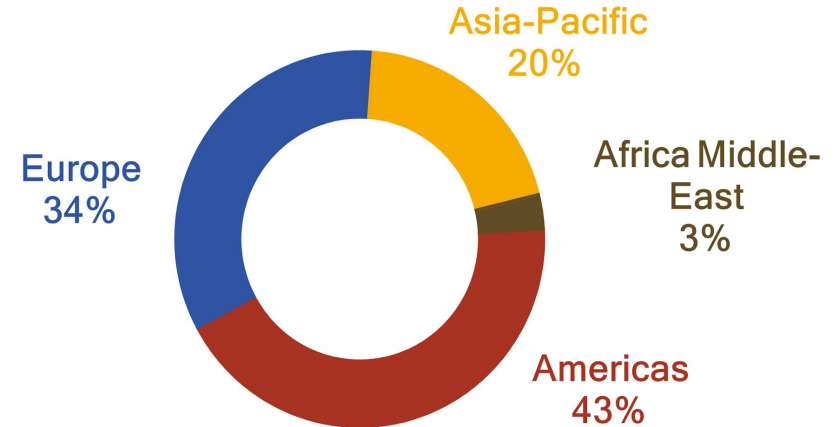
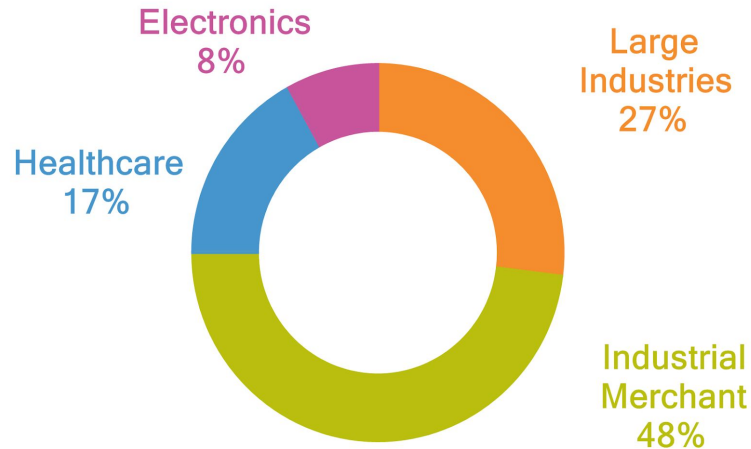
**>€60
bn**
Market
Capitalization**

* cash flow from operating activities before changes of working capital

** on December 31, 2019

A Balanced Footprint

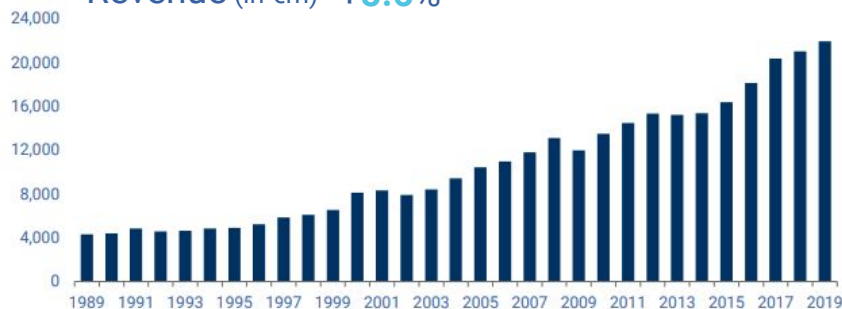
Gas & Services revenue in 2019



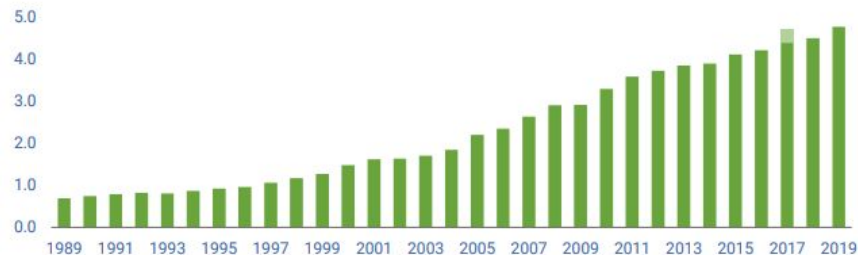
Regular and Sustained Performance

— CAGR over 30 years⁽¹⁾

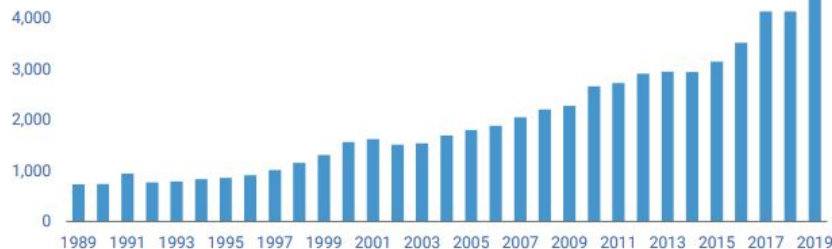
Revenue (in €m) **+5.6%**



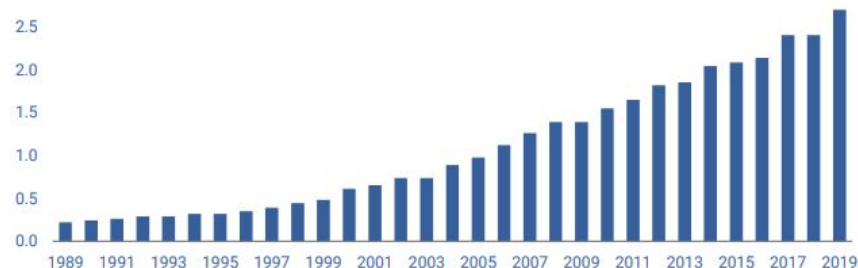
EPS⁽²⁾ (in €) **+6.7%**



Cashflow (in €m) **+6.5%**



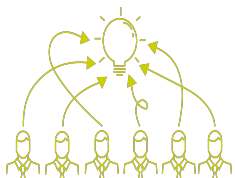
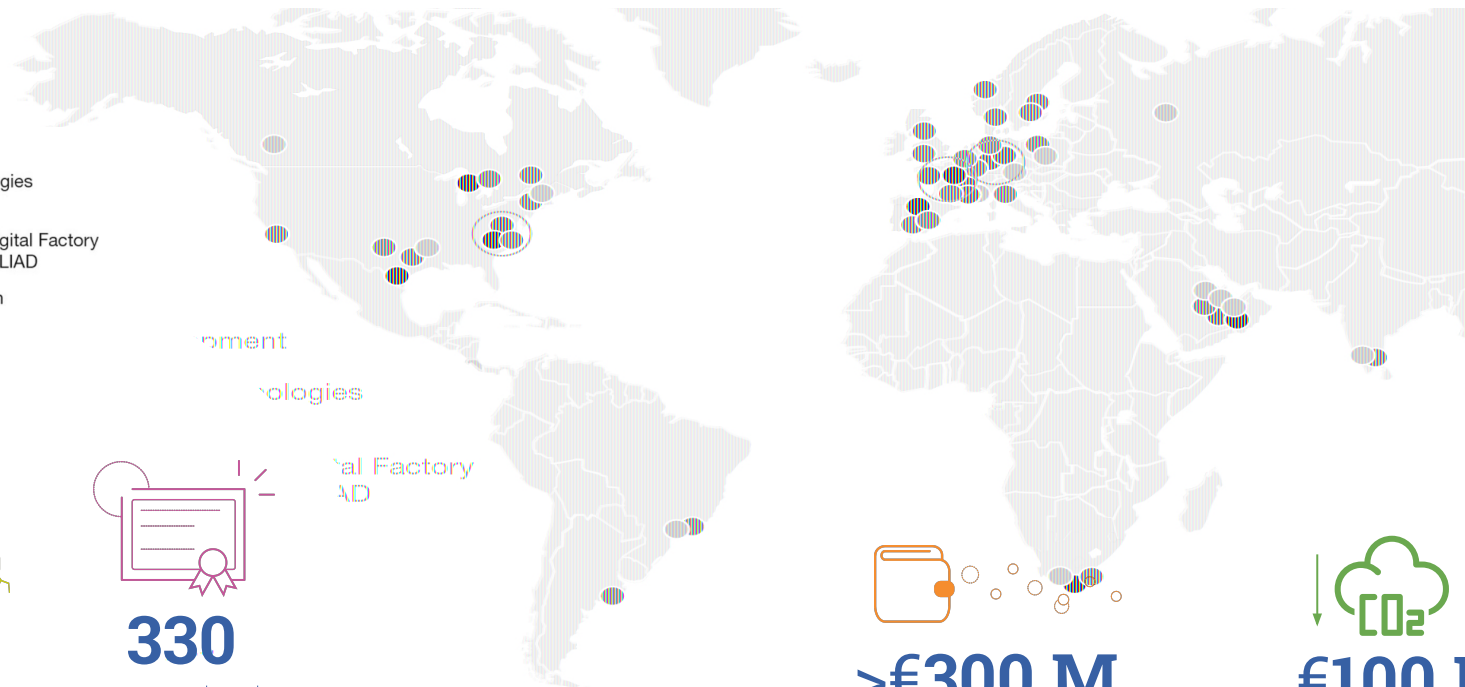
Dividend^(2,3) (in € per share) **+8.7%**



(1) Calculated according to prevailing accounting rules over 30 years. (2) Adjusted for the 2-for-1 share split in 2007, for attributions of free shares and for a factor of 0.974 reflecting the value of the rights of the capital increase completed in October 2016. (3) Dividend 2019 subject to the approval of shareholders during the General Meeting on May 5, 2020

Innovation: a Global Network

- Research & Development
- Global Markets & Technologies and Hydrogen Energy
- Digital & IT (including La Digital Factory and ALIZENT), i-Lab and ALIAD
- Engineering & Construction
- Other entities
- Innovation Campus



4,300

employees
contributing
to innovation



330

new patents

La Digital Factory
ALIAD



>€300 M

Innovation expenses




€100 M

to reduce
carbon footprint
(Incl. in Innovation expenses)

Innovation to Create New offers

Qlixbi: a Breakthrough Packaged Gas Offer



- **Designed with welders, for welders**
 - Collaboration with **700 welders**
 - **300 partners**
- **Convenient:** instant click-on connector
- **Efficient:** gas reserve indicator 
- **Safe:** ergonomic wheel and 360° rotating connector
- **With a digital tool to optimize gas stocks:** remote tracking of gas consumption
- **Patented innovation**

Chronic Care Connect: Support Patients With Chronic Disease at Home



Patient uses connected devices defined by the health practitioner



Analyzed remotely by qualified medical staff



Predictive alerts generated by algorithms



With the aim to:

- Provide **personalized care** from home and **improved quality of life** for **patients**
- Allow **doctors** to remotely **monitor changes** in their patients' clinical condition
- Prevent **hospitalization** and help control healthcare costs

Turbo-Brayton Solutions for LNG Carriers

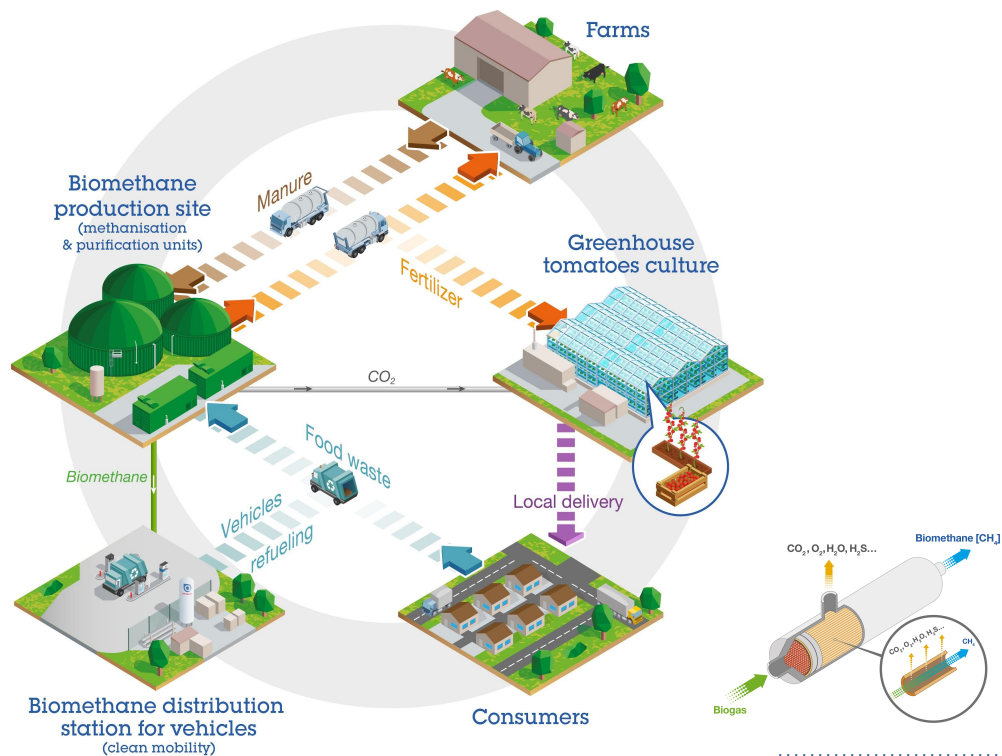


- Developed for and used initially in the International **Space** Station (ISS)
- Reliquefy **LNG boil-off during maritime transport** on LNG carriers
- **Prevents the environmental and economical impact** of LNG losses and gas flaring
- **Other promising applications** also emerging in the field of renewable energy

Read: [A tale of success in the maritime sector](#)

€180 million in orders recorded over the past two years

Biomethane at the Heart of a Circular Economy the Example of The Magic Factory



Key figures worldwide:

- >€200m Capex
- 19 Biomethane production sites
- ~70 Bio CNG/LNG stations
- >1 TWh/yr

Biomethane also used as a feedstock for the production of **renewable H₂**

Innovation to help deliver >
€400m of efficiencies annually

Technology Roadmaps to Improve the Competitiveness of our Assets



Efficiency (ASU)

R&D programs to further optimize efficiency
Ongoing on 10 ASUs



Efficiency (SMR)

New generation SMR without excess steam
production with high energy efficiency
Covestro contract. Start-up Q4 2020



Carbon Capture

New Cryocap™ product family to reduce CO₂ capture costs on SMR
and on a wide range of industrial processes



Smart Innovative Operations: LI Digital Transformation



Digital technologies
Leveraging 1bn data-points
in Operations daily

Centralized remote control
of LI plants in all key industrial basins

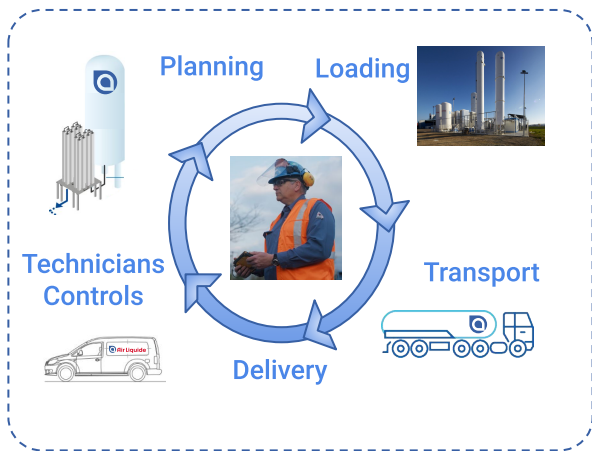
**Enhanced relationship
with our customers**



IBO to Optimize Bulk Supply Chain for IM



IBO.CONNECT



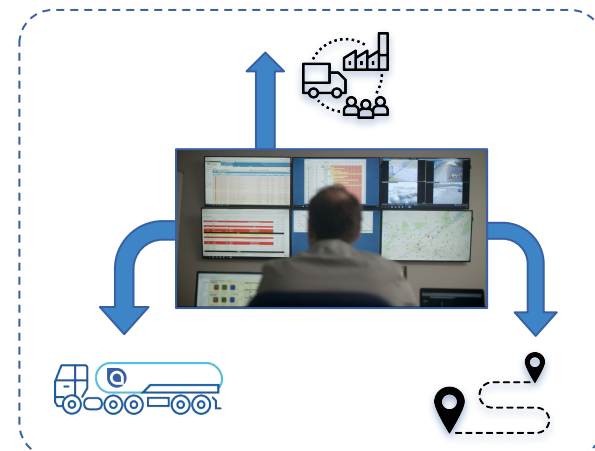
End to end digitization of assets for a seamless execution

IBO.PERFORM



Analyze operational performance to act and improve processes

IBO.OPTIM



Decision making tools to optimize supply chain with targeted actions

Launch of Major Innovative Projects for Tomorrow



CCS⁽¹⁾



MOU with Northern Lights



Consortia with Ports of Antwerp and Rotterdam

Green H₂



Electrolyzer in Quebec



HyGreen Provence

Low CO₂ Production



thyssenkrupp



ArcelorMittal

H₂ Mobility



California



Paris



China

(1) Carbon Capture and Storage

Innovation at the Heart of Energy Transition



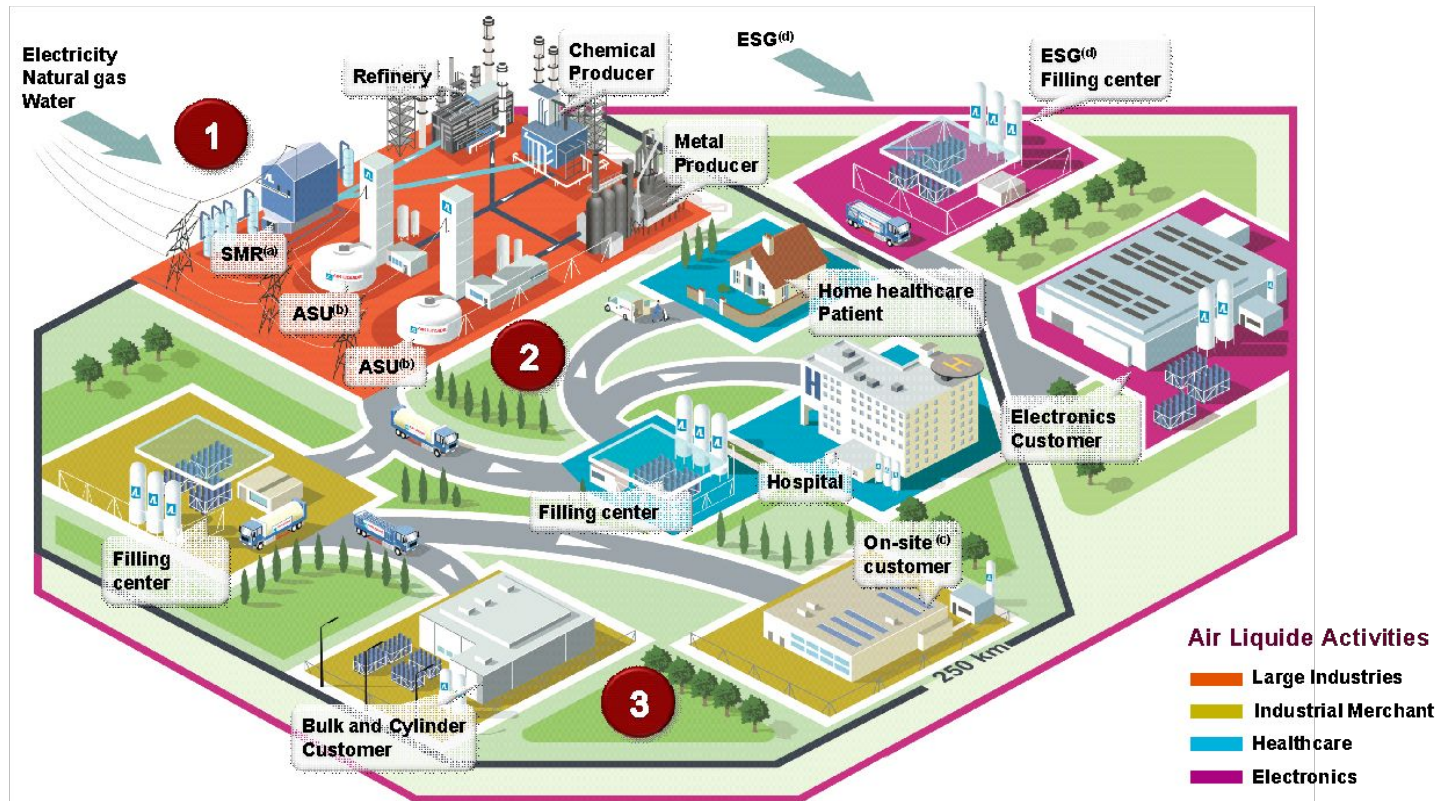
Appendix

A Strong Business Model

1 Mutualize assets

2 Liquefaction piggyback

3 Distributors, bolt-on acquisitions



^(a) SMR: Hydrogen and carbon monoxide production unit (Steam Methane Reformer)

^(b) ASU: Air gases production unit (Air Separation Unit)

^(c) On-site: Small local production unit

^(d) ESG: Electronic Specialty Gases

Financial Objectives

+6% to +8%
CAGR 2016-2020⁽¹⁾

Efficiencies >€300m on average/year⁽²⁾
+ Airgas synergies >\$300m

(2) Upgraded from >€300m to >€400m as of 2019



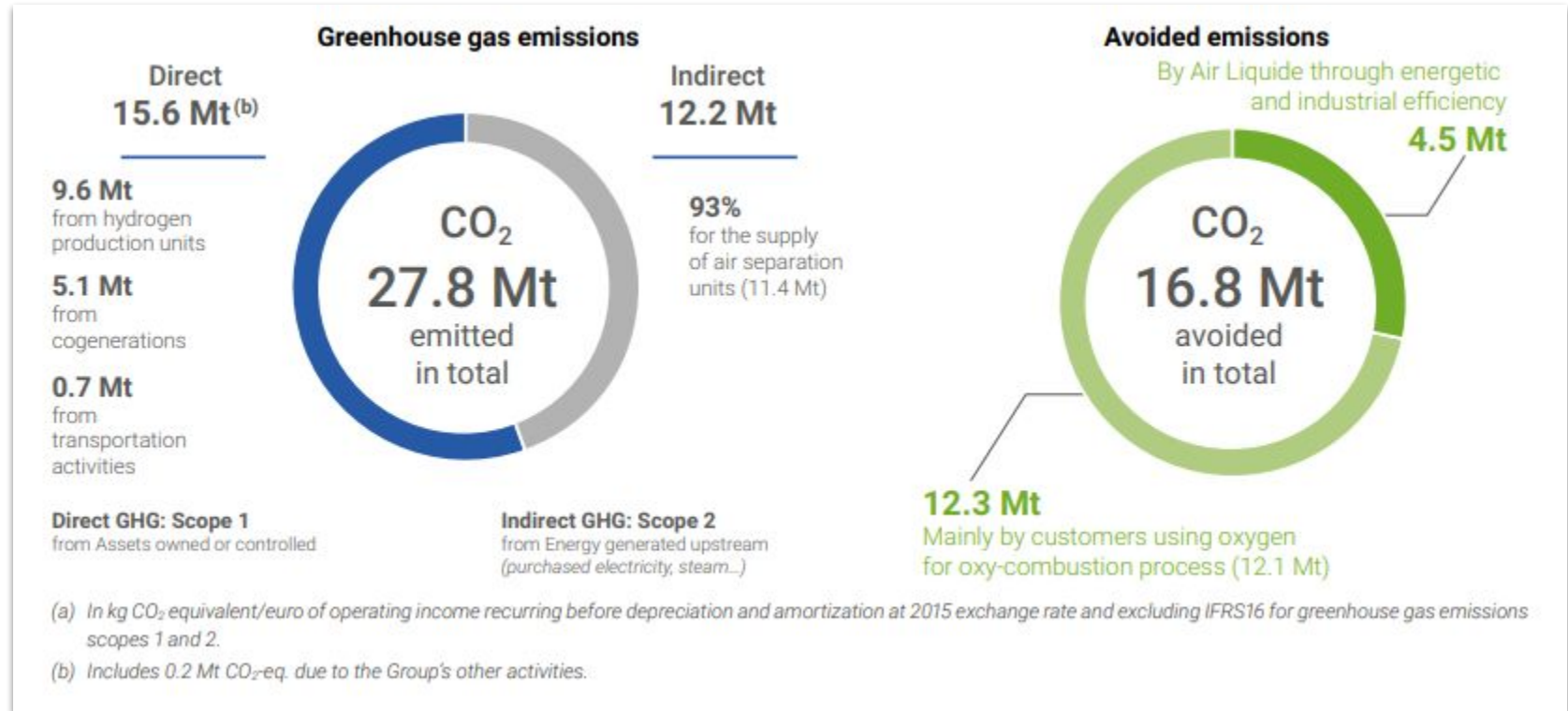
>10%
In 2021-2022

Maintain
“A” range rating

Capex/Sales 2017-2020: 10% to 12%

(1) Including Airgas scope effect in 2017 contributing +2% to the CAGR

Greenhouse gas emissions within Air Liquide



Climate Objectives

A global approach



ASSETS

Reduce our carbon intensity in 2025 vs. 2015 by **-30%**



CUSTOMERS

Act for clean industry by developing low-carbon solutions

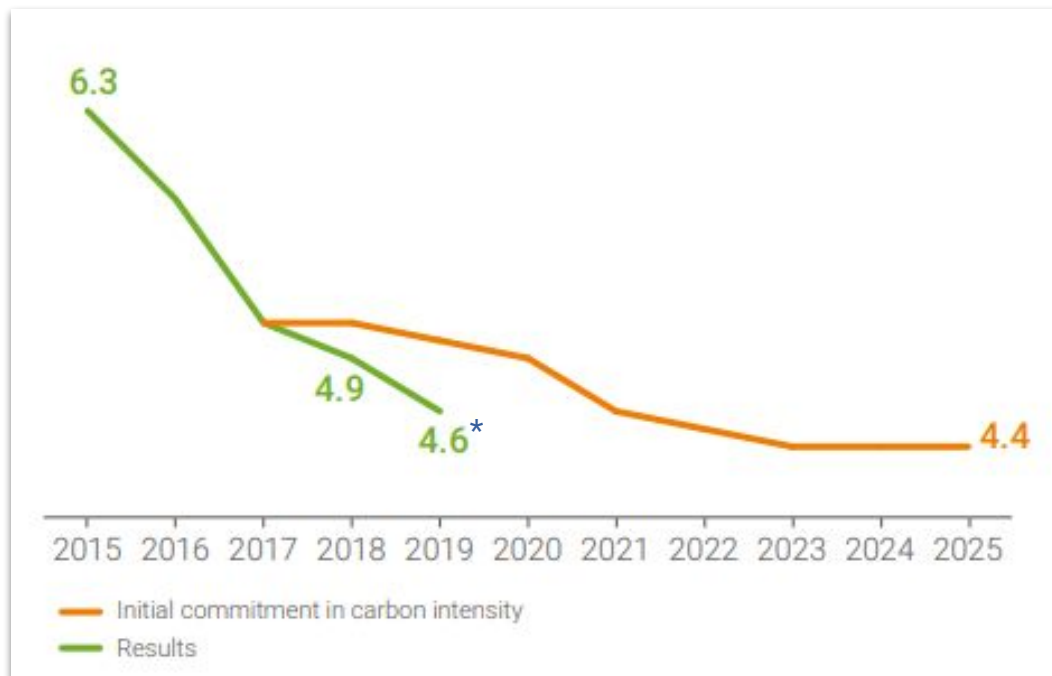


ECOSYSTEMS

Contribute to a new low-carbon society

Carbon intensity

Objective : Reduce carbon intensity by 30% by 2025 (4.4), based on 2015 emissions levels (6.3)



* **-27%** reduction in carbon intensity compared with the 2015 carbon intensity.