

climate tech

for a Sustainable Planet

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François Jackow
Chief Executive Officer,
Air Liquide



The CEO Corner

in discussion with



Aiman Ezzat
Chief Executive Officer,
Capgemini





The CEO Corner



François Jackow,
Chief Executive Officer,
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François Jackow joined the Group in 1993. He is the Chief Executive Officer of Air Liquide since June 1st, 2022. He chairs the Executive Committee of which he has been a member since 2014. After starting with Air Liquide, he has held various positions in Marketing, Business Development, Engineering and Strategy in the United States, the Netherlands and France.

From 2002 to 2007, François Jackow was in charge of Innovation, as Vice President of Research, Development, and Advanced Technologies for the Group. From 2007 to 2011, he was President and CEO of Air Liquide Japan based in Tokyo. From 2011 to 2014, he headed the Large Industries business line and from 2014 to 2016 was in charge of Corporate Strategy. From 2016 to 2022, he supervised Europe Industries, Europe Healthcare and Africa / Middle East / India hubs, as well as the Healthcare business line. From 2020 to 2022 he also supervised the Innovation, Technologies and Digital / IT functions.business administration both from France and the United States.



Aiman Ezzat,
Chief Executive Officer,
Capgemini

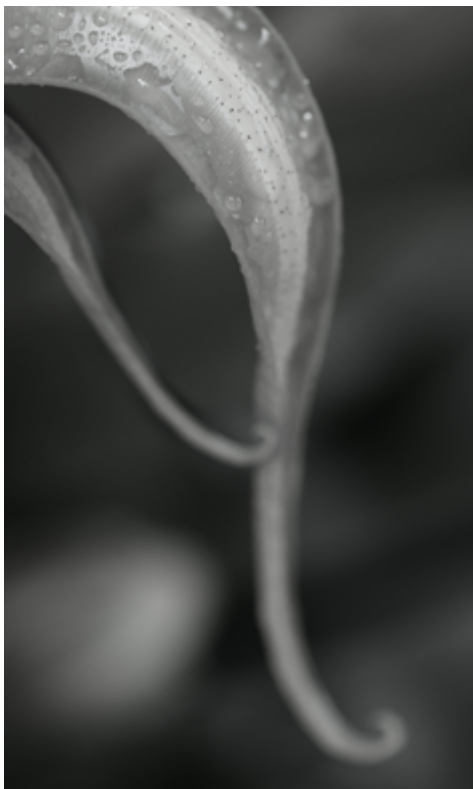
With more than 20 years' experience at Capgemini, **Aiman Ezzat** has a deep knowledge of the Group's main businesses. He has worked in many countries, notably the UK and the US, where he lived for more than 15 years. Aiman was appointed CEO in May 2020; prior to that, from 2018 to 2020, he served as the Group's COO and, from 2012 to 2018, as CFO. Aiman is also on the Board of Directors of Air Liquide and is a Member of the International Business Council of the World Economic Forum.

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 360,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2022 global revenues of €22 billion.

The Capgemini Research Institute spoke to Francois and Aiman to understand their views on the challenges of climate change, energy transition and the potential of emerging technologies to fight this planetary challenge

You took over the general management of Air Liquide as the energy crisis and climate change rose up the corporate agenda. How is this context affecting the Air Liquide Group?

— **François Jackow:** The energy crisis clearly presents us with a paradox: despite the risks and uncertainties, there are unprecedented opportunities to invest in the development of innovative, permanent solutions to the problems of our customers and of society in general. Decarbonization needs to play a key role in managing the affordability of energy and the security of the supply chain and this is a clear opportunity for Air Liquide. For instance, one of the services we now offer is oxy-combustion, which is a technique for making glass using oxygen; this reduces the use of natural gas by 10 to 35%, while also reducing CO₂ emissions, which are both significant benefits to our customers.



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Which climate technologies will play important roles in the energy transition?

— **François Jackow:** One area that stands out is low-carbon electricity, which can be generated through both renewable and nuclear sources. This will be a principal contributor to our line of low-carbon-content products, as well as shrinking our customers' carbon footprints. I also think that carbon capture, utilization, and sequestration (CCUS) is going to be very significant, particularly since all the technological bricks required (be it capture, transportation or storage) have now been proven safe and economical. These technologies can be applied as of now to very large quantities, and could, therefore, have a huge impact across the spectrum of carbon emissions, notably in the hard-to-abate industries where no alternative exists. It is, however, important to keep in mind that, while CCUS will help us meet our short-term objectives, it should not be used as an excuse to halt the development of other technologies. We need to continue the structural transition to renewable and circular processes.

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technological innovations such as green hydrogen and CCUS, as well as the evolution of batteries. I believe there will also be an important contribution from alternative fuels and remain confident that nuclear will play a critical role in the energy transition. Solar is an underexplored arena; with advances in the efficiency of solar panels, solar energy could prove a key transition technology in many geographies. However, as François highlighted, it is important to note that transitioning to renewable energy or relying on climate tech will not be enough. We need to rethink our design and production methods to do business in new and better ways.

What do you see as the role of low-carbon hydrogen in the future energy mix and what are the challenges of scaling the relevant technology?

— **François Jackow:** The first challenge is to establish a secure supply of low-carbon electricity, either from renewables or nuclear; today, globally, this is the bottleneck. The second challenge is to scale up hydrogen-production technologies. Take electrolysis; Air Liquide operates today the largest proton exchange membrane [PEM] electrolysis unit in the world [its 20-MW unit in Canada]. We need to scale that up tenfold – perhaps even as much as a hundredfold – to make an even more significant contribution. Another big challenge is, obviously, to boost market demand, not only by improving the infrastructure, but also promoting the usage of hydrogen. That will rely on effective public-policy incentives.

— **Aiman Ezzat:** Hydrogen holds great promise as a sustainable, energy-dense fuel that could ultimately replace oil and gas as a principal energy source. Our research shows that energy organizations & utilities expect low-carbon hydrogen to meet up to 18% of energy demand by 2050. Investment in the area is already taking off and is set to increase significantly. But there are important obstacles starting with cost: low-carbon hydrogen is still 2–3 times more expensive to produce than carbon-based hydrogen. Moreover, the high costs of storage, transportation, as well as energy losses across the value chain all contribute to an increased total cost of operations. Finally, there are also engineering and skill shortage challenges that organizations must contend with.

In the US, the Inflation Reduction Act is driving a lot of investment towards sustainability. What should government be doing to drive investment in Climate Tech and low-carbon hydrogen especially?

— **François Jackow:** Governments must feel the sense of urgency, and the responsibility to take action now. Sovereignty and sustainability are closely related, and they offer business opportunities for any country - this is one of the key learnings of the recent past. In order to capitalize on these opportunities, governments must put in place a policy framework that recognizes the value of carbon, and which will then drive economic behaviour based on that recognition.



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— **Aiman Ezzat:** The US has made a good start and we are seeing growing momentum across Europe as well. Looking specifically at green hydrogen, France has already committed to spending over €9 billion (\$9.9 billion) to encourage the transition of heavy industry to hydrogen. The UK plans to invest £4 billion (\$4.8 billion) in creating a low-carbon hydrogen industry by 2030. It is targeting 5 GW of annual production capacity – sufficient to power around 3 million homes – as well as heavy industry. Globally, momentum is definitely growing but, as François mentioned, we need broader frameworks that incentivize businesses while encouraging the growth of Climate Tech.

Where are your organizations on their net zero journeys?

— **François Jackow:** Achieving net zero is a serious challenge for any manufacturing company, especially when you are undergoing an energy transition. We were the first company in our sector to set carbon-intensity objectives and we are now 25% below the 2015 carbon-intensity level. However, two years ago, we realized we needed to set more – and more specific – objectives in terms of our absolute carbon emissions. We have targeted carbon neutrality by 2050. Air Liquide's target of reducing its scope-1 and -2 CO₂ emissions by 2035 has been validated by the Science Based Targets initiative (SBTi). We are the first organization in our industry to obtain such validation from a leading, independent authority such as the SBTi and this represents significant recognition of Air Liquide's trajectory to reach carbon neutrality by 2050. CO₂ emissions reduction is a key objective of our strategic plan for 2025. Air Liquide's strong commitment to a sustainable future includes not only reducing the carbon emissions of its own assets, but also helping our customers to reduce their CO₂ emissions and developing low-carbon ecosystems.

— **Aiman Ezzat:** At Capgemini, we are fully committed to sustainability. We are proud of being one of the first companies in the world to have its net zero targets validated against the new, more exacting SBTi standards published at end-2021. We have set more ambitious near-term (2030) and long-term (2040) carbon-footprint targets, notably with a 90% reduction in all emissions (scopes 1, 2, and 3) by 2040. As of end-2022, Group-wide carbon emissions had already fallen by 29% (and 46% per employee) against the 2019 baseline set by the SBTi.

Our ambitions are supported by initiatives such as our new-energy command center in India, which has used extensive digital data analysis to reduce our energy consumption by around 20%, across all our campuses. On the back of progress achieved by Capgemini in 2022, the Group was admitted to the Dow Jones Sustainability Index (DJSI) Europe at the end of the year.

How do you ensure that all stakeholders contribute towards the reduction of scope-3 emissions?

— **François Jackow:** Because we need to take into account the full value chain, it's critical that every stakeholder takes responsibility for reducing their own scope-1 and scope-2 emissions. Currently, we are sourcing renewable electricity and seeking to limit emissions from some of our units. However, what we really need for effective control of scope-3 emissions is a unified set of standards across sectors. We are working actively with associations such as the SBTi to develop an effective measurement and reporting framework, and are already reporting on nine of the 13 scope-3 categories. Working on a more consistent industry wide view of scope-3 emission reporting, we have decided to already set the objective to have 100% of our top-50 largest customers committed to carbon neutrality by 2035.

— **Aiman Ezzat:** Although we can't directly control all the scope-3 emissions in our value chain, as a global company, travel consistently contributes the largest share of Capgemini's carbon footprint. We are raising our near-term (2030) scope-3 targets for commuting and business travel to a 55% reduction per employee against a 2019 baseline. Similarly, sustainable businesses require sustainable supply chains. Establishing a reliable universal measurement mechanism is the first key action. There are no short-cuts; it involves working closely with all stakeholders to help them understand and act according to their roles in the value chain.

How are you aligning the organization to drive sustainability at all levels?

— **François Jackow:** Firstly, we need to set clear objectives - in line with our ambition to be Climate champions. Secondly, we must communicate them clearly to ensure that sustainability is at the core of the Group's growth strategy, business model, and value creation, and that all employees understand their role in achieving the objectives. Lastly, we need to ensure that we are consistent and credible, both within the organization and externally. For instance, one of the most powerful things that we have done is to implement a carbon budget: a few years ago, we allocated investment to creating a carbon envelope around our operations. This has changed the mindset of employees, who now prioritize projects that align with the company's carbon trajectory and emissions-reduction goals.

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— **Aiman Ezzat:** Sustainability must not be managed as a compliance project. Rather, it requires enterprise transformation, like the digital transformation programs that many organizations have launched. This transformation affects all parts of the business – from design of the business model and product line to operations and IT. It requires proper governance, headed by a C-suite executive. Having strong board support is also key to the success of sustainability initiatives. As a CEO, it is important to unify the organization in its purpose, removing silos and encouraging functions and teams to work closely to achieve their sustainability goals. Organizations must recognize the urgent need for viable sustainability initiatives, led and supported by realistic short-term goals.

How important do you think collaboration will be in achieving decarbonization?

— **François Jackow:** Collaboration is a key aspect of our sustainability journey. We work with our customers to invent new manufacturing techniques and set more stringent objectives. Today, our initiatives address not only product innovation, but also system innovation. We collaborate with different stakeholders, customers, suppliers, and partners, to develop an ecosystem of solutions. It is absolutely vital that different stakeholders each bring a piece of the puzzle and collaborate towards a common objective. We need a further-reaching, comprehensive outlook to impact all the stakeholders - not just customers, but also employees and shareholders - in the sustainability journey.



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— **Aiman Ezzat:** We can achieve a sustainable future only through deep collaboration with our clients, suppliers, and other stakeholders. Decarbonization will result from reconstructing the way we do business and rethinking our entire value chain and products. This requires an unprecedented level of cooperation and mobilization across industries. To find lasting, meaningful solutions, leading voices from business, academia, and government must come together to discuss our options as a society. The Conversations for Tomorrow journal is one of many such initiatives that Capgemini takes to juxtapose diverse viewpoints.

Our research indicates that most executives still view sustainability as a cost driver and an obligation, rather than a business opportunity. How do you convince your clients that sustainability is good for business?

— **François Jackow:** We engage with our customers regularly on these topics and we have identified three sustainability drivers. The first driver, particularly in Europe, is to reduce emissions sufficiently to avoid paying the EU Emissions Trading System (EU ETS) carbon tax. The second driver for engaging participation in a carbon-reduction project is helping customers meet their corporate commitments and objectives in terms of carbon trajectory. The third – and most important – driver is helping customers see opportunities to promote and develop low-carbon offers, services and products. When our customers realize that they can gain competitive advantage and create added value by offering sustainable products, that's when a sustainable business model really starts to take

shape. Decarbonization and sustainability shift to opportunity-driven goals, rather than compliance-driven obligations for the customer.

What new energy business models do you anticipate will emerge in the medium term?

— **François Jackow:** In their economic valuations, our customers are putting an emphasis on carbon reduction. By developing solutions that use traditional industrial products such as oxygen, nitrogen, and hydrogen, while also helping to reduce their own carbon footprint, we can create a lot of value for our consumers. But this will entail rethinking how we deliver our products, and exploring new schemes to package our offers. Secondly, we see a new business model for mobility. There's value to be created, not only in providing fuels for mobility, but also in changing the way transports (trucks, bus, train, etc.) are used logistically for example. Business models are changing because customers are willing to own fewer assets and embrace a different kind of business model, based on re-use.

— **Aiman Ezzat:** The energy transition is driving new business models in the energy and utilities market. These include clean energy; alternative fuels; grid-management services; and mobility services such as electric-vehicle (EV) charging stations, energy-storage solutions, and energy platforms. As the share of renewables in the energy mix increases, energy-storage solutions and grid-management services will be critical to managing intermittency in renewable-energy supply. Further, as consumers increasingly turn into prosumers,

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there is growing demand for renewable-energy storage systems for residential and commercial use, and for platforms that facilitate peer-to-peer energy exchange. Our research on this topic found that most energy and utility industry executives expect new energy models to constitute their mainstream business within the next few years.

What advice would you give to your peers on how to manage large organizations in such a volatile and uncertain environment?

— **François Jackow:** Firstly, in a volatile, challenging environment, we need a clear strategy based on strong fundamentals.

My second piece of advice relates to execution; we need to be agile and adapt to changes in the environment. We cannot afford to waste time or resources, so we need urgent access to the tools and organizations that can provide efficacy and efficiency, while building more resilient business models.

Lastly, we must listen: to our customers, who will act as our guides, and - equally important - to our employees. We need to engage them, communicate with them, explain our strategy. They need to feel that they are on the journey together.





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