

# SUSTAINABLE HEROES

Green Leaders  
in Focus



## Green Hydrogen

**Roeland Baan, CEO, Topsoe**

Roeland Baan, CEO of Topsoe, a Danish engineering company, is accelerating the rollout of green hydrogen to fight emissions in hard-to-abate industries.

## Regenerative Packaging

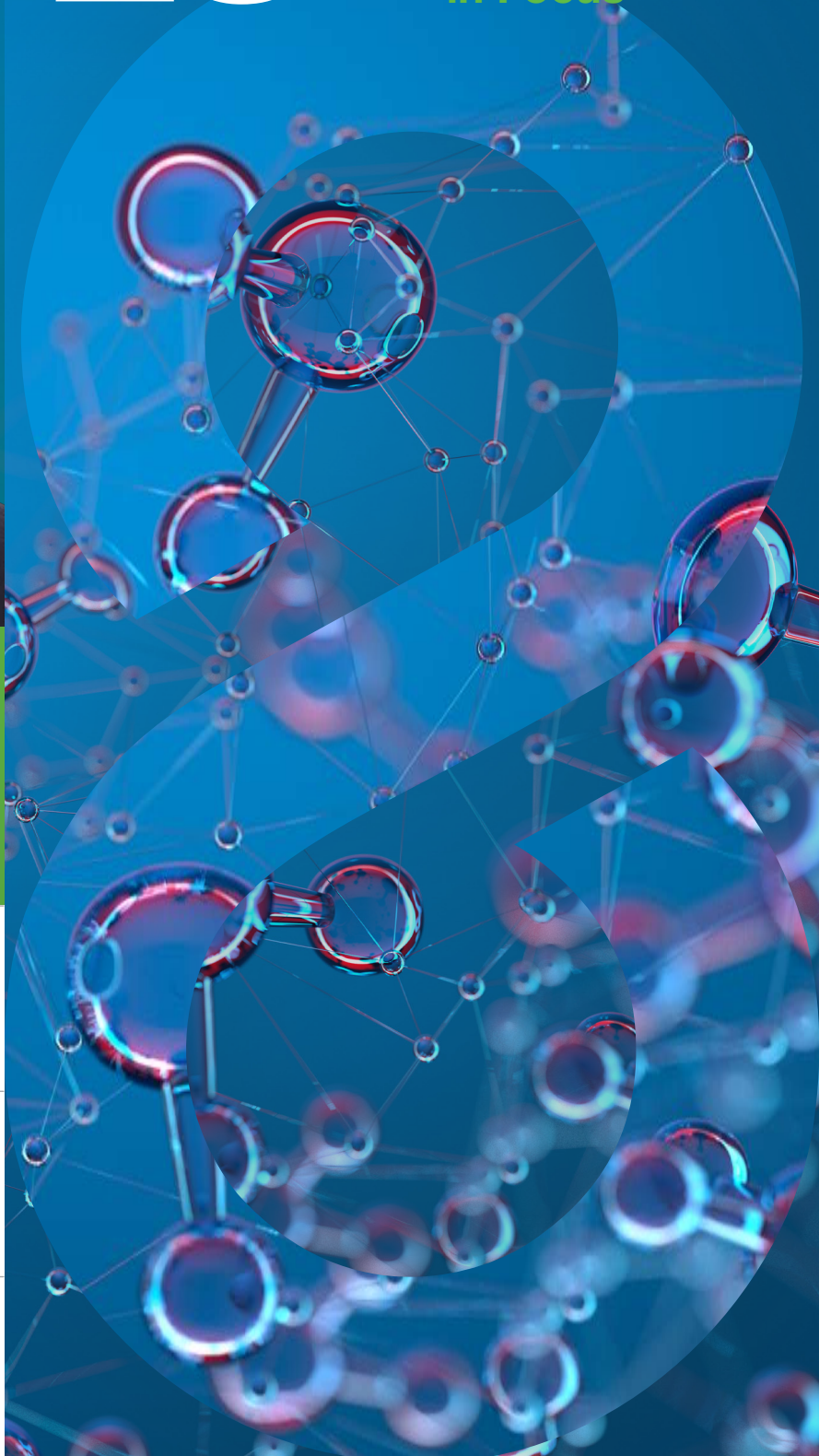
**Pierre Paslier, Co-Founder, Notpla**


## Policy Tailwinds

**Nancy Floyd, Founder, Nth Power**

## Progress over Perfection

**Amy Schumacher, CEO,  
The Heritage Group**





“Topsoe spends 8-9%  
of revenue on R&D.”

# Green Hydrogen

**Roeland Baan** is CEO of Topsoe, a Danish engineering company. Roeland tells Nomura Greentech that he is accelerating the rollout of green hydrogen to fight emissions in hard-to-abate industries.



**Roeland Baan**  
CEO  
Topsoe

**Q | What first triggered your interest in sustainability and what made you join Topsoe?**

It was really triggered by ‘An Inconvenient Truth’. While I was already environmentally aware, the film brought home the realities of global warming and in subsequent jobs I had a strong ESG and climate focus.

But I must admit that up until this time, I was working in some of the most polluting industries, such as oil and steel.

Topsoe was interesting because I got to know the company years before joining and saw that it was dedicated to developing technologies for energy and environment, but not necessarily for the energy transition.

Topsoe spends 8-9% of revenue on R&D and I remember thinking that’s a huge amount of technology that could be applied to decarbonize the planet. When I was offered the CEO job, I accepted without hesitation, as it allowed me to contribute directly in the fight against climate change. I saw a tremendous opportunity.

I started in May 2020, and by June we had released our 2024 vision to be recognized as a global leader in carbon emission reduction technologies.

Employee shareholders, family stakeholders and our institutional investor, Temasek, backed the plan, so we went full steam ahead.

**Q | Topsoe specializes in decarbonizing hard-to-abate sectors which are essential to achieve net zero by 2050. Where do you see the most progress and which technologies are you most excited about?**

The biggest issue in the energy transition is that the most exciting and promising technology for hard-to-abate sectors is Power-to-X (using renewables to create an energy carrier, typically, hydrogen).

Power-to-X requires vast amounts of green energy and electrolysis capacity has to be in place. And then there’s a green premium that will only be lowered through scale. We have to be successful, as this technology is absolutely essential to realize a net zero future.

While Power-to-X is emerging, we should also develop other areas because it’s crucial that we make significant progress in reducing emissions wherever we can this decade. That means pursuing two major pathways which are already there at scale, proven and more or less price competitive – renewable fuels, based on biological feedstocks, and low-carbon fuels, based on natural gas with carbon capture.

Hydrogen - and its derivatives, such as Methanol and Ammonia - is very much a building block as the basis for the transition. Ultimately, these molecules should be based on renewable energy, but until we have enough renewables available, we should still remove carbon, and we should concentrate on how to do that as fast as possible and then concentrate on the pathway to reach net zero.

**Q | You are building Europe's biggest electrolyzer plant to produce green hydrogen. Europe needs to grow this capacity 50-fold; how much will you generate?**

We have a proprietary technology for a solid oxide electrolyzer cell (SOEC) plant that's different to the mainstream. It's a first-of-its-kind plant and uses 30% fewer electrons to produce the same amount of hydrogen compared to other electrolysis technologies. As we have a shortage of green electrons in the near-term, this will help mitigate that problem.

At the same time, we believe that power will be expensive for a long time, so using less of it will achieve a more affordable end product.

The plant costs 350 million euros to build and we are considering building a second one in the U.S.

So, we really believe in the technology and want to scale it as fast as possible. The European Commission has a target of 10 million tons of green hydrogen produced in Europe by 2030, which would require 100 gigawatts of electrolyzers.

Currently, we only have 200 megawatts operating in Europe, so it's a huge task. Our 500 megawatts, which is projected to grow to 1.4 gigawatts annually by 2031, is still only a small fraction of what we need constructed by the end of the decade.

**Q | Has the U.S. Inflation Reduction Act benefited your business and do you think the EU Green Deal needs to provide greater incentives to companies involved in the energy transition?**

It's interesting to note that Europe has historically had a tremendous head start over the U.S. and China in developing many of the technologies we need, but ultimately the U.S. has come up with a better mousetrap - one that's very simple and provides certainty and security for at least the next decade.

You can easily assess whether you're eligible and how much you'll receive in incentives. In Europe, when you add up the incentives it probably amounts to more than the IRA, but obtaining it is very complex, with long application processing periods and a small chance of success.

It's not satisfactory, but the reason is a lack of tax unity. If we had fiscal unity, like the U. S. has, it would be easier to provide tax incentives.

But I don't want to slam our efforts here, because I came from a meeting yesterday in Brussels and there's tremendous will to make things happen in Europe. It's just that our politicians have complex waters to navigate.

But at the same time, we're seeing firsthand some of our European customers mothballing EU projects in favor of American ones. These customers have permits

already secured but decide to go where the money flows.

It's dangerous for Europe, because if we lose investments, we potentially lose expertise and we risk losing our technological advantage.

Topsoe is considering a second SOEC plant in the U.S. as a direct result of the IRA.

The IRA is pulling so much capital away from everywhere else that it'll succeed in accelerating the energy transition. But that inevitably means other territories will get fewer investment dollars.

**Q | Can sustainable aviation fuel make a significant dent in emissions from flying? And how far away are we from mainstream adoption?**

Aviation account for 2% of global energy-related CO2 emissions. It might not sound like a lot, but it is - 800 Mt CO2 in 2022 to be precise. And it's growing - 21.2 gigatons of additional CO2 is expected between 2021 and 2050 from air traffic if the current growth rates in passenger journeys continue.

Sustainable aviation fuel (SAF) can avoid about 90% of emissions. To stay on course for net zero by 2050, 10% of all fuels consumed in aviation by 2030 must be SAF, and by 2050 SAF must account for 70%.

We recently decided that decarbonization of the aviation sector wasn't going fast enough.

We thought about building SAF plants and producing and selling SAF under our own brand. In the end, we approached our long-term partner Sasol, with whom we have complimentary technologies, and together we're creating a pure play SAF end-to-end company that'll develop, build, own, operate and market SAF.

We're now in the process of incorporating the company, satisfying regulatory and competition hurdles before embarking on our big ambition to quickly get projects off the ground.

So, SAF can make a big difference and we're spearheading efforts to scale it.

**Q | Are you an advocate of technologies like carbon capture and storage or do you believe we should concentrate on faster rollout of renewables?**

At this stage, we need to throw everything we have at the problem. Already, with blue technologies (using natural gas) we can remove 99.3% of carbon from a hydrogen process. Of course, you must completely ensure that in the sequestration process it's gone forever and isn't being used for enhanced oil recovery.

Eventually, the world wants to be free of fossil fuels. But we have to accept that fossil energy will be around for the next 30-60 years, so, let's make it as clean as possible in the meantime and start decarbonizing.





**Q | What's the biggest obstacle in accelerating Topsoe's work?**

The availability of finance. In order to get our projects off the ground, banks stipulate a number of conditions, including irrevocable long-term off-take agreements. Off-takers such as airlines and shipping companies are often reluctant to lock in for the long term as they have limited clarity on long-term costs, as everything from feedstocks to operational costs is still new.

If we could use contracts for difference or long-term power purchase agreements more frequently to provide certainty to the market, it would really help facilitate financing.

**Q | What has impressed you most since joining the company three years ago?**

I've been impressed by the incredible depth of knowledge deeply ingrained in the DNA of this company.

Topsoe's founder is an accidental entrepreneur who started out as a scientist to improve catalysts. Decades ago, he said we're first and foremost here because of our passion for science. Secondly, we're here to use that science to create a better world. Thirdly, we of course need to drive a profitable business. But the passion for science and doing good is what drives us. That remains the same 83 years later.

Science is the core of what we do. We only undertake projects if they benefit society, and of course they need to generate sufficient capital to be able to reinvest in the company for growth.

When we came up with our new vision and a new direction, there was a lot of discussion, pushback and questions, but it was empowering, once everyone was on board, to just go for it.

**Q | What are your future plans?**

We have a full plate. We're playing in all these different technologies that are central to the energy transition. Our Power-to-X group started with 50 people about 18 months ago and has now grown to 200 people.

The energy transition is a tectonic shift on a par with the Industrial Revolution. We're trying to replace a century of energy development with a completely new energy vector in the space of 30 years. It's mind boggling. And at the same time the world wants to develop further.

**Q | Who's your sustainable hero and why?**

That's probably the most difficult question. You can look at Bill Gates who through Breakthrough Energy Ventures is making a tremendous difference, but I'll actually go closer to home with a Danish politician called Connie Hedegaard.

Connie was Denmark's Minister of Environment from 2004 to 2009 and hosted the climate COP in 2009.

She had the foresight that it was possible for Denmark to decarbonize and pursue a totally different future through clean energy. And that was the early 2000s, so she was ahead of her time.

She became the European Commissioner for Climate Action in 2010, where she led the negotiations towards the adoption of the 2030 Climate and Energy Framework.

She was also the EU's climate ambassador in international climate negotiations. So, as an individual and civil servant she's probably done more than anyone for the energy transition in Europe - spearheading it, believing in it and being the embodiment of it.

[nomuragreentechcommunications@nomuragreentech.com](mailto:nomuragreentechcommunications@nomuragreentech.com)

[www.nomuragreentech.com](http://www.nomuragreentech.com)

## NEW YORK

309 W 49th St  
New York, NY 10019  
United States  
Phone: +1 212 667 9300

## SAN FRANCISCO

Three Embarcadero Center, #1150  
San Francisco, CA 94111  
United States  
Phone: +1 415 445 3800

## HOUSTON

1201 Fannin Street, Suite 262  
Houston, TX 77002  
United States  
Phone: +1 713 253 3009

## ZÜRICH

Bahnhofstrasse 26  
8001 Zürich  
Switzerland  
Phone: +41 44 578 3900

## HONG KONG

30/F, Two International Finance Centre  
8 Finance Street Central  
Hong Kong  
Phone: +852 2536 1111

## LONDON

1 Angel Lane  
London EC4R 3AB  
UK  
Phone: +44 20 7102 1000

## FRANKFURT

Rathenauplatz 1  
60313 Frankfurt am Main  
Germany  
Phone: +49 69 97508-0

## PARIS

7 place d'Iéna  
75773 PARIS CEDEX 16  
France  
Phone: +33 1 53 89 30 00

## SINGAPORE

10 Marina Boulevard, Marina Bay  
Financial Centre Tower 2, #36-01  
Singapore 018983  
Phone: +65 6433 6288

## TOKYO

1-13-1 Nihonbashi, Chuo-ku  
Tokyo 103-8011  
Japan  
Phone: +81 0 3-3211-1811

## SYDNEY

Level 41, Governor Phillip Tower  
1 Farrer Place, Sydney, NSW 2000  
Australia  
Phone: +612 8062 8000



"Nomura" is the global marketing name of Nomura Holdings, Inc. and its direct and indirect subsidiaries worldwide. "Nomura Greentech" is the marketing name that refers to the division in Nomura's investment banking department that provides products and services to clients in the sustainable technology and infrastructure sectors. All activities of Nomura Greentech in the U.S. are conducted by Nomura Securities International, Inc. ("NSI"), a broker-dealer registered with the SEC and member SIPC. Elsewhere, services of Nomura Greentech are conducted by locally registered and/or regulated Nomura entities unless otherwise disclosed or notified. (Please contact us for details of our registrations and licenses in your location.) This document does not constitute: (i) research or a product of the Nomura research department, (ii) an offer to sell, a solicitation of an offer to buy, or a recommendation for any investment product or strategy, or (iii) any investment, legal or tax advice. Nomura may, and/or its officers, directors and employees, may, to the extent permitted by applicable law and/or regulation, deal as principal, agent, or otherwise, or have long or short positions in, or buy or sell, the securities, commodities or instruments, or options or other derivative instruments based thereon, of issuers or securities mentioned herein. Any member of the Nomura Group may from time to time perform investment banking or other services for, or solicit investment banking or other business from the companies mentioned in this document.