



# Green hydrogen: the game-changer climate advocates can't afford to ignore

**Today, green hydrogen is an expensive fuel. It's complex to produce, transport, store, and transform. Its production and use involve certain risks. But despite so many drawbacks, it remains on the agenda for the energy transition. Why? Simply because when used or burned with oxygen, it emits no CO<sub>2</sub>! Remembering global warming is directly related to the concentration of greenhouse gases in the atmosphere, green hydrogen just can't be ignored when developing a mix of solutions to fight climate change. With what level of priority? Response elements with Jean Jouet, CTO of Rely.**



**Jean Jouet**  
Rely CTO

The scientific community is united: The successive reports from the IPCC\*, including the latest update from June 2025, are unequivocal. Earth is currently experiencing unprecedented climate upheaval, both in speed and intensity. The main culprit? The increasing concentration of greenhouse gases in the atmosphere (and particularly CO<sub>2</sub>), primarily stemming from the Industrial Revolution and the widespread use of fossil fuels (coal, oil, and gas). These energy sources have enabled remarkable progress but have also significantly increased our carbon footprint.

"The facts are clear," explains Jean Jouet, Chief Technology Officer of Rely. "Humanity has no choice: to survive, we must curb climate change. The only viable path is to drastically reduce our CO<sub>2</sub> emissions from fossil fuels. The challenge is

immense because, of course, there is no question of giving up all the standard of living (health, education, communication & traveling tools...) to which we are now all accustomed."

## **A Multi-Faceted Response to a Complex Challenge**

To complex problems, multiple solutions. "It would obviously be fantastic if there were a single, magical solution to solve the problem, but unfortunately, that is not the case," states Jean Jouet.

"But the good news," he continues, "is that there are already a whole range of strategies we can deploy, and when combined, they should lead us to the 2050 goal of 'Net Zero Emissions.'"

\*Intergovernmental Panel on Climate Change

The first part of the solution involves improving energy consumption – both through behavioral changes and technological innovation.

“Technological innovation is one of our most valuable allies in enhancing the energy efficiency of all human activities, says Jouet. Simple solutions can make a significant impact and are often quick to implement – for example, replacing incandescent bulbs with LED lighting to reduce a building’s energy consumption. This technology has been available for many years and could be adopted more widely.”

“And I will not discuss individual behaviors here. As energy professionals, our influence over personal habits is limited. However, I am personally convinced that the development of new technologies does not exempt each of us from adopting responsible behaviors – such as turning off the lights when they are not needed.”

### Massive Electrification and Energy Efficiency

Transitioning to fossil-free technologies cannot happen overnight. Existing infrastructure – coal or gas power plants, traditional blast furnaces – cannot be shut down and replaced instantly. “For obvious technological reasons,” continues



There is no single solution for the energy transition; it requires, in this sequence, reducing energy consumption, improving efficiency, electrifying where possible with low-carbon electricity (including nuclear), using biomass when feasible, capturing and storing CO<sub>2</sub>, and ultimately, relying on green hydrogen.

Jean Jouet, “but also for economic reasons. An investment made ten years ago in a plant with a 50-year lifespan will still need several decades to be amortized.”

“On the other hand,” he emphasizes, “their energy efficiency and performance can be significantly improved. Their CO<sub>2</sub> emissions can be reduced by integrating capture technologies. Even their business model could be reviewed to take this issue into consideration. This is why we speak of transition. It will require time, patience, and resilience.”

Another crucial aspect of the solution is electrification. “Massive electrification, coupled with the growth of renewables, is a top priority,” claims Jean Jouet. “That’s where the most gains can be made, and quickly. For example, an electric motor is three times more efficient and emits 2 to 32 times less CO<sub>2</sub> than an internal combustion engine (depending on the electricity source). It is also possible to electrify most thermal processes below 800°C even if it sometimes involves lower efficiencies. But remember: the main goal is reducing emissions, not just improving yields. Everything that can be electrified should thus be, and as soon as possible.”

### Green Hydrogen and Its Many Uses

Green hydrogen can be used in various fields:

- As a raw material for fertilizers or chemicals.
- As a reactive agent in petrochemicals, and in the near future, for steel production.
- As an energy vector, in space engines or for mobility solutions (mainly maritime and aviation).
- As an energy storage solution to manage the intermittency of renewable sources.

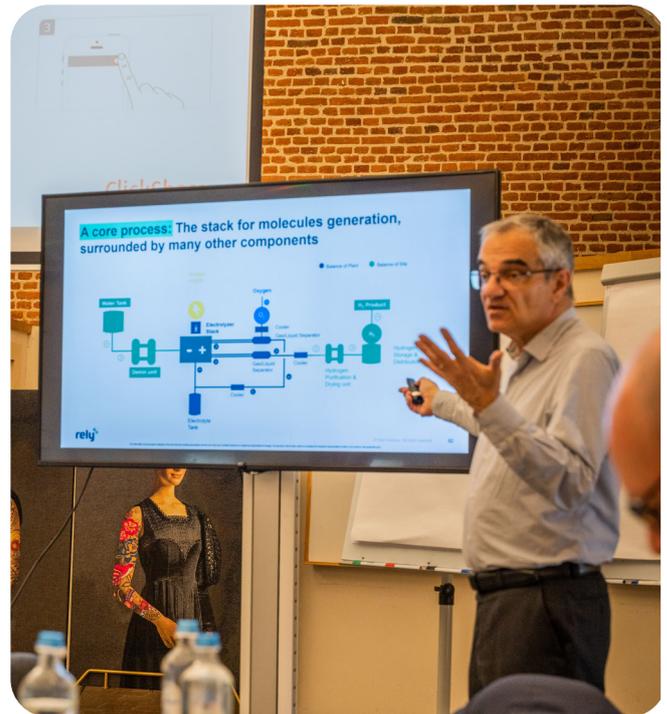
## The Key Role of Green Hydrogen

Finally, there are many essential industries that we cannot do without and that will be challenging to electrify: steelmaking, cement production, chemical and petrochemical industries... These are called "hard-to-abate industries." Their emissions account for between 30% and 40% of global CO<sub>2</sub> emissions. Decarbonizing their processes is therefore crucial.

"This is where green hydrogen comes into play," explains Jean Jouet. "Despite its costs, production complexity, transportation and storage challenges, green hydrogen makes here perfect sense. It is the only way for these heavy industries to reduce their reliance on fossil fuels and, beyond CO<sub>2</sub> capture technologies, the only method to lower their CO<sub>2</sub> footprint."

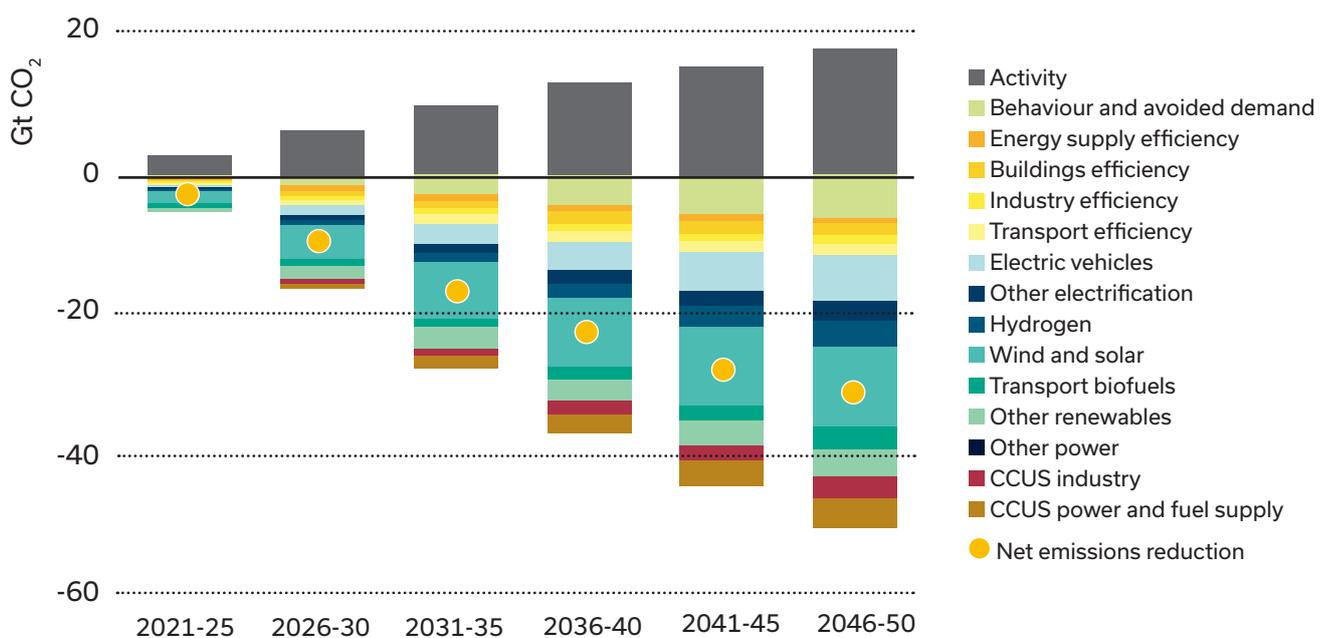
## Innovating to Make Green Hydrogen More Accessible

As Jean Jouet reminds us, the drawbacks of green hydrogen are not insurmountable. "At Rely, our core mission is to develop technologies that reduce costs, enhance safety, and scale up green hydrogen production plants. Our goal is to make green



Jean Jouet, Rely CTO: "Green hydrogen is not the sole solution to climate change. But it is definitely part of the solution, especially for the hard-to-abate industries."

## Average annual CO<sub>2</sub> reductions from 2020 in the NZE



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Renewables and electrification make the largest contribution to emissions reductions, but a wide range of measures and technologies are needed to achieve net-zero emissions

hydrogen more accessible, to accelerate its adoption by industries where it is the only viable option."

Today, Rely is notably working with pioneer developers and with industrialists already using grey hydrogen, such as fertilizer producers. For them, switching to green hydrogen is mainly an economic issue. "It's up to us to lower LCOH enough to convince them to make the leap," he says. "We need these early adopters to kick-start the industry and truly get green hydrogen moving. Thanks to these pioneers, we can encourage others - those requiring deeper transformations - to follow suit. Not to mention that green hydrogen is often just a step in the Power-to-X process aimed at sustainably producing various other molecules, such as ammonia, e-methanol, or e-SAF."

## Rely's commitment

In any case, this evolution is unavoidable. The energy transition must accelerate to limit the impacts of climate change, and green hydrogen is definitely part of the solution - especially for hard-to-electrify industrial applications.

"At Rely, we're all committed to contribute to this acceleration. In fact, it's precisely why our company has been created. It's thus up to us to continue developing and improving green hydrogen and make it both attractive and accessible for new uses", concludes Jean Jouet enthusiastically.

## The Chicken or the Egg?

Developing a green hydrogen industry is a long and complex process. Producing green hydrogen requires low-carbon electricity (from renewables or nuclear), electrolyzers (manufactured in dedicated gigafactories), and infrastructure for storage, transport, and distribution. It also requires industrial demand - companies willing to invest in this new sector.

Who will make the first investment, take the initial technological and financial risks? "At Rely," says Jean Jouet, "we are betting on being part of these pioneers, collaborating with John Cockerill Hydrogen, a leader in pressurized alkaline electrolyzers, to support the first industries committed to reducing their carbon footprint. For example, with Indian company AM Green, we are transforming a grey ammonia plant into a green ammonia plant in Kakinada (Andhra Pradesh, India). An emblematic project that we believe will serve as an inspiring model."

## More information



The Kakinada project acts as a steppingstone towards the energy transition. It exemplifies how industry pioneers like Rely are shaping the future of clean energy. (Picture: AM Green)