

# **Hydrogen Europe Position Paper**

## **Delivering REPowerEU through a strong European hydrogen industry**

**May 2022**

## Executive summary

### Context and introduction

The industry stands ready to expand its manufacturing capacities and to support the expected exponential market growth for renewable and low carbon clean hydrogen. This will be driven by the climate-driven Fit for 55 policies and targets and the recently renewed ambition to decrease dependency from Russian oil and gas, as part of the REPowerEU communication. The communication proposes the Hydrogen Accelerator as one of its main pillars, sets out a strategy to double the previous EU renewable hydrogen target to 10 million tons of annual domestic production, plus an additional 10 million tons of annual hydrogen imports. Meeting these targets requires the EU to significantly upscale its manufacturing capacities for innovative equipment such as electrolyzers.

By 2025, European manufacturers of electrolyzers are aiming to deliver a combined production capacity of approx. 25 GW per year<sup>1</sup>. Considering that production capacity will continue to increase after 2025, this would be sufficient to guarantee at least a cumulative installed basis of around 100 GW by 2030<sup>2</sup>. This is far above what is required to fulfill the current RFNBO target proposal which is estimated at 5.6 million tons of H2 by 2030.

Infrastructure will also need to be quickly developed and retrofitted for allowing the transportation, distribution, and storage of hydrogen, both domestically produced and imported from countries with great renewable energy resources. New investments in any gas import terminals and pipeline should be future-proved, hydrogen ready.

### Key Recommendations for policy makers

- Increase the renewable energy target to at least 45% by 2030.
- Keep the ambition of the 50% RFNBOs binding target in industry by 2030.
- Ensure the 2.6% RFNBOs target in the transport sector is maintained and consider an increase of up to 5%.
- Introduce intermediary targets in 2027 for both targets in industry and transport and corrective measures should the target not be on track.
- Maintain the current ambition of the Alternative Fuels Infrastructure Regulation proposal in Member States. This includes binding targets for hydrogen refuelling stations in both main the TEN-T corridors and comprehensive network, as well as in the urban nodes. It also includes minimum refuelling capacities (2ton hydrogen per day) and liquid hydrogen stations.
- Increase the 2030 sub-target for synthetic aviation fuel (e.g., e-kerosene) from the currently proposed 0.7%, in line with a 5% target before 2035.
- Keep temporal correlation to a monthly resolution in the Delegated Act on RFNBOs, fostering the optimization of electrolyzers, decreasing the need to oversize the renewable power assets, increasing power grids utilization, reducing compliance-related costs, and eventually limiting the cost of renewable hydrogen.
- Ensure a grandfathering clause on additionality for hydrogen projects commissioned before 2027 in the Delegated Act on RFNBOs to reduce regulatory risk and incentivize first movers in a nascent market.
- Consider as additional those existing renewable energy power plants that are already out of support scheme and are approaching a decommissioning decision.
- Define low carbon hydrogen by 2023, with high-level principles already agreed in the Hydrogen and decarbonised gas package.
- Consider introducing thresholds in the Industrial Emissions Directive to treat the various H2 production sites different depending on their sizes.

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<sup>1</sup> This is based on Power consumption. Please note that the recently signed [Joint Declaration among electrolyser manufacturers and the European Commission](#) refer to 17.5GW of electrolyser output (Low heating value), considering a 70% electrolyser efficiency.

<sup>2</sup> Producing 10mTons of hydrogen would require 90 to 100 GW of electrolyser capacity, considering utilization factors between 58 and 64% and efficiency rate of 50kWh/kg of H2.

## 1. Increasing hydrogen market demand and providing visibility to the industry

### a) Increase the ambition of RFNBOs in end-use sectors to reduce fossil fuel dependency

Replacing fossil-based hydrogen with renewable hydrogen is a top priority for Europe and thus a strong signal to the market is needed. Expanding the use of renewable hydrogen across the energy system is one of the most effective ways to reduce dependency on natural gas and oil. By doing so we, we support further emission reduction and allow renewables to access all types of energy uses. **We therefore call on the European policy makers to increase the renewable energy target to at least 45% by 2030.**

**Renewable hydrogen in industry:** The European Commission's current proposal on a binding target for industry use of RFNBOs is crucial. **European policy makers must keep the ambition of the 50% RFNBOs binding target by 2030.** Moreover, Hydrogen Europe encourages the co-legislators to **introduce an intermediary target by 2027 to ensure the sector is on track**, as it is currently discussed in the European Parliament.

**Renewable hydrogen in transport:** The current target of **at least 2.6% of the final energy demand with RFNBOs should be maintained.** Furthermore, Hydrogen Europe encourages policymakers to consider an upward revision of this target and include intermediate targets which could help the transport sector increase its GHG saving target beyond the currently proposed 13%. Hydrogen will play a major role in tackling emissions in transport, as such an adequate number of refueling infrastructure across Europe's main transport corridors is essential. Hydrogen Europe calls for maintaining **the current ambition in the AFIR proposal and ensuring it is not watered down in the capitals<sup>3</sup>. In this sense, we urge to preserve the binding targets for HRS**, as proposed by the co-legislators in the European Parliament.

Hydrogen Europe considers that the GHG saving ambition in the aviation and maritime sectors must be reconsidered as well. As part of the ReFuelEU Aviation, **the 2030 sub-target for synthetic aviation fuel (e.g., e-kerosene) should be increased from the currently proposed 0.7%, in line with a 5% target before 2035<sup>4</sup>.** We also suggest introducing an intermediate target as of 2025 to facilitate and monitor implementation. As part of refuelEU Maritime, we should introduce a 2030 sub-target for ships to consume at least 6% of e-fuels. This could be complemented with mandatory refueling points in European ports.

**Renewable hydrogen in power and heating:** Beyond industry and transport, hydrogen can also play an important role in decarbonising heating for industry and buildings, in combination with other technologies such as heat pumps and electric heating technologies. It will also play a central role in power generation<sup>5</sup>, helping to decrease dependency on natural gas and enable larger shares of variable renewables in the system. The role of hydrogen in these sectors should be further assessed and considered in view of the current energy supply crisis.

### b) Adequately define all types of hydrogen and bullet proof respective methodologies

It is of paramount importance to review the targets for renewable hydrogen while reviewing the overall EU renewable energy ambition. This is central to kick-starting the roll out of hydrogen technologies in record time which can only happen with a clear regulatory framework for producers and off takers of renewable and low-carbon hydrogen. Having a set of clear definitions for different types of hydrogen and clear methodologies to calculate their carbon footprint is key. These rules will be detailed in two delegated acts (DA)<sup>6</sup> and will fundamentally determine the capacity of Europe to channel necessary investments into the production of

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<sup>3</sup> [Joint letter](#) by IRU, ACEA, T&E and Hydrogen Europe, 4 May 2022

<sup>4</sup> Hydrogen Europe [position paper on ReFuelEU Aviation](#), November 2021,

<sup>5</sup> [Barriers and mitigation Measure for clean hydrogen](#), pag.39, Energy Roundtable of the European Clean Hydrogen Alliance, October 2021

<sup>6</sup> The European Commission plans to publish these documents on 18 May 2022 for one-month public consultation/approval by Member states

renewable hydrogen. Upscaling these technologies quickly will be key to confronting today's energy security challenges.

**The Delegated Act (DA) on Article 27.3** must provide a clear, feasible and pragmatic approach to accounting renewable electricity for hydrogen production when connected to the power grid. In particular:

- **Strict requirements on temporal correlation will slow down project implementation** in the EU and increase the costs of hydrogen with undesirable knock-on effects on the competitiveness of European hydrogen producers, off-takers, and electrolyser manufacturers. The motivation of the European Commission to include strict temporal correlation stems from the idea that running an electrolyser 24/7 could increase the GHG emissions in the energy system as a whole. However, running an electrolyser for up to 5,000 hours a year would have positive impacts on the power system.<sup>7</sup> Hydrogen producers will avoid buying power from the market when hourly emissions are high as these hours are directly correlated with very high electricity prices. An hourly temporal correlation as currently suggested will strongly limit the ability of hydrogen producers to produce above 40% of the time for most parts of Europe (or 3,500 hours) unless the projects are extremely oversized (e.g., 1200 MW of renewables for a 200 MW electrolyser) and incorporate large batteries, leading to significantly higher costs of hydrogen. **Temporal correlation should be kept to a monthly resolution<sup>8</sup>** to foster the optimisation of electrolysers, increase power grids utilisation, reduce administrative and compliance-related costs, and eventually limit the cost of renewable hydrogen for the whole European economy. As the power system continues to increase the share of renewable energy, moving to a shorter temporal resolution (e.g., daily) could be assessed.
- **Ensuring additionality** is another legislative requirement for the deployment of renewable hydrogen. The European Commission is contemplating to apply this principle as of 2027, which should allow the sector sufficient time to synchronise the development of both renewable power plants and hydrogen production facilities. For those projects commissioned before this deadline, a grandfathering clause should be ensured to reduce regulatory risk and incentivise first movers in a nascent market. In addition, existing renewable energy power plants that are already out of support scheme and are approaching a decommissioning decision should also be eligible to count as additional.

### c) Define low-carbon hydrogen in 2023

Low-carbon hydrogen is expected to receive special treatment with regards to injection tariffs (as proposed by the European Commission in the Hydrogen and Decarbonised Gas Package). And it is also eligible for state-aid support, as defined in the new Guidelines on State aid for Climate, Environmental Protection and Energy (CEAAG)<sup>9</sup>. Such support could take the form of Carbon Contracts for Difference to attract investment in industrial sectors. However, there is not yet any definition of low-carbon hydrogen and the European Commission is only aiming to provide one in 2024, through a Delegated Act. This creates investment uncertainty and thus blocks projects from being financed. **This should be done as soon as the definitions of renewable hydrogen and the methodologies to calculate GHG emissions of e-fuels are determined, and thus the process should be finished by 2023.**

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<sup>7</sup> Understanding RED II – [What is the CO2 emissions impact of the rules defining hydrogen as “green”?](#), Frontier Economic, November 2021

<sup>8</sup> Renewable Hydrogen Coalition [policy asks on the Art. 27.3 delegated act](#).

<sup>9</sup> [https://ec.europa.eu/competition-policy/sectors/energy-and-environment/legislation\\_en](https://ec.europa.eu/competition-policy/sectors/energy-and-environment/legislation_en)

#### **d) The Hydrogen and Decarbonised Gas Package should factor in the nascent nature of the hydrogen sector**

Delivering large quantities of hydrogen to industry, transport and buildings will require important infrastructure upgrades for the transmission, distribution, and storage.

Hydrogen demand and supply will need to be balanced with long-term storage, e.g., seasonal fluctuations. Long term storage could take the form of ammonia tanks, repurposed underground salt caverns and potentially even depleted gas fields. Building the hydrogen infrastructure, including the transmission backbone and large hydrogen storage sites is an urgent and colossal task that will require a collective industry effort. The European Commission should reassess the proposed unbundling rules against the backdrop of the war in Ukraine. And should also start thinking about options on how variable renewables could be incentivised to deliver dispatchable energy around the year (using hydrogen as a key storage medium, then re-electrifying it with hydrogen to power).

#### **e) Put in place simple and quick procedures for renewable hydrogen projects as part of the Industrial Emissions Directive**

Permitting is key bottleneck for the execution of large-scale energy infrastructure. The experience of renewable energy generating installations, especially onshore wind, is a major cause for concern at a time when scaling renewable electricity is essential. While it is laudable that governments and the European Commission are aiming to tackle this issue by proposing simplified and accelerated procedures, such measures should be extended to electrolyzer projects to avoid similar barriers. It should be acknowledged that not all hydrogen production processes affect the environment and human health in the same way. Electrolysis projects are less emission-intensive than other forms of industrial activities and hydrogen production and as such should be treated differently.

Currently, the Industrial Emissions Directive treats all type of hydrogen production routes and project sizes in the same fashion, putting a great regulatory burden on smaller projects. **The European Commission and other European Institution should consider introducing thresholds to treat the various production sites differently depending on their size.**

In addition to the environmental-related aspects, projects are also subject to long processes driven by administrative bottlenecks: lack of sufficient and/or qualified staff, lack of a digital platforms for the submission of documentation, lack of a single contact point, various public authorities involved, etc. **The duration of the overall administrative process should be limited also for the development of hydrogen production facilities, similarly to how renewable electricity projects are treated as part of the Renewable Energy Directive.**

#### **f) Provide clarity on RFNBOs certification**

It is very important to work with harmonized, coherent, and consistent certification schemes for hydrogen that can be recognised and used at a global level. Such certification schemes could allow to use a single methodology to calculate the greenhouse gas (GHG) emissions and life cycle assessment (LCA) of hydrogen. The industry is committed to carry out LCAs for transparency and accountability when producing hydrogen and hydrogen derived fuels. However, there are currently many systems under development. **The EC should provide as soon as possible clarity on which voluntary schemes are qualified to certify RFNBOs.**

## 2. Investment needs for a strong European electrolysers and components manufacturing base

### a) Accelerating IPCEI process

The European Commission should accelerate the process for the approval of IPCEI programs at national level. In addition, it is important to consider a revision of the process and its configuration to facilitate a more dynamic approach that is responsive to the industry needs and that supports operational expenses. Waiting over 2 years for Commission approval can jeopardise projects and put companies, especially SMEs, at high investment risks due to large uncertainty.

### b) Support electrolyser manufacturing to ensure scalability

The demand for high quality and price competitive European electrolysers is rapidly growing. The manufacturing base needed to tackle the expected rapid growth is not yet in place. The main reason behind is the lack of a clearly defined regulatory framework. Government-backed support to limit the investment risk and foster a positive business case for off-takers is highly needed. And while large electrolysers that work efficiently and over long periods of time are already on the market today, they are mostly produced by manual processes. This process is time-consuming, resource intensive and more costly. It is urgent to focus the industry capacity on technologies that are scalable, can be done on serial production and can be modularly adapted to their functionality and site conditions.

**National and European schemes should focus on reducing the investment risk and on establishing the serial production of electrolysers in a manner that is not limited to specific technologies.** Programs such as the German H2Giga flagship project could be replicated to support the transition towards serial production and positive off-taker business cases.

In that respect, as part of **the ongoing review of the General Block Exemption Regulation, the European Commission should consider making technology suppliers legally eligible for assistance** if they support and facilitate the investment activities supporting the climate objectives and REPowerEU ambition to take on a share of the actual investor risk, including the contractual assumption of project risks. In addition, the thresholds for investment aid, operational aid and aid intensity for projects that support the EU climate objectives and the REPowerEU ambition should also be raised, at least temporarily.

### c) European Investment Bank

The EIB should play a very important role in supporting the roll out of hydrogen production facilities and the manufacturing capacity to produce the necessary equipment. The European Commission and the EIB should envisage a mechanism for a fast-track process with regards to the approval process of loans at favourable investment rates dedicated for needed infrastructure and necessary feasibility studies.

### 3. International Dimension

Europe will have to import large volumes of renewable hydrogen if it is to meet its ambitious targets stated in the REPowerEU communication. **The European Union will need to build strong and resilient energy partnerships across the globe** that go beyond mere declarations of intent and make it attractive to source climate-related technologies from European companies. The energy partnerships should focus on countries with highly competitive conditions for wind and solar energy to support Europe in meeting its triple energy challenge, and on countries that deliver critical raw materials for the hydrogen value change.

To support these energy partnerships and foster a faster development of hydrogen production projects outside Europe, the European Commission should engage the EIB in discussions on re-defining priority countries for investments to better align them with the objectives of the Green Deal and the REPowerEU communication.

The European Commission should consider how a Global European Hydrogen Facility, based on the model of H2Global could be set up, financed, and be administered and – if appropriate – make a proposal before the negotiations on the EU ETS are finalised. This consideration should include the option to dedicate revenues from the EU ETS for that purpose.



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# H2ero Net Zero

Propelling global carbon neutrality by  
accelerating the European hydrogen industry



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