

## France Hydrogène Position Paper

### On the “Fit for 55” Package

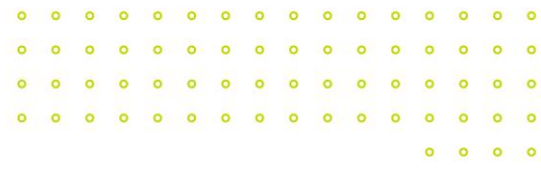
#### Adapting the EU legislations to foster renewable and low-carbon hydrogen

## INTRODUCTION

On 14 July, the European Commission presented its brand new **“Fit for 55” legislative package, a revision of several EU energy-climate laws** aimed at adapting the EU's targets and tools after raising its climate neutrality ambitions. The package contains **many proposals for hydrogen that go in the right direction, in line with the Hydrogen Strategy for a Climate-Neutral Europe**. They will stimulate the supply and demand of renewable and low-carbon hydrogen and encourage the development of a competitive European hydrogen industry. However, **some of the new dispositions should be improved to ensure consistency of the future EU legislation on hydrogen** in line with the EU's GHG emissions reduction ambitions and should better consider differences between Member States' energy systems.

## KEY RECOMMENDATIONS

- 1. Proper definitions of hydrogen:** the definition of renewable hydrogen should be completed with a definition of low-carbon hydrogen, meeting a GHG emission reduction level. A common methodology to assess GHG reductions from different production pathways should be adopted. Definitions should be made clearer and more consistent by distinguishing between pure hydrogen and synthetic fuels.
- 2. Acknowledging the role of low-carbon hydrogen:** low-carbon hydrogen, produced from low-carbon electricity or from carbon capture, utilization, and storage (CCUS) should be better acknowledged as a competitive and efficient way to reach the EU's GHG emissions reduction objectives.
- 3. Unlocking the production of renewable hydrogen:** additionality criteria and temporal and geographical correlation criteria should be removed as they represent a barrier for the deployment of renewable hydrogen. Additionality (i.e. new renewable energy capacities) should be imposed on Member States in their NECP instead of on renewable hydrogen producers. For grid-connected electrolysis, the average share of renewable energies in the national electricity mix should be used.
- 4. Facilitating free allowances for electrolyzer units:** the extension of the EU-ETS to renewable and low-carbon hydrogen production facilities is a good step but should be implemented more quickly (before 2026) and more broadly (including units above 5 tonsH<sub>2</sub>/day instead of 25 tonsH<sub>2</sub>/day).
- 5. Guarantees before any extension of the CBAM to hydrogen:** if the CBAM does not directly target hydrogen today, a hypothetical inclusion of this sector in the future should not be made before 2026 and on the condition the scope of the carbon methodology is expanded to include direct and indirect emissions of imported hydrogen (scopes 1,2 and even 3).
- 6. Achieving the new transport objective with low-carbon hydrogen:** low-carbon hydrogen should be made eligible to account to the achievement of the new objective of -13 % of GHG emissions in transport in 2030, which could be raised in return.
- 7. Accelerating the deployment of hydrogen stations:** the minimum levels of hydrogen refueling stations Member States shall define by 2030 should be fixed as soon as 2025. Criteria per capita should be used for HRS in urban nodes. Dual pressure (350 and 700 bar) should be required to fuel buses, LCV, and HDV.
- 8. Mobilizing all sustainable fuels for aviation and maritime:** low-carbon synthetic fuels should be eligible to the ReFuelEU Aviation Regulation, while low-carbon hydrogen should be fully included within the FuelEU Maritime Regulation and its carbon intensity properly assessed (not based on the average of the EU electricity mix).
- 9. Making taxation of hydrogen consistent in the long term:** as the new taxation system for energy and electricity favors clean energies, low-carbon hydrogen should still benefit from a favorable minimum level of taxation after 2033 given its environmental performances in terms of GHG reduction.
- 10. Ensuring the articulation and consistency of EU legislations on hydrogen:** proper articulation should be guaranteed between the “Fit for 55” Package and the Hydrogen and Gas Markets Decarbonisation Package so that the whole EU legislation on hydrogen enables the development of both renewable and low-carbon hydrogen without inconsistency.



## RED III: A FRAMEWORK FOR RENEWABLE HYDROGEN TO BE STREAMLINED

### Completing and improving the legal definitions of hydrogen

The revision of the Renewable Energy Directive (RED III) offers significant changes for hydrogen. First, it introduces **a more comprehensive definition of renewable hydrogen, now encompassing all its uses** (industry, transport, heat) **and subject to a global certification scheme**. However, **the definition of low-carbon hydrogen is postponed to a later date**, within the upcoming Hydrogen and Gas Markets Decarbonisation Package expected on 14 December. The contribution of low-carbon hydrogen to decarbonation for heavy industries and transport should be acknowledged by the EU to reach the increased GHG emissions reduction targets from the EU Climate Law and the “Fit for 55” Package.

The current definition of renewable hydrogen would benefit from being better streamlined, as it risks causing confusion between legal texts. Rather than a vague and negatively defined category of “*renewable fuel of non-biological origin*” (RFNBO), **the legislation would gain in coherence and clarity by clearly distinguishing what is pure (renewable or low-carbon) hydrogen** (as it is the case in [the French legislation](#)), **from what is synthetic fuel** (derived from hydrogen). Better definitions will improve the overall understanding of the EU framework and avoid inaccuracies such as within the ReFuelEU Aviation Regulation (see definition of “*synthetic aviation fuels*”).

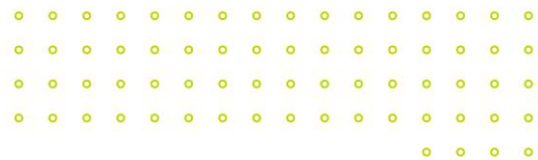
Hydrogen definitions should be consistent with the ones from the [EU Strategy for Hydrogen](#) and **impose a common GHG reduction level compatible with the EU Taxonomy for Sustainable Activities**. They should be **technologically neutral and cover all relevant hydrogen production pathways**, including electrolysis from renewable electricity, steam reforming of biogas and processes from biomass (providing sustainability criteria are met) to produce renewable hydrogen, and carbon capture, utilization, and storage (CCUS) and electrolysis from nuclear electricity and low-carbon grid-electricity to produce low-carbon hydrogen. A **common methodology to assess GHG reductions** is required and should properly assess carbon intensity with a life-cycle assessment.

### Moving additionality requirement from renewable hydrogen producers to Member States

The increased renewable energy target - up to 40% of the EU's energy consumption by 2030 - is an ambitious boost that will require **an accelerated pace of deployment of new renewable energy capacities**. Between 80 to 120 GW of solar, wind or hydropower capacities will be needed to foster the production of 10 million tons of clean hydrogen by 2030, which will be stimulated by **the introduction of a quota of renewable hydrogen in industry (excluding refining), amounting to 50% of its hydrogen consumption in 2030**. This is a key measure to help supporting the scaling up of renewable hydrogen, and ultimately bringing down its costs.

Nevertheless, this binding target won't be achievable if the European legislator do not **withdraw the measures imposing an excessively restrictive framework to define renewable hydrogen, with its additionality criteria and temporal and geographical correlation criteria** to be included in a future Delegated Act expected by the end of 2021. As the draft DA stands, these criteria constitute **real obstacles to the deployment of renewable hydrogen** : each unit of electrolyzers would be dependent on construction delays for additional renewable electricity power units. Slowing down the scale up will also interfere with **the need to supply renewable hydrogen at a reasonable price to industries** (compared to fossil-based hydrogen around €1.5/kg) without impairing their competitiveness. Yet additionality criteria for electricity supplied to BEV has been successfully removed.

Alternatively, **additionality should rather be imposed at a holistic level (the energy system) instead of on renewable hydrogen producers**. Additionality should rather be a prerequisite imposed on Member States which should integrate the new electricity demand driven by the hydrogen industry in their **National Energy and Climate Integrated Plans (NECP)** so that they can manage the long-term supply-demand balance of their electricity mix and ensure its decarbonisation is not compromised. Finally, to determine the share of renewable



hydrogen produced with **grid-connected electrolysis**, the method should be based on **the average share of electricity from renewable sources in the country of production**, as measured two years before the year in question. This measure would help preventing the greenwashing of electrolysis production from carbon-intensive grid electricity.

## EU ETS: A WELCOME EXTENSION TO ELECTROLYZER FACILITIES, BUT LATE AND SELECTIVE

### Free allowances to electrolyzer facilities

**The reform of the EU ETS carbon market is going in the right direction to strengthen the carbon price signal** and encourage the transition to low-carbon technologies provided that adequate carbon leakage protection is guaranteed to trade intensive sectors. Its extension to maritime transport, the reduction in the quantities of carbon quotas in circulation, or the gradual reduction in free allowances are all levers for generating an increase in the value of the ton of CO<sub>2</sub>, which could reach between €48 and €80/tCO<sub>2</sub> in 2030 depending on the assessed scenarios. **A carbon price of €100/tCO<sub>2</sub> would increase the production cost of fossil-based hydrogen produced by steam reforming of natural gas by about €1/kg**, thus improving the competitiveness of renewable and low-carbon hydrogen.

The revision also allows **producers of hydrogen by electrolysis to explicitly enter in the perimeter of the EU-ETS Directive, to benefit from free carbon allowances which they can then sell on the market**, and to have the practical mean to support them thanks to carbon contracts for difference. This welcome measure constitutes **a guarantee against the risks of carbon leakage** (imports of hydrogen) and will make it possible to encourage the decarbonisation of industrial facilities by bypassing the risk of competitive disadvantages vis-à-vis steam reforming installations.

### Eligibility criteria should be lowered

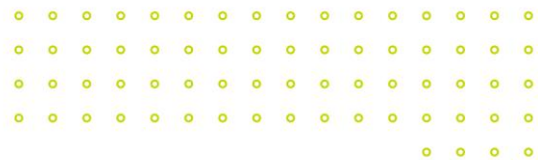
However, the effects should be rather limited due to the constraints imposed by the Commission. On the one hand, **the allocation of free allowances to electrolysis installations will only start at a late stage, from 2026**. On the other hand, **a production threshold of more than 25 tons of hydrogen per day (corresponding to electrolyzers > 100 MW for 5000 hours/year)** is defined for an installation to be eligible for free allowances, which will exclude many electrolyzer units. **These two conditions should be removed. A threshold of 5 tons of hydrogen per day (corresponding to electrolyzers > 20 MW) could be more appropriate** to cover more facilities.

Another interesting change is that **the Innovation Fund**, which is fed by EU-ETS revenues, will double in size over ten years to more than €50 billion. **These funds will be used to design carbon contracts for difference for hydrogen projects**. By investing in renewable or low-carbon hydrogen, an industrial facility will be able to receive public support covering the difference between a strike price of CO<sub>2</sub> and its actual market price on the EU ETS.

## CBAM: NO EXTENSION TO H2 UNLESS CARBON INTENSITY IS PROPERLY ASSESSED

**The creation of the Carbon Border Adjustment Mechanism (CBAM) does not directly concern hydrogen**, which is not included in the list of targeted sectors, but indirectly through the fertilizer, steel, and cement industries. From 2026 onwards, the CBAM must internalize the carbon content of fertilizers or steels imported from third countries, which should protect the competitiveness of European industries that are engaged in efforts for decarbonization, notably by switching from fossil fuels to renewable or low-carbon hydrogen. Free carbon allowances for these industries would be however progressively phased-out up until 2036.

In its impact assessment, the Commission considers a future inclusion of hydrogen in the CBAM as "*possible*". Such a choice will necessarily have to be made in consultation with the industry and after a proper impact



assessment. In this case, France Hydrogène expresses its vigilance concerning **the carbon methodology to be used by the CBAM**. Currently, this later **only covers direct GHG emissions of products (scope 1)**. It is important that the Commission takes advantage of the 2026 milestone that has been set **to extend its perimeter to include indirect emissions (scope 2)** such as those linked to electricity generation accounting for most of the carbon footprint of hydrogen produced by electrolysis. If an integration would be foreseen, it should be decided with **the guarantee that thorough assessments of the carbon intensity of imported hydrogen will be made, including the indirect emissions (scope 2) and those linked to its transport (scope 3)** from shipping.

## ACCELERATING THE DEVELOPMENT OF HYDROGEN IN TRANSPORT (RED III, CO2 STANDARDS FOR CARS, AFIR, REFUEL EU AVIATION AND FUEL EU MARITIME)

### Incentives for the decarbonisation of road transport with hydrogen

In RED 3, **the creation of a sub-target of 2.6% of renewable hydrogen in the energy supplied to the sector in 2030** will encourage the distribution of clean hydrogen to buses, coaches, light commercial vehicles, heavy-duty vehicles and freight transport. In addition, setting a **greenhouse gas intensity reduction target of -13% by 2030 for transport** is a relevant measure to ensure technological neutrality. Within the Decarbonisation Package, **France Hydrogène defends that low-carbon fuels including low-carbon hydrogen could be counted towards this target** as a solution for quick and significant reductions of GHG emissions of the sector. Consequently, **the GHG intensity reduction target for transport could be increased** as low-carbon hydrogen would add to decarbonization efforts in addition to renewable fuels.

**The new requirements for car manufacturers to reduce CO2 emissions from new cars and vans**, by up to 55% and 50% respectively in 2030 compared to 2021, will provide **an incentive for a switch to zero-emission vehicles such as fuel cell ranges**, which are expected to become much more widely available in the next few years. This will be followed by a full switchover **with the end of new petrol and diesel vehicle sales by 2035**.

### Accelerating the deployment of hydrogen refueling stations

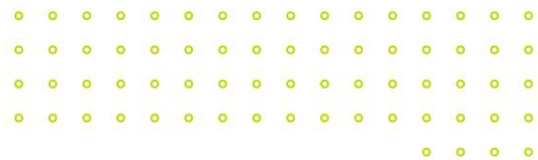
The Regulation on Alternative Fuels Infrastructures (AFIR) aims at ensuring a sufficient and consistent network of hydrogen refueling stations (HRS) across Europe. It will **constrain Member States to set minimum levels of stations on their territories by 2030 and impose a hydrogen station every 150 kilometers on the TEN-T network and in every urban node**. To reach the target of 500 HRS in Europe by 2025 set by the [Strategy for Sustainable and Smart Mobility](#), however, **these obligations would benefit from being brought forward five years before (by 2025)**. Moreover, one station in each urban node is insufficient depending on the size of the considered urban area. **Higher targets for urban nodes will be needed and minimum requirements must be adapted to the size of each urban node** (with a ratio per capita for instance).

By 2030, HRS will also have to distribute at least 2 tons/day of hydrogen and be equipped with at least one 700 bar refueling point. However, a **different level of pression is required to fuel hydrogen buses, coaches, heavy-duty vehicles or light commercial vehicles (350 bar)**. The AFIR should therefore require **installing refueling points with dual pressure (350 and 700 bar)**, otherwise the HRS network would be sub-optimal and not adapted to each relevant category of fuel cell vehicles.

The Commission also intends **to encourage the distribution of liquid hydrogen for heavy vehicles**, with a station every 450 kilometers and its distribution in freight terminals. **Financial support from Member States and the EU will be essential for reaching all these targets**.

### Adaptations to be made for hydrogen in rail, aviation and maritime

**Hydrogen applications are encouraged for other types of transport**. With the AFIR, States will have to include in their national policy frameworks strategies for **the deployment of hydrogen in airports, maritime ports, inland waterway ports, and for rail**, including optional targets. **Rail transport** is one of the most advanced in



terms of penetration of hydrogen technologies, for non-electrified sections of the rail network. It is however not properly addressed in the AFIR, contrary to other transport modes. The Commission's proposal could be completed by **referencing relevant standards for hydrogen applications in rail in its annex**<sup>1</sup>. Besides, with two new Refuel Aviation and Fuel Maritime Regulations, the Commission will directly constrain airline companies and shipowners to gradually switch to sustainable fuels to reduce their GHG emissions.

**In aviation**, hydrogen and electricity are not directly targeted as they are considered insufficiently mature technological options within the next 10 years. But **airlines will have to use at least 0.7% of synthetic fuels derived from renewable hydrogen in 2030 and follow a trajectory up to 8% in 2040 and 28% in 2050**. To be able to reach the decarbonisation objectives of the aviation sector, France Hydrogène asks for **a definition of "synthetic aviation fuels" not only limited to those derived from renewable hydrogen, but also including productions of e-kerosene from low-carbon hydrogen**. Decarbonized hydrogen used as intermediate product to produce conventional fuels should also be included, as it is the case with road transport within RED II.

**In the maritime sector, ships will have to reduce their GHG intensity by 6% in 2030, before targets are raised to -26% in 2040 and -75% in 2050**. To achieve these targets, they will have to choose from a wide range of sustainable fuels, including **renewable and low-carbon hydrogen, ammonia and methanol**. However, **France Hydrogène questions the carbon methodology the FuelEU Maritime Regulation proposes** to assess the carbon intensity of these fuels (annex II). Low-carbon fuels such as low-carbon hydrogen are not included in the annex. And the annex considers that the carbon intensity of non-renewable electricity supplied should be by default the average carbon intensity from the EU electricity mix (with a projected value of 72 gCO<sub>2eq</sub>/MJ corresponding to 383 gCO<sub>2eq</sub>/kWh in 2030), whereas **it should rather be the average carbon intensity of the national electricity mix of the Member State where the fuel is produced**.

## ETD: A FIRST FRAMEWORK FOR HYDROGEN TAXATION

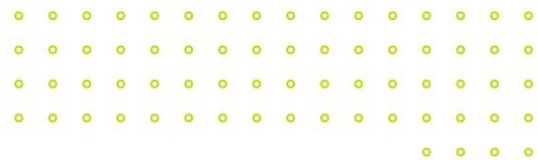
Finally, the revision of the Energy Taxation Directive (ETD) is an opportunity for the European Commission to propose a deep review of the taxation of fossil fuels and to **introduce a first taxation on hydrogen**, on the condition its initiative receives a unanimous support from the 27 Member States.

**Only hydrogen intended for use as a transport or heating fuel is concerned by the taxation**. With a taxation system now based on the energy content (net calorific value) and environmental performance of energies, **fossil-based hydrogen is impacted accordingly with minimum levels of taxation of €7.17/GJ in 2023** (i.e. €0,86/kg) **and up to €10.75/GJ in 2033** (i.e. €1.28/kg).

Conversely, the new tax system provides an incentive for low-carbon energies. **Renewable hydrogen and low-carbon hydrogen are granted almost painless minimum rates of around €0.15/GJ from 2023** (i.e. €0,02/kg). In the aviation and maritime sectors, the level of taxation for these two fuels is even set at zero for a transitional period of ten years. Member States will also have the possibility to apply fiscal exemptions or reductions to renewable hydrogen.

**However, the Commission has chosen to penalize low-carbon hydrogen from 2033 onwards**, when its minimum level of taxation is to rise suddenly to €5.38/GJ (i.e. €0,64/kg). If this change shows a preference to favor renewable hydrogen in the long term, **France Hydrogène is concerned by this political arbitrage as it seems totally unconnected to the environmental performance of low-carbon hydrogen**, which should be the principle at the heart of the new taxation system proposed by the European Commission. Therefore **low-carbon hydrogen should still benefit from favorable minimum rates after 2033**.

<sup>1</sup> IEC 63341-1 Railway Application – Rolling stock – Fuel cell system for the propulsion; IEC 63341-2 Railway Application – Rolling stock – Hydrogen storage system; IEC 63341-3 Railway Application – Rolling stock – performance requirements and test methods; IEC 63341-4 Railway Application – Rolling stock – vehicle-to-station communication protocol.



## CONCLUSIONS: LEGISLATIONS TO BE COMPLETED WITH THE UPCOMING DECARBONISATION PACKAGE

While this “Fit for 55” package is generally positive for hydrogen, it is still incomplete and a full EU legislation on decarbonised hydrogen will only become complete when the Hydrogen and Gas Market Decarbonisation Package will be unveiled. Consistency between the two packages will be key.

The general connotation of the “Fit for 55” Package is essentially directed towards renewable energies, and **nothing is said about carbon capture, utilization, and storage (CCUS)**, which, combined with steam reforming, would allow large quantities of low-carbon hydrogen to be obtained quickly and thus achieving rapid and concrete results in the fight against climate change.

Similarly, **nuclear electricity, which can be used to produce low-carbon hydrogen with a high load factor most of the year, is largely absent from these sets of measures**, even though its inclusion within the EU Taxonomy of Sustainable Activities should now be a foregone conclusion following the favorable opinions of the three independent expert bodies commissioned by the EU.

Finally, in selected countries with a low-carbon electricity mix, **grid-connected electrolyzers** are also an effective option to produce decarbonized hydrogen below the EU taxonomy threshold of 3 tCO<sub>2</sub>/tH<sub>2</sub>.

Consequently, **those low-carbon production pathways should be all treated** in the upcoming Decarbonisation Package and contribute to the EU GHG emissions reduction targets.