

# Renewable hydrogen – EU regulatory enablers

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# EXECUTIVE SUMMARY

The EU has prioritised renewable hydrogen as part of REPowerEU, its energy response to the Ukraine war. REPowerEU sets a target of 20 million tonnes of renewable hydrogen to be consumed in the EU by 2030, half of which would be produced domestically.

To deliver on these ambitions, the EU must set a clear and actionable definition of renewable hydrogen, guarantee a level playing field between domestic production and imports, target the right end uses (aviation, shipping, parts of industry), and develop and finance infrastructure accordingly. This is key to scaling up renewable hydrogen towards competitiveness this decade.

The following position paper recaps WindEurope's renewable hydrogen-related positions on the Renewable Energy Directive, the Delegated Act on Renewable Fuels of Non-Biological Origin, the Carbon Border Adjustment Mechanism, and the 'gas package'.

To deliver a cost-effective scale-up of renewable hydrogen geared at decarbonising hard-to-electrify sectors, WindEurope calls for the:

## **The Renewable Energy Directive**

- To include a clear definition of renewable hydrogen;
- To enshrine the 75% target for the use of renewable hydrogen in industry and the 5% target for Renewable Fuels of Non-Biological Origin in aviation and shipping, as proposed in REPowerEU.

## **The Delegated Act on Renewable Fuels of Non-Biological Origin**

- To apply a monthly temporal correlation until 2027 followed by a more granular correlation, as the timeframe to demonstrate that grid-connected electrolyzers use renewable electricity;
- To clarify which projects qualify as new or 'additional' renewables.

## **The Carbon Border Adjustment Mechanism**

- To include hydrogen and hydrogen derivatives (e-fuels) imports in the scope of the Carbon Border Adjustment Mechanism to create a level playing field between domestic and imported hydrogen production.

## **The revision of the Gas package**

- To discard the proposed grid tariff discounts for renewable and low-carbon gases, which could lead to cross-subsidisation leading electricity users to pay for hydrogen infrastructure;
- To discard the proposed blending provisions as most of the blended hydrogen will be used in heating, where direct electrification is the more cost-effective and energy-efficient alternative to gas boilers.

# INTRODUCTION

The European Union is committed to reaching carbon neutrality by 2050 and direct electrification is set to play a major role in this energy transition. Direct electrification is the most efficient, sustainable, and affordable solution to deliver net-zero emissions. The share of direct electrification in 2050 should reach about 57% (or 351 Mtoe) of the final energy demand. But since parts of the energy system cannot be electrified directly, indirect electrification (through hydrogen and other e-fuels) will also play a key role, covering about 18% of the final energy demand in 2050<sup>1</sup>. The respective contributions of direct and indirect electrification towards decarbonisation may evolve over time as innovation enables the direct electrification of more end uses.

Today 96% of the hydrogen consumed in the EU (9.1 million tonnes) comes from hydrogen made from steam methane reforming, a highly polluting process that uses natural gas. It produces 7 Kg of CO<sub>2</sub> per Kg of hydrogen produced. However, hydrogen can be produced via electrolysis powered by renewable electricity from wind and solar thereby cutting the CO<sub>2</sub> emissions of its production.

Producing renewable hydrogen for the decarbonisation of hard-to-electrify sectors will require a massive scale-up of electrolyzers, additional renewable electricity capacity, and acceleration of electricity grid roll-out<sup>2</sup>. Ultimately, renewable hydrogen consumption will help shield off-takers against high gas price volatility. It will therefore be central to Europe's energy security strategy. REPowerEU increased the hydrogen consumption target to 20 million tonnes (57 Mtoe) by 2030.

To deliver on these ambitions, the EU must set a clear and actionable definition of renewable hydrogen, guarantee a level playing field between domestic production and imports, target the right end uses (aviation, shipping, parts of industry), and develop and finance infrastructure accordingly.

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<sup>1</sup> European Commission – Fit-for-55 IA, MIX scenario

<sup>2</sup> Delivering climate neutrality requires doubling electricity grid investments from the current €40bn p.a. by 2025 at the latest [Etipwind-WindEurope report Getting fit for 55 and set for 2050 - June 2021](#)

# AN ACTIONABLE POLICY FRAMEWORK

In its **Hydrogen Strategy** (2020), the EU pledged to ramp up electrolyser capacities for renewable hydrogen to 6 GW by 2024 and 40 GW by 2030. The strategy also included targets for the production of renewable hydrogen of 1 million tonnes by 2024 and 10 million tonnes by 2030. This has served as the basis for the hydrogen-related provisions of the **Fit for 55 package**. The European Commission has revised upwards a number of renewable hydrogen-related provisions as part of REPowerEU, its energy response to the war in Ukraine

REPowerEU sets out measures on enhancing energy security and cutting reliance on Russian fossil fuel imports. In addition to the good electrification measures (such as doubling the deployment of heat pumps), the REPowerEU proposal included:

- Increasing the hydrogen consumption in Europe to 20 million tonnes of hydrogen (57 Mtoe), out of which 10 million tonnes would be imported;
- Increasing the electrolyser target in 2030 to 65 GW;
- Increasing the renewable energy capacity in 2030 (41 GW of additional wind capacity);
- Increasing the Renewable Fuels of Non-Biological Origin targets in the Renewable Energy Directive:
  - From 50% to 75% for hydrogen consumption in the industry;
  - From 2.6% to 5% for fuels consumed in all transport modes;
- Supporting blending of hydrogen with natural gas as a measure to displace Russian gas imports.

This has implications for the various pieces of legislation recapped below. This paper focuses on the renewable hydrogen-related positions on the Renewable Energy Directive, the Delegated Act on Renewable Fuels of Non-Biological Origin, the Carbon Border Adjustment Mechanism, and the ‘gas package’. These are key to scaling up renewable hydrogen towards competitiveness and focusing on decarbonising hard-to-electrify sectors.

**Figure 1** EU framework for renewable hydrogen



## RENEWABLE ENERGY DIRECTIVE

The **3<sup>rd</sup> revision of the Renewable Energy Directive** includes 2030 sector targets for the so-called renewable fuels of non-biological origin (RFNBOs), which include renewable hydrogen and e-fuels. The European Commission has proposed the following targets:

- 75% share in consumption of industry (energy and non-energy uses); and
- 5% of fuels consumed in all transport modes.

WindEurope supports these targets which send a clear signal to the market toward the scale-up of renewable hydrogen. This scale-up requires investment in electrolyser capacity and industrial processes on the end user side. Crucially, it is essential that the Renewable Energy Directive provisions on hydrogen are used to promote exclusively renewables and do not serve as a vehicle for other technologies. This would undermine the integrity of the legislation and weaken investment certainty.

The successful delivery of these targets will hinge on the development and implementation of clear incentives and support mechanisms to initially cover the cost gap between conventional and renewable hydrogen.

The January 2022 **Guidelines on State aid for climate, environmental protection and energy** (CEEAG) have set the rules for providing support schemes to renewable hydrogen projects. State aid can be awarded for investment and operating costs as well as the relevant infrastructure for renewable hydrogen.

The aid awarded, for example in a Carbon Contracts for Difference (CCfD), should be done at the national or the EU level in technology-specific auctions. This approach has proven the most cost-effective for deployment of wind energy and is essential to the visibility of the supply chain. It should be replicated for renewable hydrogen.

## DELEGATED ACT ON RENEWABLE FUELS OF NON-BIOLOGICAL ORIGIN

The revised **Renewable Energy Directive from 2018** mandated the European Commission to draft a Delegated Act setting the rules to demonstrate renewable hydrogen produced via electrolysis is effectively based on renewable electricity. This Delegated Act is meant to apply to renewable hydrogen use in transport. But it will create a very important precedent. And all indications are that the same rules will ultimately apply to other end uses, including industry.

According to the draft Delegated Act tabled in May 2022, renewable hydrogen should meet the following criteria:

- Renewables projects and the hydrogen production facility must sign a PPA and be in the same bidding zone (exceptions for offshore bidding zones and reduced congestion between bidding zones);
- Until 2027 renewable hydrogen needs to be produced within the same **calendar month** as the electricity from renewables under a PPA, beyond 1 January 2027 an **hourly correlation** applies;
- From 1 January 2027 only **unsubsidised** renewables projects can have a PPA with an electrolyser;
- From 1 January 2027 renewable hydrogen projects need to prove **additionality** (they are new projects) via a PPA with a renewable energy project;

- From 1 January 2027 renewable hydrogen needs to be produced within the same **one-hour** period as the electricity from renewables under a PPA.

The Delegated Act includes a general exemption for bidding zones where the renewable electricity share is above 90%. Electrolysers within these zones are considered to produce renewable hydrogen without needing to meet the above criteria.

The European Commission plans to revisit the proposed rules in the Delegated Act once the REDIII targets are reached.

WindEurope supports the adoption of the Delegated Act which will give clarity to the market. It is however important that the regulatory framework is clear, simple and actionable. To this end:

- It is essential that the final Delegated Act maintains the monthly temporal correlation as the timeframe to demonstrate that grid-connected electrolysers use renewable electricity until 2027, at which point a more granular temporal correlation should apply;
- The European Commission must clarify which projects qualify as additional renewables.

## CARBON BORDER ADJUSTMENT MECHANISM

A well-designed **Carbon Border Adjustment Mechanism** (CBAM) can be a driver for decarbonisation notably by driving increased climate ambitions from countries outside Europe. The European Commission originally proposed the measure to apply to cement, steel, iron, aluminium, and electricity.

As currently discussed in the European Parliament, WindEurope supports the inclusion of hydrogen and hydrogen derivatives (e-fuels) in the scope of the CBAM. This would contribute to a level playing field between the domestically-produced hydrogen with respect to imports of renewable and low-carbon hydrogen. This is all the more important as imports will play a role in delivering the EU's renewable hydrogen targets, REPowerEU envisages that half of the 20 million tonnes of renewable hydrogen to be consumed by 2030 will come from imports.

## INFRASTRUCTURE - GAS PACKAGE

Infrastructure developments for hydrogen are a key enabler for market development. Repurposing and use of the existing gas infrastructure both for the transport and storage of renewable hydrogen will play a role in its cost-effective deployment. But the measures and incentives to that end must be geared to avoid stranded assets and the associated costs for society. The '**Gas Package**' tabled by the European Commission in December 2021 must address this balance.

The package includes grid tariff discounts for renewable and low-carbon gases which would lead to cross-subsidisation between electricity and gas consumers. In practice this means electricity consumers, who are already bearing significant taxes and charges unrelated with electricity generation, could end up subsidising hydrogen infrastructure. The development of hydrogen infrastructure should be financed via the provisions in the State aid guidelines thereby creating transparency on the associated costs.

The European Commission's proposal also includes minimum caps of blended hydrogen at interconnections. Since industrial consumers require high-purity natural gas as a feedstock in their processes, the blended hydrogen would mostly be used in heating, where heat pumps are a better

alternative already today. The proposed blending provisions will lead to costly adaptations for industrial users<sup>3</sup> and ultimately increase costs to households. WindEurope therefore does not support the blending provisions as proposed by the European Commission which would slow the direct electrification of heating.

WindEurope welcomes in principle a third-party access to hydrogen networks as it would foster competition needed to reduce the cost of renewable hydrogen. However, the proposed provisions through a negotiated third-party access could result in high costs for developers. WindEurope supports third-party access costs to be set by National Energy Regulators to ensure a transparent and non-discriminatory process.

Finally, it is essential that the Gas package enshrines the principle of vertical unbundling (separating production from network operation) and horizontal unbundling (separating hydrogen activities from gas or electricity activities) in an equivalent way as applied in the electricity and gas sector. This would enable a transparent competition between hydrogen producers that are accessing the grid, and result in lower costs for project developers and society as a whole.

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<sup>3</sup> Cefic Views on the Commission Proposal Amending the Gas Directive & Gas Regulation