

## ERCST Reflection Note

### *Taking stock of the hydrogen regulatory framework*

*This reflection note intends to provide an answer to the questions raised during previous ERCST roundtable on hydrogen. Firstly, whether the proposed regulatory framework is ready to simultaneously deliver the ramp-up of the EU H2 economy and respond to the current energy crisis and, secondly, whether the proposed regulatory framework will foster the competitiveness of the EU hydrogen economy vis-à-vis third countries, such as the USA.*

#### Highlights

- There is a mismatch between the level of EU hydrogen ambition and regulatory constraints, exacerbated by both an incomplete regulatory framework and the energy crisis.
- A complete and comprehensive regulatory framework is urgently needed to move business plans forward - with complete definitions for renewable and low carbon hydrogen being a priority.
- Imposing a stringent legal obligation (target of 50% RFNBOs in industry by 2030) in sectors that require a constant hydrogen supply without ensuring access to renewable electricity and flexibility in the qualification of the electricity as renewable during a transition phase may be detrimental. This may translate into the relocation of industry outside the EU and replacing the domestic production by imports.
- Considering current gas prices, there is a clear opportunity for renewable and various forms of low-carbon hydrogen in the EU - if requirements to qualify the electricity as 100 % renewable were more flexible and a technologically neutral approach to incentives was adopted.
- Based on the proposed regulatory framework, the EU may produce the “greenest” hydrogen in the world, but not at affordable prices and not in sufficient quantities to satisfy consumer needs and to compete at the global scale.

## 1. Introduction

Most of the different building blocks of the EU hydrogen regulatory framework were presented in various parts of the Fit for 55 package and the hydrogen and decarbonized gas market package. While for the latter, the European Parliament and the Council are yet to adopt their positions, for the majority of the Fit for 55 proposals, it is now time for co-legislators to find compromises during the trilogues.

This reflection note intends to address the questions raised during the recent ERCST roundtable on hydrogen: firstly, whether the proposed regulatory framework is capable to ramp-up the EU H2 economy and respond to the current energy crisis, and, secondly, whether the proposed regulatory framework will foster the competitiveness of the EU hydrogen economy vis-à-vis third countries such as the USA.

## 2. State of play of the hydrogen regulatory framework

The hydrogen regulatory framework at the EU level is still being completed. While there are some elements upon which the EU institutions still need to agree, there are others that have not been proposed yet. The clarification of these issues is important, because if the EU hydrogen economy is to deliver on the ambition set in the Repower EU communication and in the proposed legislation, investments need to be made and implemented as soon as possible.

Some of these elements are the following:

- **Complete definition for RFNBOs (Renewable Fuels of Non-Biological Origin):** A complete definition for RFNBOs (essentially renewable hydrogen) is dependent on the adoption of two delegated acts rooted in the Renewable Energy Directive (RED II). Although proposals have been put forward, neither of them has been adopted yet.
- **Complete definition for low-carbon hydrogen:** The definition of low-carbon hydrogen provided in the proposed Hydrogen and Gas Directive is also incomplete, as it does not specify neither the fossil fuel comparator to which the 70% GHG emission reduction should be applied, nor the methodology to calculate the GHG emissions savings. According to the Commission proposal, this issue will not be clarified until 2024, when a Delegated Act is expected.
- **A comprehensive and harmonized certification scheme for renewable and low-carbon hydrogen:** Linked to the issue of definitions, a harmonized certification scheme for renewable and low-carbon hydrogen is still taking shape. It is still unclear how this certification scheme will apply to imports.
- **A framework for Carbon Contracts for Difference to finance hydrogen projects:** In the revision of the EU-ETS Directive, the Commission proposed to extend the scope of the Innovation Fund. This would allow the Innovation Fund to provide support through competitive tendering mechanisms (such as CCfDs), whereby up to 100% of the relevant costs of the projects may be supported. In the REPowerEU communication, the Commission further specified the technological scope for CCfDs, namely renewable hydrogen production and its application in industry. Further details will be provided in secondary legislation (Delegated Act) once the legislative process for the EU-ETS Directive revision is completed.

- **Details for an updated hydrogen benchmark within the EU-ETS:** Currently there is one benchmark for hydrogen (grey hydrogen used in refineries), which in practice means that grey hydrogen producers are entitled to free allowances. The Commission wants to extend free allocation to less CO<sub>2</sub>-intensive types of hydrogen, based on the principle “*one product, one benchmark*”. However, the implementation of the updated benchmarks is planned for 2026.
- **Hydrogen in CBAM:** The European Parliament promotes the inclusion of hydrogen in the CBAM. It is therefore still unclear if hydrogen will be covered by the EU CBAM.
- **Detailed rules on unbundling and third-party access for hydrogen pipelines:** It is still unclear what level of flexibility will be applied to the principles of unbundling and third-party access. As an example, the draft report of MEP Jens Geier proposes to delete the provisions on horizontal unbundling for hydrogen pipelines to facilitate repurposing of gas pipelines into hydrogen and to benefit from the synergies between the hydrogen and gas sector.
- **The role of blending:** The role of blending in the future EU hydrogen economy is still unclear from a regulatory point of view. The European Commission proposed a harmonized cap on blending in the form of an EU-wide allowed limit of 5% at cross-border interconnection points. However, MEP Jerzy Buzek, rapporteur for the Hydrogen and gas Regulation, in the draft report, proposed to lower the threshold to 2%. The draft report also underlines that the blending of hydrogen into the natural gas system is a last resort solution, as it is less efficient compared to using hydrogen in its pure form and diminishes the value of hydrogen for its use in industrial applications.
- **Governance for hydrogen transportation infrastructure:** Another element that is unclear, is the level of independence from the gas sector (ENTSOG) that will be bestowed to ENNOH (European Network of Network Operators for Hydrogen). This will determine the level of influence of Gas Transmission System Operators (TSOs) in the development and planning of the future hydrogen transportation infrastructure.

Although all aforementioned elements require prompt clarification, there is one element whose clarification is most pressing, namely having complete and comprehensive definitions for renewable and low-carbon hydrogen. It is essential for business plans to move forward and for investment decisions to be made.

### 3. Delegated Act on Additionality

One of the elements needed to complete the definition of renewable hydrogen is a Delegated Act which, once adopted, will determine the properties of electricity to produce RFNBOs. This section presents a summary on the process and content of this Delegated Act.

- **On the process:**

In line with art 28 (5) of the RED 2018, the proposed Delegated Act on additionality establishes the requirements to consider electricity used to produce RFNBOs as 100% renewable. Together with the provisions in the RED and the proposed Delegated Act on a methodology for RFNBOs and Recycled Carbon Fuels, they provide the necessary elements for a comprehensive definition of renewable hydrogen in the EU. Although the Delegated Act was proposed in May 2022, its adoption has been delayed due to, among other things, the European Parliament (EP) position on RED III.

The Parliament position<sup>1</sup> does not favour leaving the regulation of this issue to a Delegated Act and incorporates in the draft RED legislation some of the elements previously addressed by the Commission proposal in the Delegated Act. After the adoption of the Parliament position, the Commission reiterated its willingness to go ahead with the adoption of the Delegated Act, arguing that its delegated powers were granted under the legislative framework of RED II. However, if the Parliament amendment survives the trilogues and becomes part of the final text, there will be two legislative acts with a different legal hierarchy (Directive vs. Delegated Act) that will contradict each other. In consequence, the uncertainty concerning these issues remains until negotiations on RED III are concluded.

- **On the content:**

Compromise amendment number 13, which passed with a very tight majority (4 votes) introduced changes to some of the criteria addressed by the Commission in its proposal, inter alia:

1. no mention to the 36-month window within which both the electrolyser and the RES facility shall come into operation.
2. temporal correlation between the moment when renewable electricity is generated and its usage by electrolyzers is extended from an hourly/monthly basis to a quarterly basis until 2030.
3. geographical correlation has been changed from a bidding zone to a country-based approach.

- **Conflicting arguments:**

One of the key points of the discussion is to what extent the requirements to define what accounts as renewable electricity to produce RFNBOs could be made more flexible to allow a faster ramp-up of the hydrogen market and to facilitate industrial players to achieve the targets proposed in the RED. In this context, there are two conflicting arguments which are not easily reconcilable.

On the one side, some stakeholders argue that a significant share of the overall electricity production will be used in electrolyzers, which, if not fed with additional renewable electricity, will result in an overall increased consumption of electricity produced by fossil fuels.

On the other side, the Commission has proposed stringent targets at a Member State level in industry and transport. Industrial hydrogen consumers, for instance in the steel and chemical sectors, need a constant (24/7) hydrogen supply. Considering that an increased pressure on renewable electricity for the decarbonization of other sectors of the economy will probably create scarcity of renewable electricity in the years to come, industrial players, (especially in the Member States with less renewable resources), will find it very difficult to comply with the targets in the RED. In other words, imposing a stringent legal obligation (50% RFNBOs in industry) in sectors that require a constant hydrogen supply, without ensuring access to renewable electricity and/or providing greater flexibility in the qualification of this electricity as renewable during a transition phase may translate in EU industry relocating outside Europe and replacing the EU production by imports.

There are three different options that could help to reconcile these conflicting views.

- The first one involves making the requirements to qualify electricity as renewable more flexible without this leading to an overall increase of carbon emissions.
- The second option embraces the adoption of a technologically neutral approach to incentives by allowing low-carbon hydrogen to account towards the targets for industry in the RED,

<sup>1</sup> In the Council position, provisions on additionality in the General Approach have not been changed.

- and the third one would require lowering the proposed target for industry.

In essence, if nothing changes, the EU may end up producing the greenest renewable hydrogen in the world, but not affordable and not in sufficient quantities to satisfy the consumer needs and to allow the market to ramp-up.

#### 4. EU competitiveness vis-à-vis third countries

- **Effects of the energy crisis on the hydrogen production costs**

A rebound of natural gas demand caused by the economic recovery from COVID-19, followed by unprecedented gas supply constraints resulting from the war in Ukraine have changed the economics of hydrogen production in the EU. This is especially the case for grey hydrogen (from unabated fossil gas) and blue hydrogen (from natural gas with CCS).

As an example, at natural gas prices of 45/50 USD per million British thermal units (MBtu) which were observed during some periods of 2022 in the EU, hydrogen produced with natural gas with CCS may exceed USD 8 Kg/H<sub>2</sub> and USD 7 Kg/H<sub>2</sub> without CCS. This represents price levels up to even four times higher than the levels seen in previous years. Considering current gas prices, renewable hydrogen produced with electricity under a PPA, becomes the cheapest hydrogen production type in many locations across the EU.<sup>2</sup> Therefore, the current energy crisis calls into questions many of the assumptions that were made with regards to the prices, volumes, viability, and contribution of the different production processes during the transition.

Against this backdrop there are three different scenarios:

- the first one involves the subsidization of natural gas;
- the second one involves leveraging on the existing crisis and accelerating the deployment of renewable and other forms of low-carbon hydrogen;
- and the third one assumes importing the final product (ammonia, steel, fertilizers) from third countries with better access to cheap renewable electricity and natural gas.

None of the previous options are free from side effects. While the first and third options may not render the desired economic and financial benefits for the EU, the second one may bring greater benefits in the long run. However, for this option to work, the requirements to qualify the electricity as 100 % renewable to produce RFNBOs through PPAs should be made more flexible and a technology neutral approach to incentives should be ensured.

It is more evident now that blue hydrogen will not contribute to providing the necessary volumes to ramp-up the market during the transition in the EU, as previously expected. Therefore, the flexibilization of the rules and the possibility for other forms of low-carbon hydrogen to count towards the targets in the RED may provide electrolyzers with the necessary stability to run 24/7.

- **Technologically neutral incentives for hydrogen under the US inflation reduction act**

The EU is a frontrunner in clean hydrogen deployment and innovation. However, the hydrogen market is expected to commoditize soon, which will increase competition at a global scale. While fossil resources are physically bound to a specific geographical area, hydrogen production can be delocalized. This will make the future global hydrogen market very competitive.

<sup>2</sup> Global Hydrogen Review 2022, IEA. [\(See more\)](#)

An example of this competitive landscape is the Inflation Reduction Act (IRF) that has recently been adopted by the US. The details of this act are still to be hammered out. The IRF offers a tax credit that is available for 10 years, with a level of support that depends on the GHG footprint of the H<sub>2</sub> produced. For example, if hydrogen is produced with no carbon emissions, the tax credit is maximized at \$3 per kilogram of H<sub>2</sub>. It then scales down proportionally, depending on the level of emissions released with a cap set at 4kg of CO<sub>2</sub>e/kg. The purpose of the incentive scheme is to reduce green hydrogen production costs to \$0.73-\$3.5/kg of H<sub>2</sub>.

This is a gamechanger that might influence the hydrogen investment flows towards the US to the detriment of the EU hydrogen ambitions.

## 5. Conclusion:

There is a mismatch between the European hydrogen ambitions and regulatory constraints. This is exacerbated by an incomplete regulatory framework and the energy crisis.

Based on the proposed regulatory framework, the EU could produce the “greenest” hydrogen in the world. However, it would not be at affordable prices and not in sufficient quantities to satisfy consumer needs and to compete at the global scale.