

POLICY BRIEF

The hydrogen and decarbonized gas market package

Highlights

- There is a mismatch with the hydrogen strategy when it comes to the role of low carbon hydrogen in the transition.
- Detailed definitions for renewable and low-carbon hydrogen are still missing.
- The proposed definitions framework does not sufficiently reward producers according to the CO₂ footprint of the different production processes.
- Lack of additional renewable electricity to achieve the European Commission RFNBOs targets proposed in RED III.
- There is not sufficient support for industry to comply with the RFNBOs target as proposed in RED III.
- The inclusion of hydrogen in CBAM deserves further discussion.
- A technologically neutral approach to incentives should be ensured.
- There is too much emphasis on hydrogen infrastructure regulation for a nascent hydrogen market.
- The side effects of the EU reliance on hydrogen imports should be further explored.

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1. Completing the hydrogen regulatory puzzle

This policy brief provides an overview of the EU hydrogen regulatory framework with special focus on the hydrogen and decarbonized gas market package. This policy brief is part of ERCST research activities on hydrogen which intend to assess the policy and regulatory implementation of the European Commission hydrogen strategy and should be read together with ERCST hydrogen paper: [The Fit for 55 package and its implication on the EU hydrogen economy.](#)

Following on from the publication of the European Commission Hydrogen Strategy, and the first set of Fit for 55 publications, on December 15th 2021 the Commission proposed a new set of legislative proposals including the revision of the Gas Regulation 715/2009 and the Gas Directive 2009/73. The hydrogen and decarbonized gas market package is a relevant new piece of the hydrogen regulatory framework, designed to foster the uptake of renewable and low-carbon gases, for instance hydrogen and biomethane.

The first round of Fit for 55 publications addressed fundamental questions covering demand and supply of renewable hydrogen. However, key regulatory issues covering hydrogen transportation and transportation infrastructure and the creation of the right environment for investments in low-carbon hydrogen were not sufficiently addressed. The hydrogen and decarbonized gas market package focuses on some of these key missing pieces, as identified by ERCST in previous analysis.

This package is only one piece of the hydrogen regulatory puzzle and does not aim to regulate all aspects of the hydrogen economy. For this reason, looking at the hydrogen regulatory framework in silos should be avoided. The package is best assessed in conjunction with other key proposals, as summarized in the annexed table (pages 5 and 6).

Using a holistic assessment, ERCST identifies key missing pieces and points to issues that need further clarification in the hydrogen regulatory framework.

Missing pieces and issues that need further clarification

- There is a mismatch with the hydrogen strategy when it comes to the role of low carbon hydrogen in the transition.
- Detailed definitions for renewable and low-carbon hydrogen are still missing.
- The proposed definitions framework does not sufficiently reward producers according to the CO₂ footprint of the different production processes.
- Lack of additional renewable electricity to achieve the European Commission RFNBOs targets proposed in RED III.
- There is not sufficient support for industry to comply with the RFNBOs target as proposed in RED III.
- The inclusion of hydrogen in CBAM deserves further discussion.
- A technologically neutral approach to incentives should be ensured.
- There is too much emphasis on hydrogen infrastructure regulation for a nascent hydrogen market.
- The side effects of the EU reliance on hydrogen imports should be further explored.

The Fit for 55 package represents an effort to decrease emissions. However, many questions regarding its implementation, affordability and more importantly, the impact on businesses citizens as well as on society overall remain unanswered. In this context, hydrogen is a good example of an approach to decarbonization which is promising but not without uncertainties.

2. The hydrogen and decarbonized gas market package: What is in?

2.1. Hydrogen Definitions

Definitions are a fundamental pillar of the EU internal energy market. Definitions represent the foundations where policies, regulations and incentives are rooted, serving as a framework for their implementation. In the hydrogen discussion, the debate around the different colors of hydrogen (green, blue, pink, turquoise etc.) is directly linked with the issues of definitions and incentives. This is because colors will come with money. The gas and decarbonized gas market package has proposed a long-awaited definition for low-carbon hydrogen. More concretely, the proposed Directive defines low-carbon hydrogen as hydrogen which meets a greenhouse gas emission reduction threshold of 70%. However, this definition is to some extent incomplete as the concrete methodology to define the GHG threshold will not be proposed until 2024 when a delegated act is expected.

- **Analysis:** The above-mentioned definition does not provide enough clarity and predictability for investments in this technological landscape (low-carbon hydrogen) particularly taking into consideration the time required in the different project phases, from planning to implementation. There is therefore a mismatch in terms of timing and substance with the European Commission Hydrogen Strategy which assigned low-carbon hydrogen a role during the transition.

Another relevant question is whether the European Commission is proposing a definition framework capable of rewarding producers according to the CO₂ footprint of their production processes. As an example, the closest to a definition for renewable hydrogen, is the proposed RFNBO (renewable fuels of non-biological origin) definition under RED III. This definition would not include hydrogen produced by biomass pyrolysis as biomass does not qualify as non-biological. A definition framework based on GHG emission reductions rather than technologies would better serve the development of the EU hydrogen economy.

2.2. Hydrogen transportation infrastructure

An important question to consider is the extent to which the regulatory regime applicable to gas networks should be applied to hydrogen. Similarly, whether transportation infrastructure should follow or foster demand. To help the reader answer these, a brief description of the most important issues addressed by the package can be found below.

- **Unbundling:** The package covers the issue of horizontal and vertical unbundling making use of the different available models and providing some level of flexibility to market players.
 - **Vertical unbundling (Art 62 Directive):** The Directive proposes that Member States shall ensure that by 31 December 2024, hydrogen network operators are unbundled in accordance with the unbundling rules for gas Transmission System Operators (TSOs). There is however some level of flexibility. If the hydrogen network belongs to a vertically integrated company, Member States may choose between an ownership unbundling model but also have the option to choose an independent system operator model (ISO) or an independent transmission system operator model (ITO).
 - **Horizontal unbundling (Art 63 Directive):** The Directive proposes that where a hydrogen network operator is part of an undertaking active in transmission or distribution of natural gas or electricity, it shall be independent at least in terms of its legal form.
- **Third-party access to hydrogen networks (Art 31 Directive):** The Directive proposes to carry over the third-party access regime (TPA) governing the existing natural gas networks to hydrogen. Again, a certain degree of flexibility has been provided and Member States may implement a system of negotiated TPA to hydrogen grids until 31 December 2030.
- **Cross-subsidization (Art 4 Regulation):** The question of cross-subsidization is particularly important when the owner and operator of the gas infrastructure also owns and operates a hydrogen network. This is also highly relevant when repurposing current gas assets into hydrogen, as in some cases, gas consumers may end up covering the costs of construction or operation of the hydrogen infrastructure and vice versa. The package proposes that if a network operator provides regulated services for gas and hydrogen, it will need to have separate regulated asset bases (RAB). Although this approach should reduce the risks posed by a combination of natural gas assets and hydrogen assets in the same base, it does not completely rule out cross-subsidization as financial transfers from one RAB to another may be allowed.
- **Blending (Art. 20 Regulation)** In the Regulation proposal the Commission acknowledges that blending of hydrogen into the natural gas system is less efficient compared to using hydrogen in its pure form and therefore diminishes the value of hydrogen. However, it provides Member States considerable leeway on whether to apply blending in their national natural gas systems. It also proposes a harmonized cap on blending in the form of an EU-wide allowed limit of 5% at cross-border interconnection points to prevent segmentation of the internal energy market.
- **Network planning and the creation of ENNOH:** Using a similar approach to the functioning and coordination of transmission systems in the gas and electricity sectors, the Commission has proposed the creation of a European Network of Network Operators for Hydrogen (ENNOH) (**Art. 40 Regulation**). ENNOH will take over from the European Commission temporary platform created to take care of early work on scoping and developing issues relevant for the building up of the hydrogen network. ENNOH will work in close cooperation with ENTSOE and ENTSG and will be tasked

with, among others, the development of network codes and the adoption of non-binding ten-year network development plans (TYNDPs) (**Art. 41 Regulation**). As regards network planning and in line with the energy system integration strategy, the Commission has adopted an integrated and inclusive approach anticipating increased interlinkages between natural gas electricity and hydrogen. In this context, there should be one single network development plan per Member State. (**Art. 51 Directive**)

- **Analysis:** Although a considerable level of flexibility has been provided by giving member states more leeway to implement some of the provisions already mentioned, regulation should be the exception and not the norm at stages when markets have not reached a sufficient level of maturity and find themselves in a nascent stage as is the case here.

3. Incentives

The question of incentives for the ramping-up of the hydrogen economy has been primarily addressed in the first set of Fit for 55 publications presented in July 2021. In this first part of the package incentives for renewable hydrogen and to a lesser degree also for low-carbon hydrogen have been proposed (See annexed table). One of the central parts of the debate focused on whether the hydrogen and decarbonized gas market package would include specific targets on the demand-side for low-carbon hydrogen, which has not been the case.

- **Analysis:** An EU-ETS driven technology neutral approach on incentives where all decarbonized hydrogen production pathways get the same level of support should be prioritized during the transition. Considering the expected potential scarcity of renewable electricity and the high price of renewable hydrogen in the coming years, the targets introduced in the revision of the renewable energy directive for renewable hydrogen will be extremely difficult to achieve. For this reason, a dual approach providing both further support and guidance to industry and an EU-ETS driven technology neutral approach should be adopted at least during the transition.

4. Next steps and way forward for the hydrogen and decarbonized gas market package

- **On the European Commission front:** The Commission opened a feedback period on the proposals that will last until April 12th for the Directive and until April 13th for the Regulation.
- **On the European Parliament front:** The leading committee for both, the Regulation and the Directive will be ITRE (Committee on Industry, Research and Energy). MEP Jens Geier (S&D) will be the rapporteur for the Directive and MEP Jerzy Buzek (EPP) will be the rapporteur for the Regulation.
- **On the Council front:** Due to a greater focus of the French presidency on key files published as part of the first set of Fit for 55 publications, deep Council discussions on the package are not foreseen until the Czech presidency, which will run from July until December 2022.

5. Annex I The proposed hydrogen regulatory framework in a nutshell

THE HYDROGEN REGULATORY PUZZLE	
FIT FOR 55 PACKAGE	
Proposal	Main issues covered
Renewable Energy Directive III	<ul style="list-style-type: none"> - Definition for RFNBOs and extension beyond the transport sector. - 2030 binding target for industry: 50 % RFNBOs of the hydrogen used for final energy and non-energy purposes. - 2030 binding target for transport: share of RFNBOs is at least 2,6% in 2030. - Certification: Extension of the certification system for renewable to include hydrogen.
EU-ETS Directive	<ul style="list-style-type: none"> - EU ETS free allocation rules are amended to support the uptake of innovative decarbonization technologies i.e., electrolytic hydrogen. - Proposed increase in the innovation and modernization fund. Extended scope for the innovation fund to allow support through CCfDs.
AFIR Regulation	<ul style="list-style-type: none"> - Minimum number of publicly accesible hydrogen refuelling stations are put in placew by 31 December 2030.
CO₂ Standards for cars and vans Regulation	<ul style="list-style-type: none"> - The strengthened CO₂ emission reduction requirements represent a technology neutral way to foster the uptake of Zero-emissions vehicles. - New combustion engines vehicles phase-out by 2035.
Energy Taxation Directive	<ul style="list-style-type: none"> - Definition for low-carbon fuels. - Lowest minimum rate € 0,15/GJ for RFNBOs and during a transition phase (10 years) also to low-carbon hydrogen.
FUELEU Maritime Regulation	<ul style="list-style-type: none"> - Covers all renewable and low-carbon fuels, including decarbonised hydrogen and decarbonised hydrogen-derived fuels.
Hydrogen and Decarbonized Gas Package	<ul style="list-style-type: none"> - Definition for low-carbon hydrogen. - Methodology to complete the definition expected in 2024. - Certification: Parallel to the RED certification system. - Non-binding targets for low-carbon hydrogen - Regulation of hydrogen transportation infrastructure including: <ul style="list-style-type: none"> o Vertical and horizontal unbundling o Third party access o Cross-subsidization o 5% blending threshold o Network planning and creation of ENNOH
OTHERS	
EU Hydrogen Strategy (Non-legislative)	<ul style="list-style-type: none"> - European Commission hydrogen outlined vision. - Focus on renewable hydrogen. - Low-carbon hydrogen to play a role during the transition. - First phase: 2020 – 2024: 6 GW of renewable hydrogen electrolyzers and production of up to 1 million tonnes of renewable hydrogen. - Second phase: 2025 to 2030: at least 40 GW of renewable hydrogen electrolyzers and production of up to 10 million tonnes of renewable hydrogen - Third phase: deployment at scale to reach all hard-to-decarbonise sectors.
EU Taxonomy Climate Delegated act	<ul style="list-style-type: none"> - Hydrogen production considered aligned with the taxonomy when: the life-cycle GHG emissions savings requirement of 73.4% for hydrogen and 70% for hydrogen-based synthetic fuels relative to a fossil fuel comparator of 94g CO₂e/MJ . - Repurposing: conversion/repurposing of existing natural gas networks to hydrogen

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Roundtable on Climate Change and Sustainable Transition

State Aid Guidelines for Energy and Climate	<ul style="list-style-type: none">- Member States awarded leeway to support renewable hydrogen during the transition.- Low-Carbon hydrogen just addressed through CCS.
TEN-E Regulation	<ul style="list-style-type: none">- PCI support can go to converting gas pipelines to carry hydrogen until the end of 2027, and those projects could continue to carry natural gas blended with hydrogen until the end of 2029.
Delegated act on additionality	<ul style="list-style-type: none">- Awaiting publication

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*This policy brief does not necessarily cover every aspect of the hydrogen regulatory framework and is not designed to provide legal or other advice.