



HYDROGEN and decarbonised gas market package

Brussels, December 03rd, 2021

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Roundtable on
Climate Change and
Sustainable Transition

Presentation Structure

Fit for 55 Package and H₂, completing the regulatory puzzle

Background to the discussions state of play of the hydrogen and gas market in Europe

What is in the revision the package for Hydrogen

Additionality principle for renewable hydrogen

Key questions for the discussions:

It is the regulatory framework complete? What are the missing pieces?

What are the right KPIs to assess if the package is delivering the targets set in the EC Strategy

Has the right balance between regulation and market-based instruments been achieved?

Within this framework, how should additionality be designed and defined?

Principles

Technology neutrality
Market economy vs. regulation

Production

- ❖ **Binding classification (Certification production processes)**
- ❖ **Additionality criteria for renewable H2.**
- ❖ **Imports v. exports**

- ❖ RED III and additionality for RFNBOs, H2 and Gas Package for low carbon, EU Taxonomy
- ❖ Delegated act on RFNBOs
- ❖ Member States, H2 and Gas Package

Demand

- ❖ **Hard to abate vs. other sectors**
- ❖ Hydrogen purity
- ❖ **Hydrogen scarcity and affordability**

- ❖ RED III, CO₂ Stdrs. for cars and vans, Rev. EU-ETS Directive, AFIR, Refuel Maritime, Refuel Aviation
- ❖ Member States, H2 & Gas Package
- ❖ Rev. RED III, Rev. H2 and Gas Package, Rev. State Aid, EU Taxonomy, Energy Taxation Directive, CO₂ Stdrs. for Cs. and Vs

Transportation

- ❖ **Pace for infrastructure development**
- ❖ Blending
- ❖ Repurposing

- ❖ Rev. TEN-E, H2 & Gas Package, EU Taxonomy, MS level
- ❖ Rev. TEN-E, H2 & Gas Package, State Aid, EU Taxonomy, MS lev.
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Incentives

- ❖ **CCfD**
- ❖ **Demand mandates**
- ❖ **Tax rebates**
- ❖ Sustainable Finance
- ❖ State Aid
- ❖ **Funding Mechanisms**

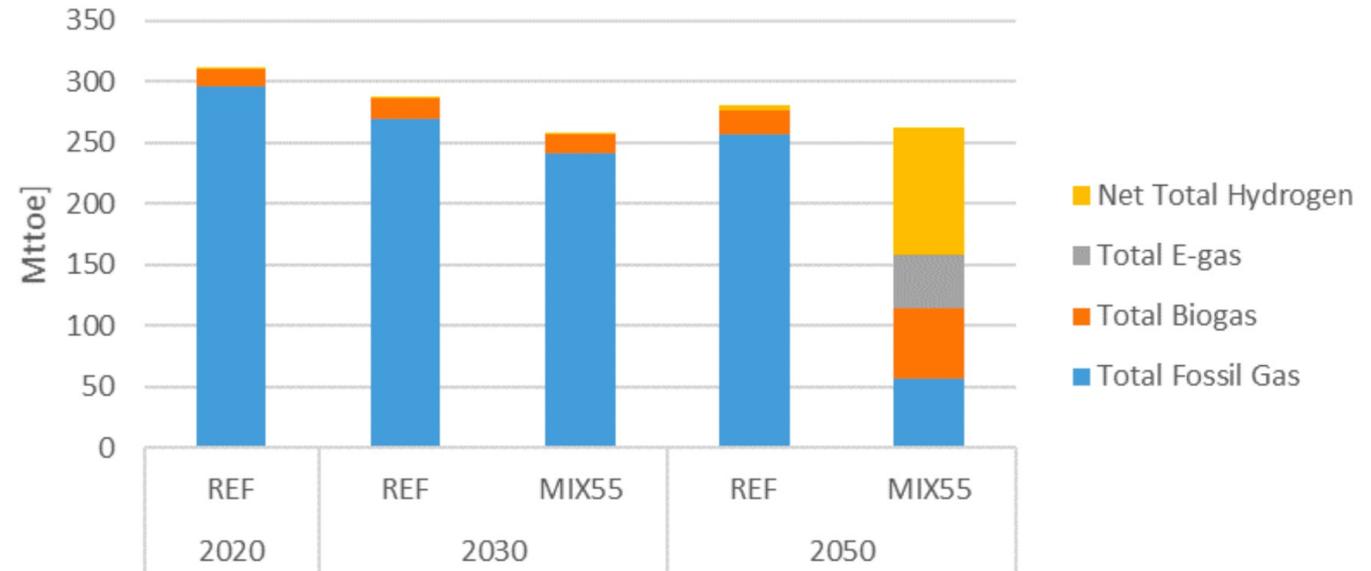
- ❖ MSs Level, ETS Directive
- ❖ RED III, Rev. H2 & Gas Package, MSs Level
- ❖ Energy Taxation Directive, Revised State Aids
- ❖ Rev. State Aid Guidelines, IPCIs
- ❖ ETS Modernization & Innovation Fund, RRF, JTF, Horizon Europe, CEF, EIB financing

State of play of gaseous fuels in the EU

- Natural gas, i.e. fossil methane constitutes **around 95% of today's gaseous fuels consumed in the EU.**
- Together with other gaseous fuels it accounts for roughly 25% of total EU energy consumption, used for 20% of EU electricity production, and 39% of heat production.
- While the EC has already expressed that energy efficiency related measures and electrification will play a fundamental role to reduce emissions, in certain areas, gaseous fuels will remain present in the EU energy system.
- According to the Climate Target Plan Impact Assessment, the share of gaseous fuels to total EU energy consumption in 2050 would be about 20%. Just 5% below today's levels.

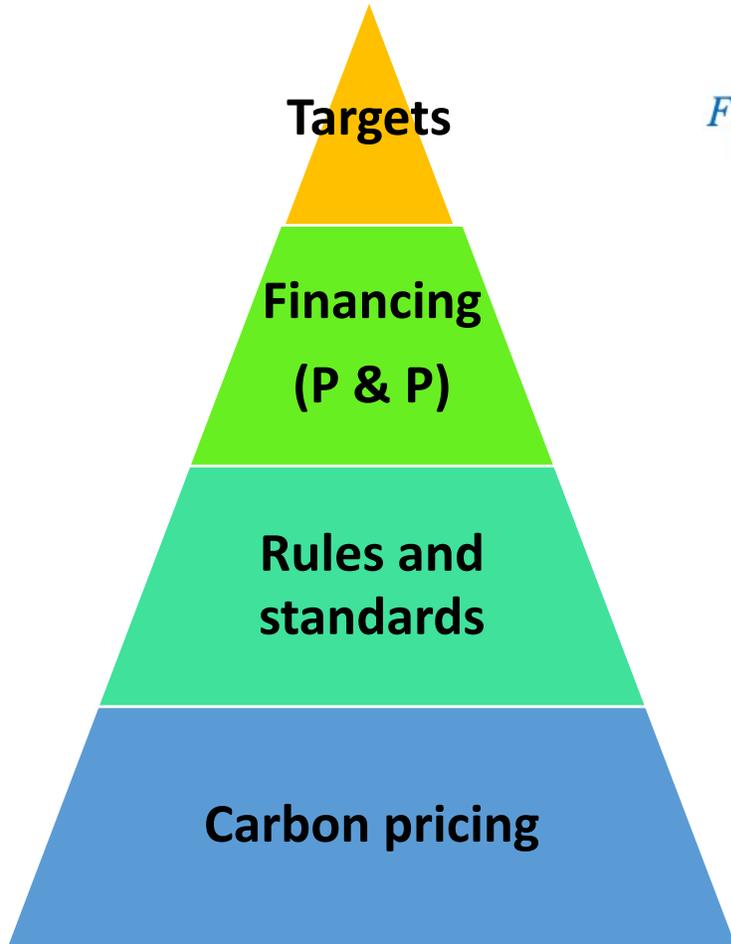
Renewable and low carbon gases in the existing gas infrastructure and markets

- The energy carried by gaseous fuels would, after slightly decreasing between 2020 and 2030, stay at about 85% of the current level.
- **Decarbonizing current gas consumption will be key.**
- **Problem: Decarbonised gases have significantly higher levelized costs of energy compared to natural gas**



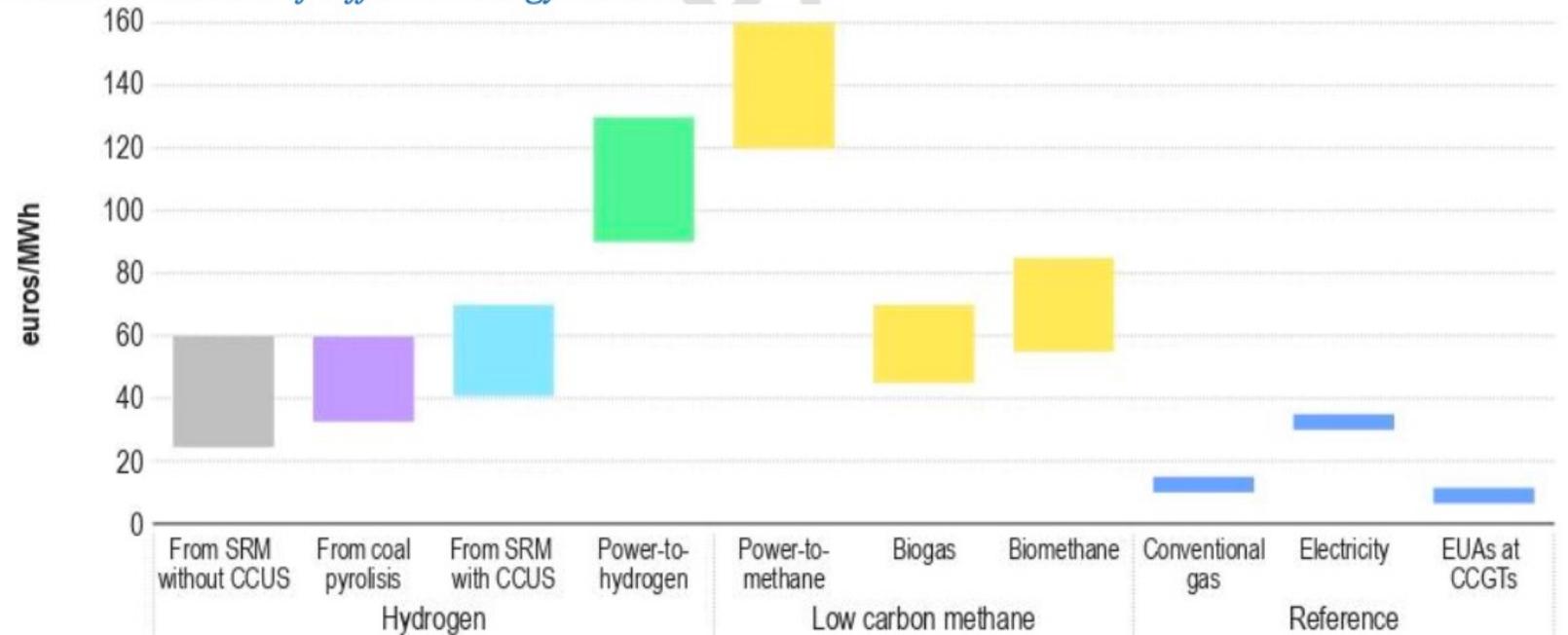
Source: Draft Impact assessment EU Commission

Renewable and low carbon gases in the existing gas infrastructure and markets



How to improve business cases

Figure 2: Production cost of different energy carriers



Source: ACER based on desk research of EC, OIES, IEA, Hydrogen Europe, IRENA and other studies.

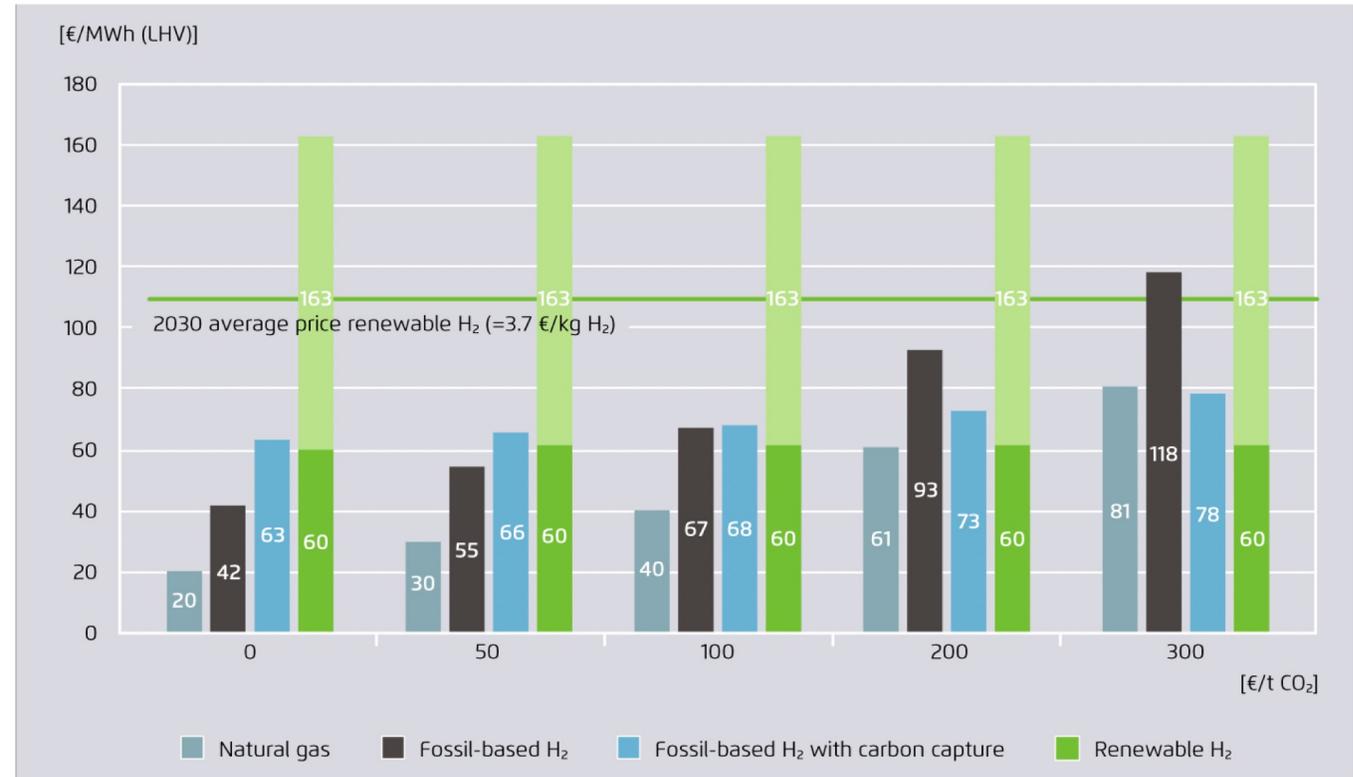
Impact of Carbon Pricing, achieving the right balance

It is true that carbon prices are **today not high enough**.

Even if they were high enough the EU-ETS price signal better contribute to the uptake of technologies which are already close to the market.

In any case these should not translate in public coffers shouldering an undefined financial burden for an indetermined period.

We believe that a right balance between carbon pricing and regulation is needed, avoiding an abusive use of command and control measures.



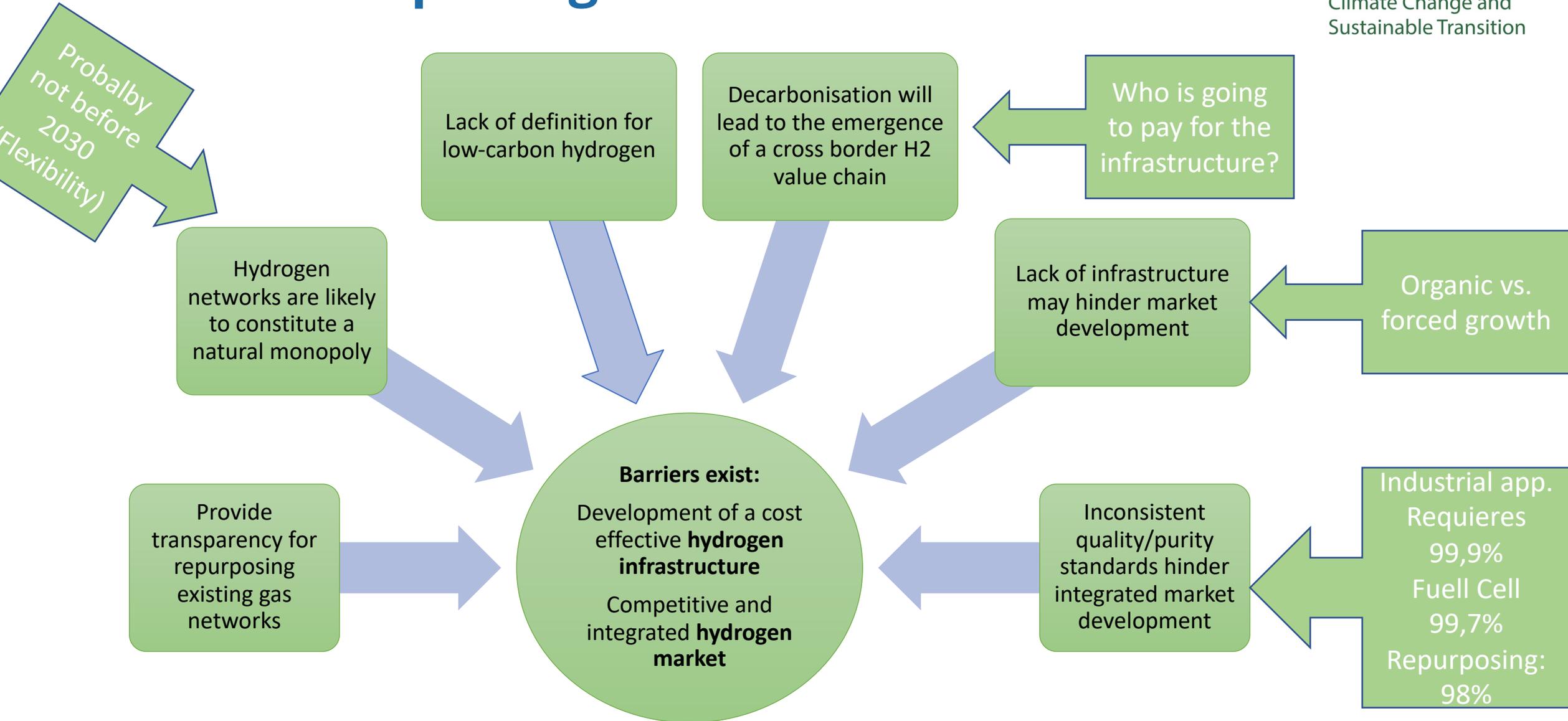
Agora Energiewende & Guidehouse (2021); Assumes natural gas price of €20/MWh, capture rate for fossil-based H₂ with CCS of around 75%.

H₂ and fit for 55 completing the regulatory puzzle

Achieving the right balance

| | Electricity | Industry | Buildings | Transport | Hydrogen | Removals and Land Use |
|---------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------|----------|----------------------------------------|
| Pricing | | Revision of the EU Emissions Trading System and establishment of a separate ETS for buildings and road transport | | | | |
| | | | Revision of the Energy Taxation Directive | | | |
| | Proposal for a Carbon Border Adjustment Mechanism | | | | | |
| Targets | | Revised Effort Sharing Regulation | | | | |
| | | Revision of the Energy Efficiency Directive | | | | |
| | | Revision of the Renewable Energy Directive | | | | |
| | | | | | | Revision of the LULUCF |
| Rules | | | | Revision of CO ₂ standards for cars and vans | | |
| | | | | Revision of Alternative Fuels Infrastructure | | |
| | | | | ReFuelEU: Aviation | | |
| | | | | ReFuelEU: Maritime | | |
| | | Third Energy Package for Gas (Q4 2021) | | | | Third Energy Package for Gas (Q4 2021) |
| Support & Financing | | Social Climate Fund | | | | |

Problems the package intends to tackle



Gas Directive, what is in for hydrogen?

- **The scope of the Directive has been extended:** The Directive establishes rules for the transport, supply and storage and **the transition of the natural gas system to a system based on renewable and low carbon gases.**
- The Directive **establishes common rules for the transportation, supply and storage of hydrogen using the hydrogen system.**
- **It lays down the rules relating to the organisation and functioning of the hydrogen sector,**
- **The Directive establishes rules for the progressive establishment of a Union-wide interconnected hydrogen system for supporting the decarbonisation of the EU energy system.**
- **Unbundling: A transitional period is foreseen:** Member States should be able to rely on the alternative unbundling model until 2030. But vertically integrated hydrogen companies could still be offered the use of an independent hydrogen network operator beyond that date that would allow them to maintain ownership of the network.

Gas Directive, what is in for hydrogen?

- **New definitions including**, among others: hydrogen system, hydrogen storage facility, hydrogen terminal, hydrogen quality, hydrogen undertaking, hydrogen network operator etc.
- **Definition for low-carbon hydrogen**: means hydrogen the energy content of which is derived from non-renewable sources, which meets a greenhouse gas emission reduction threshold of [70%].”
- **Integrated network planning**: The 10-year network development according to the Directive plan need to take account of the increased interlinkages between the gas and electricity, as well as the introduction of novel gases.
 - Be in line with the national energy and climate plans and support the European and climate energy objectives.
 - Consider alternatives to system expansion such as energy efficiency and demand-side management.
 - **It acknowledges that the role of natural gas is expected to decrease, which also affects the demand for infrastructure investments. The network development plan therefore needs to balance competition concerns and avoiding stranded assets.**
 - Any plan to construct a hydrogen network must be based on a realistic and forward-looking demand projection
- **Certification of renewable and low-carbon fuels**: Points out that In order to ensure that LCFs would have the same decarbonisation impact as compared to other renewable alternatives it is very important that they are certified by applying a similar methodological approach based on a life cycle assessment of their total GHG emissions.

Gas Regulation, what is in for hydrogen?

- **Scope:** Setting non-discriminatory rules for access conditions to natural gas and hydrogen, facilitating the emergence of a well-functioning and transparent wholesale market with a high level of security of supply in gases and providing mechanisms to harmonise the network access rules for cross-border exchanges.
- **New scope for the EU entity for distribution system operators:** Distribution system operators operating a natural gas system or, if applicable, a hydrogen gas system shall cooperate ... in order to promote the completion and functioning of the internal markets for gases in the natural gas system and for hydrogen
- **Minimum cap for blended hydrogen:** The regulation does not require member states to blend hydrogen into their fossil gas networks, but would introduce from 2025 an EU-wide allowed cap of 5% at cross-border interconnection points where transmission system operators have to accept gases with a blended hydrogen level below the cap.
- **Avoiding cross-subsidies:** Art 4. makes a separation between regulated services for gas, hydrogen and or electricity and the underlying asset base. This means at least that:
 - Services revenues obtained from the provision of regulated services can only be used to recover the costs of the regulated asset base on which the regulated services were provided;
 - When assets are transferred to a different regulated asset base, their value will be established. The value established will be such that cross-subsidies do not occur.

Gas Regulation, what is in for hydrogen?

- **New hydrogen network operators entity:**
- The draft regulation would also set up a “European Network of Network Operators for Hydrogen” (ENNOH) to among others:
 - Ensure optimal management of the Union hydrogen network and to allow trading and supplying hydrogen across borders.
 - It would draw up a non-binding EU-wide 10-year network development plan covering “viable hydrogen transportation networks and necessary interconnections”, prepare cross-border network codes and work with ENTSOG in the run-up to the eighth list of projects of common interest.
 - The Commission would set up a temporary body to support early work on scoping and developing issues relevant for the building up of the hydrogen network and markets while ENNOH is being established.

Additionality principle for renewable hydrogen

- In short, the additionality principle is a measure intended to ensure that **renewable electricity is not re-directed from the power grid, to be used for the decarbonization of other sectors.**
- In the RED II revision proposal, Article 1(16) amends Article 27(3) REDII **to delete the additionality framework for electricity in transport.**
- Delegated act on RFNBOs will shed more light on this issue and **complete the definition for renewable hydrogen.**
 - **Last leaked version:**
 - Points out that in order to count electricity taken from the grid as fully renewable, the installation generating renewable electricity came into operation not earlier than 24 months before the installation producing the renewable hydrogen.
 - Art 4. makes the temporal correlation more flexible moving from 15 mins to one hour.
 - Recital 10 includes a flexibility provision stating that Art 4.1.a. should enter into force at a later stage than the other provisions.

Key questions for the discussion



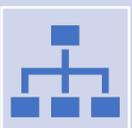
- Will there be a comprehensive regulatory framework for hydrogen in the EU after the package? What are the missing pieces?



- Has the right balance between regulation and market-based instruments been achieved?



- What are the key KPIs to assess if the regulation is delivering the desired outcome?



- Within this framework, how should additionality be designed and defined?