NORTON ROSE FULBRIGHT

Energy Academy 2025

Green Hydrogen Regulation

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Partner

15 April 2025

Energy Academy 2025 program

Session 1 | 18 March

Grid access

Grid congestion poses a serious threat to energy projects, energy-intensive industries and other businesses. However, it also presents opportunities for new business models. Against this background, in the first session of 2025, we will explore opportunities for connected to gain flexible access to the grid. We will address:

- ✓ Time-based and time-block based ransmission rights
- ✓ Cable pooling
- ✓ Capacity reduction contract
- ✓ Redispatch

Speakers: Marjolein Dieperink and Rosalie Blaauw

Session 2 | 15 April

Green hydrogen regulation

In this second session of our Energy Academy, we will take you through the most recent development and pitfalls of the green hydrogen regulation. What are the key things to keep in mind when entering this field? We will start with the basics and dive into the most important regulatory issues including:

- ✓ EU and Dutch regulation
- ✓ Legal definition of green hydrogen / EU compliant RFNBO
- ✓ Regulation and outlook hydrogen infrastructure
- ✓ Implementation of RED III (renewable energy directive)

Speaker: Marjolein Dieperink

Session 3 | 17 June

Updates on energy project permitting

The third edition of our Energy Academy will focus on the relevant environmental and planning legislation in respect of development and operation of energy projects. This session will provide you with insights in different types of permitting procedures and possible environmental requirements, including:

- ✓ Choosing a location for your energy projects
- ✓ First experience with environmental law
- ✓ Recent developments

Speakers: Maaike Faase and Leora Wit

Session 4 | 16 September

New Energy Act

After a summer break, we will continue our Energy Academy with a deep dive into energy regulation, with a special focus on:

- ✓ Amendments to the Electricity Act 1998 and the Gas Act.
- ✓ The active customer and producer
- ✓ Flex contracts and grid congestion
- ✓ Regulator ACM

Speakers: Marjolein Dieperink and Rosalie Blaauw

Session 5 | 14 October

CCS

In the fifth edition of our Energy Academy, we take you along the most common CCS project structures and common issues in the legal framework, with special focus on:

- ✓ Legal structure CCS projects
- ✓ EU ETS and government support & subsidies
- ✓ Bottlenecks in the legal framework

Speakers: Marjolein Dieperink and Wouter Hertzberger

Session 6 | 18 November

ESG & the energy sector

The last Energy Academy provides a practical deep dive into ESG in the energy sector, with a special focus on:

- ✓ The legal framework for ESG
- ✓ Carbon Emission Reductions & Compliance.
- ✓ The Energy Sector & Mandatory Climate Transition Plans

Speakers: Marjolein Dieperink and Sharon Oded

Current legal developments in the hydrogen market

OWE Subsidy Awards	✓ Over 30 projects applied for OWE.
Clarity on REDIII Implementation	✓ Refinery Route Viability; ✓ Industry Obligations: obligation to replace grey hydrogen with green hydrogen?
Infrastructure and Costs	✓ An updated rollout plan for Hynetwork is expected.
New Energy Act	✓ Preparations are underway for the entry into force of the Energy Act.
Grid fees	✓ Increase of grid tariffs for electrolyzers? ✓ Feed-in tariffs for electricity production plants.

Agenda

01 EU & National Hydrogen Strategy

02 Definition of green hydrogen

03 RED III national Implementation

04 EU legislation: Decarbonisation Package

05 Dutch legislation and policy: Hydrogen Infrastructure

EU & National hydrogen strategy

EU-Level

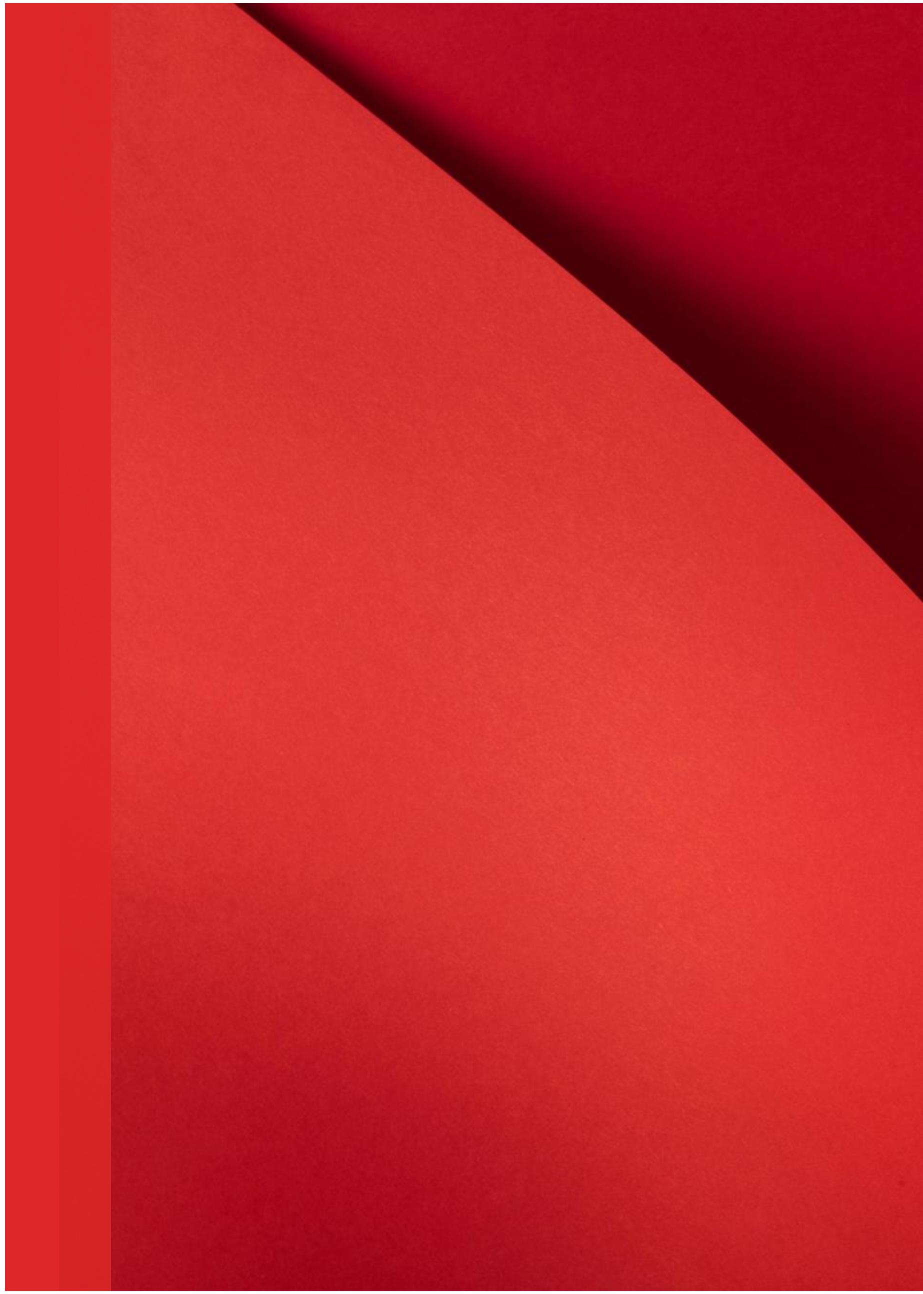
01 By 2030: At least 40 GW of renewable hydrogen electrolysers in EU, and 40 GW in neighbouring regions for export to the EU.

02 Produce up to 10 million tonnes of renewable hydrogen annually by 2030.

03 Add 400 new hydrogen refuelling stations by 2030.

04 Ensure hydrogen plays a role in decarbonizing 46% of the EU's diesel rail network.

05 Limit fossil-based hydrogen to max 23% by 2030 and 20% by 2035 of national hydrogen consumption.



NL-Level

01 The Climate Agreement sets a target of at least 4 GW of electrolysis capacity by 2030, with an ambition of reaching 8 GW by 2032.

02 Access to transport and storage infrastructure will be regulated no later than 1 January 2033.

03 Gasunie (HyStock) aims to build four hydrogen caverns at Zuidwending with a total storage capacity of 20,000 tonnes.

04 The infrastructure for four coastal industrial clusters must be ready by 2030 at the latest and the Delta Rhine Corridor is expected to be completed in 2031-2032.

05 For import infrastructure, the regime of negotiated third-party access will continue to apply even after 2033.

Definition of green hydrogen

What is green hydrogen?

Green hydrogen is a RFNBO

- ✓ Green hydrogen can be qualified as a renewable fuel of non biological origin (RFNBO);
- ✓ RFNBOs are renewable liquids and gaseous fuels of non-biological origin other than biomass.

How is green hydrogen made?

Green hydrogen is made through a process called electrolysis, using electricity from renewable energy sources (like wind, solar, or hydropower) to split water into hydrogen and oxygen.

Legal framework for green hydrogen

The requirements for the production of RFNBOs are laid down in:

- ✓ Renewable Energy Directive (2018/2001 & 2023/2413);
- ✓ EU Delegated Act on a methodology for renewable fuels of non-biological origin (2023/1184); and
- ✓ EU Delegated Act establishing a minimum threshold for greenhouse gas (GHG) emission savings of recycled carbon fuels (2023/1185).

Why is green hydrogen important?

- ✓ Compliance with EU and Global Climate Policies;
- ✓ Hydrogen can store excess renewable electricity for later use, helping stabilize energy systems;
- ✓ Green hydrogen can decarbonize hard-to-abate sectors.

When can hydrogen be considered RED compliant RFNBO?

Hydrogen can only be certified and sold as green hydrogen if the strict set of conditions on the production of RFNBOs following from the RED and Delegated Acts 2023/1184 & 2023/1185 are met. Whether hydrogen qualifies as RED compliant RFNBO depends on:

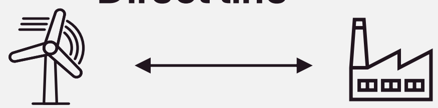
01 **Criterion I:** The electricity used for the hydrogen production

02 **Criterion II:** The percentage of GHG emissions savings is generated with the hydrogen production

03 **Criterion III:** The mass balance and traceability in the supply chain

Criterion I – The electricity used for the hydrogen production

Direct line

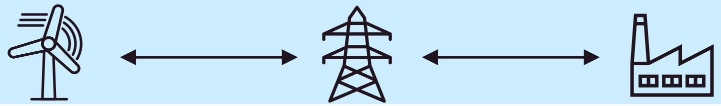


Re 1 – Direct line

- ✓ The REP must be connected to the ELZ through a direct line:
  - Direct link between an isolated producer with a single, separate consumer; or
  - Direct link between a producer with one or more consumers where either the producer or the consumer has at most 1 grid connection.
- ✓ The REP was not commissioned earlier than 36 months before the ELZ;
- ✓ The REP cannot be connected to the grid, or the REP is connected to the grid, but no electricity has been taken from the grid to produce hydrogen with the ELZ.

Note: If the ELZ also uses electricity from the grid, this can count as fully renewable if the criteria of '*grid connection with PPA*' or *grid connection without PPA*' are met.

Grid connection with PPA



Re 2 – Emission intensity grid is <18 gCO_2eq/MJ

- ✓ A PPA has been conducted;
- ✓ There is temporal and geographical correlation.

Re 3 – PPA sourcing (rest category)

Additionality

- ✓ A PPA has been conducted;
- ✓ The REP was not commissioned earlier than 36 months before the ELZ.
- ✓ The REP has not received operating aid or investment aid (including CfD).

Geographical correlation

- ✓ The REP and the ELZ are in the Netherlands;
- ✓ The REP and ELZ are in interconnected zones with equal or higher day-ahead prices;
- ✓ The REP and the ELZ are in an interconnected offshore bidding zone.

Temporal correlation

- ✓ Until 31 December 2029: hydrogen and electricity are produced within the same calendar month;
- ✓ From 1 January 2030: hydrogen and electricity are produced within the same hour
- ✓ This condition is always met when renewables set the market price during the hour of hydrogen production.

Grid connection without PPA

Re 4 – Renewable electricity in grid is > 90%

- ✓ 100% of the hydrogen is RFNBO if the average share of renewable electricity in the grid in the Netherlandss exceeded 90% previous calendar year.

Re 5 – Avoid curtailment

- ✓ 100% of the hydrogen is RFNBO if the used electricity reduces the need for redispatching of renewable electricity generation.

Re 6 – Grid mix

- ✓ A part of the hydrogen can qualify as RFNBO, namely the part that corresponds with the share of renewable electricity in the grid in the Netherlands measured two years prior to the year in question. This percentage in the Netherlands was approximately 40% in 2022.

Legenda:

- **REP:** Renewable electricity production plant
- **ELZ:** Electrolyser producing hydrogen
- **Re 1, Re 3 and Re 6** are possible in the Netherlands.
- **Re 2, Re 4 and Re 5** are not yet possible in the Netherlands.

Criterion II – The percentage of GHG emissions savings

The total GHG emissions savings of the hydrogen produced must at least be 70%

Step 1 – Calculate total emissions

Calculate the total emissions from the produced hydrogen throughout the entire production chain. include for example emissions of:

- ✓ The electricity used for the hydrogen production:
  - Direct line and grid connection + PPA electricity has an emission intensity of 0 g CO2,eq / MJ;
  - Grid electricity without PPA in the Netherlands has an emission intensity of 99,9 g CO2,eq / MJ;
- ✓ Use of deionised water, tap water and wastewater;
- ✓ Transportation of hydrogen to the offtaker.

Step 2 – Calculate the emission savings

- ✓ Calculate the emissions savings of the produced hydrogen by comparing the emissions calculated under step 1 to a fossil fuel benchmark by using the following formula:
- ✓ **Emissions savings = (Ef – E)/Ef**
  - **Where: E =** total emissions from the use of the renewable hydrogen produced; and
  - **where Ef =** total emissions from the fossil fuel comparator. This comparator always 94 g CO2,eq per MJ H2.
  - The outcome of this calculation must be > 70%, in order for the hydrogen to qualify as RED compliant RFNBO.

Calculation example:

If a producer has calculated that the total emissions of a batch of hydrogen produced in a certain hour is 25 g CO2,eq per MJ H2, the emissions savings of this hydrogen batch are **72%** ((94-25)/94x100%=72%).

.

Criterion III – The mass balance and traceability in the supply chain

- The RED compliant RFNBO sustainability information must remain physically linked to the RED compliant RFNBO.
- The mass balance refers to the production, purchase, and sale of RFNBOs that meet the RED requirements, allowing for the issuance of a Proofs of Sustainability (PoS).
- The mass balance must clearly distinguish between RFNBO hydrogen and non-RFNBO hydrogen and identify which RFNBOs comply with RED-III and which do not.
- All data sources should be thoroughly documented, and any formulas used should be clearly explained..
- A mass balance should be made on a monthly or quarterly basis.

Producing different types of hydrogen with one electrolyser plant (1/3)

3 routes of hydrogen production

As said, there are three routes to produce hydrogen, namely:

- ✓ **Route A** Through a direct line between the electrolyser and the renewable energy plant;
- ✓ **Route B** Through a grid connection with a PPA; and
- ✓ **Route C** Through a grid connection without a PPA

Route B and C can be combined

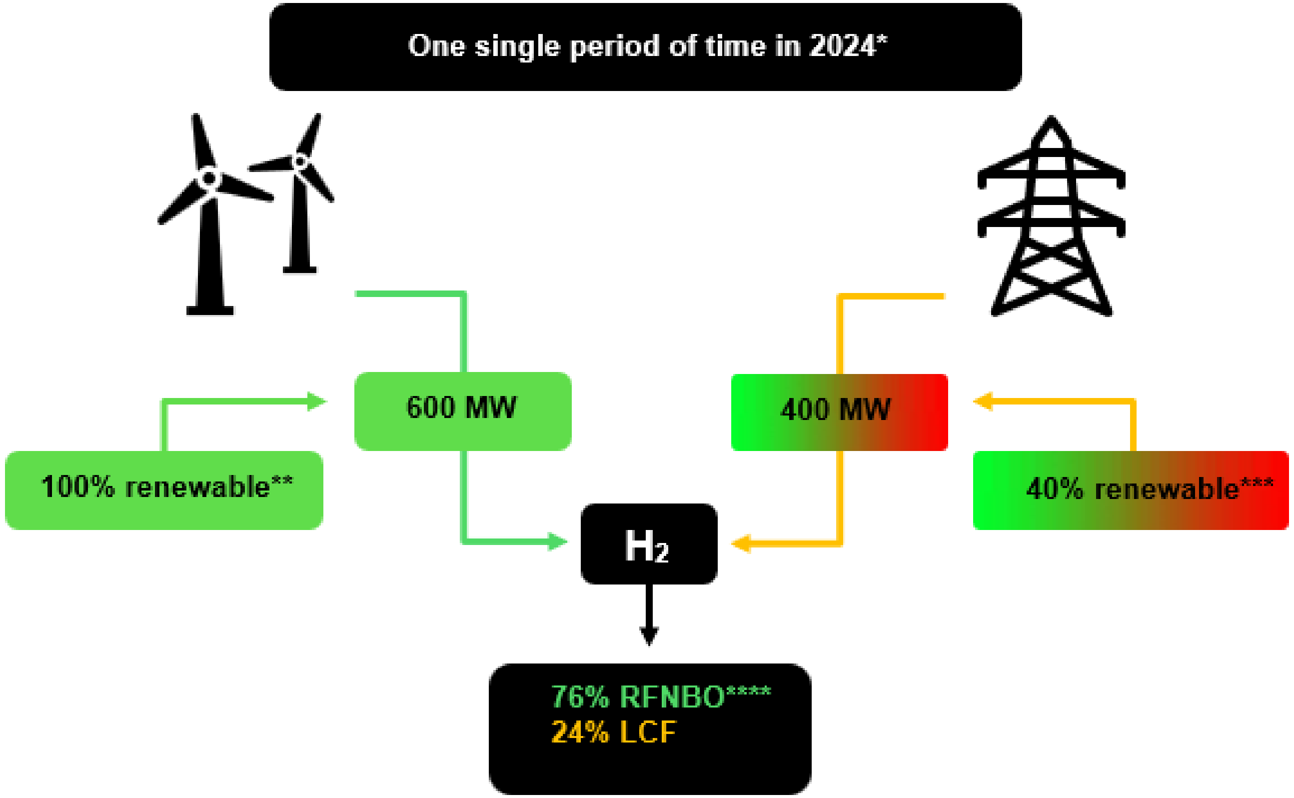
It is possible for one electrolyser plant to combine these routes of producing hydrogen for one singe batch of hydrogen. Doing this will result in different types of hydrogen, namely:

- ✓RED compliant RFNBO;
- ✓Low Carbon Fuel/hydrogen (LCF)*; and/or
- ✓Grey hydrogen.

***LCF:** hydrogen can be qualified as LCF if the energy content is derived from non-renewable sources, which meets the GHG emissions reduction threshold of at least 70 % compared to the fossil fuel comparator for RFNBO.

Producing different types of hydrogen with one electrolyser plant (2/3)

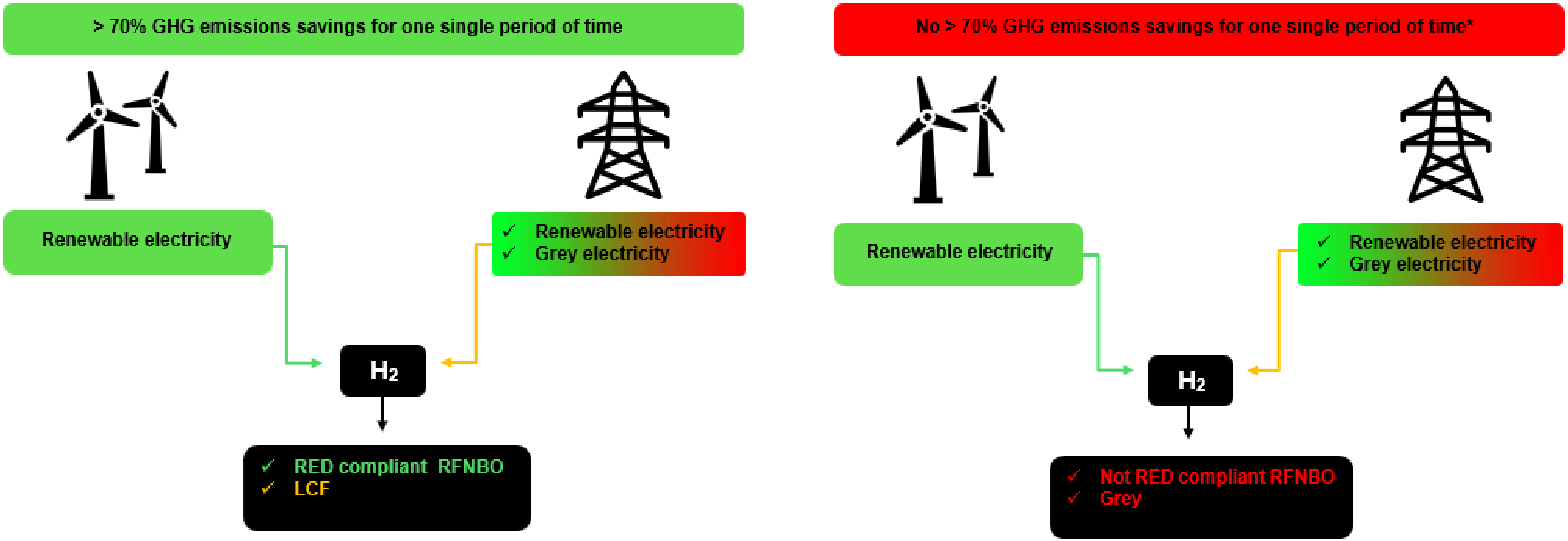
Topping up the % of RFNBO with grid electricity



*	Assuming that the 70% GHG emissions savings target has been achieved
**	Electricity compliant with the criteria from Delegated Act 2023/1184 is 100% RFNBO
***	The share of renewable electricity on the grid in Netherlands in 2022 is 40%
****	(600MW/1,000MWx100%= 60%) + (400MWx0.4)/1,000X100%= 16%) = 76%

Producing different types of hydrogen with one electrolyser plant (3/3)

Consequences of outcome GHG calculations



RED III national implementation

Binding REDIII targets and NL implementation

Binding targets	Envisaged implementation per 1 January 2026
Share of renewables: • EU level: 42.5% • NL level: 39%	
RFNBO in industry • 2030: 42% • 2035: 60%	Annual obligation monitored by HWI's Demand side subsidies Production subsidies*
RFNBO in transport: 2030 • 14.5% GHG intensity reduction • Combined share biofuels, biogas & RFNBO = 5.5% • 1% = RFNBO	Annual obligation monitored by ERE's
Heating & cooling: additional 1.1% ('26 – '30)	

! Targets are binding for EU member states and only become binding for companies after implementation into national legislation

*national indicative elektrolyzer target 2030: 4GW; 2032: 8GW

Implementation industry sector (HWI)

- ✓ **How?**: Amendment of the Environmental Management Act (**EMA**) + Decree + Regulation.
- ✓ **Amendment EMA**: Next steps: proposal to be send to Council of State, final proposal and parliamentary debate.
- ✓ **Entry into force**:
  - Implementation deadline: May 2025;
  - Uncertain whether 1 January 2026 will be realistic, postponement until 1 January 2027 more likely.
- ✓ **Renewable Hydrogen Units scheme**: The implementation will be achieved by a **Renewable Hydrogen Units** scheme (*Hernieuwbare Waterstofeenheid voor de Industrie*; also: **HWIs**).
- ✓ **Annual industry obligation** for the use of RFNBO?
- ✓ Will be supported by a system for trading and reporting HWIs.
  - Industry must annually deploy a certain percentage of their hydrogen use with HWIs.
  - Should be supplemented with both supply-side subsidies and demand-side subsidies.
  - A purchasing process for HWIs will be initiated by the government, by way of a procurement tender.
- ✓ Refineries may fall within the definition of industry in RED > only to the extent that a refinery produces fuels that are not used for transport

(i.e. used for power generation (i.e. heavy fuel oils) + oil products for the chemical sector + solid materials (like coke) used in the production of aluminium, steel, or fertilizer production).

Implementation Transport sector (ERE)

- ✓ **How?**: Amendment of the Environmental Management Act (**EMA**) + Decree + Regulation.
- ✓ **Amendment EMA**: Next steps: final proposal and parliamentary debate.
- ✓ A draft Decree has been published on 6 November 2024.
- ✓ **Entry into force**: envisaged per 1 January 2026.
- ✓ The implementation of the transport targets following from REDIII will be achieved by an **Emission Reduction Units** scheme (*Emissiereductie eenheden*; also: **EREs**).
  - Each ERE represents 1 gigajoule of saved emissions in the value chain. Parties can use these EREs to fulfil their annual contribution to the share of renewable energy.
- ✓ **Refinery Route.**
  - Use of RFNBOs in refining processes to produce transport fuels count toward the transport targets; i.e. the so-called refinery route; resulting in **Refinery units**.
  - However, limitations will apply > correction factor set at 0.4 or a higher level?
  - **Refinery units** may be used in the land, inland waterway and aviation sectors.

EU legislation: Decarbonisation Package

Adopted in May 2024

Adopted in May 2024 – Forms the legal foundation of the EU hydrogen market

Introduction of the New Decarbonisation Package

*(EU transposition deadline: **5 August 2026**)*

Legislative Framework

Creates a dedicated regulatory framework for hydrogen for the first time.

Directive (EU) 2024/1788

✓ Sets out the legal and institutional framework for the internal market, particularly focusing on the rights and obligations of market participants.

Regulation (EU) 2024/1789

✓ Sets out directly applicable operational rules and technical provisions, complementing the Directive.

Objectives & Principles

Facilitating investment, transparency and market access.

*To facilitate the transition from natural gas to renewable and low-carbon gases – particularly hydrogen – by creating a **harmonised transparent, and competitive internal energy market that supports the EU's 2050 climate neutrality goals***

✓ Dedicated regulatory framework;

✓ Non-discriminatory third-party access;

✓ Promoting investment.

✓ 'Unbundling';

✓ Cross-border cooperation;

✓ Consumer protection.

Definitions

Crucial for the uniform application across the Member States.

Infrastructure

✓ *Hydrogen network;*

✓ *Hydrogen storage;*

✓ *Hydrogen terminal;*

✓ *Hydrogen interconnector;*

✓ *Hydrogen system.*

Market Actors

✓ *Hydrogen undertaking:*

- Production, transport, storage, trading.

✓ *Hydrogen network operator:*

- Manages & develops hydrogen transport networks.

Decarbonisation package

Key instruments

Regulatory Holidays

Art. 60 Regulation

Temporary exemptions – so-called regulatory holidays – from certain core regulatory requirements:

- ✓ Ownership unbundling, tariff regulation and regulated third-party access (TPA);
- ✓ Applicable only to new large-scale hydrogen infrastructure;
- ✓ Granted only if the investment would not occur without the exemption, and if competition is not unduly distorted;
- ✓ Exemption period is capped at 25 years;
- ✓ All exemptions automatically expire on 1 January 2033.

Unbundling Rules

Art. 54-57, 62-63 Directive

To ensure fair access and prevent market dominance, the Directive imposes strict unbundling rules:

- ✓ Vertical unbundling (Art. 54);
- ✓ Horizontal unbundling (Art. 63);
- ✓ Temporary flexibility (Art. 62(4)).

Additional requirements:

Separate branding, premises, IT systems, personnel, and auditors (Art. 55-57).

Tariff Regulation

Articles 37-39 Regulation

From 1 January 2033, hydrogen tariffs must be:

- ✓ Objective, cost-reflective, transparent, non-discriminatory;
- ✓ Pre-approved by regulators (ACM);
- ✓ Based on separate Regulated Asset Bases (RABs);
- ✓ Cross-subsidisation allowed only if:
  - Within same Member State;
  - Approved through cost-benefit analysis;
  - Limited to one-third of the asset's depreciation period.

Third-Party Access (TPA)

Articles 31-33, 48-49 Directive

The Directive provides a differentiated TPA regime:

- ✓ Hydrogen networks (Art. 31):
  - Negotiated TPA until 2030;
  - Regulated TPA mandatory from 2031.
- ✓ Hydrogen terminals (Art. 32):
  - Always under negotiated TPA.
- ✓ Hydrogen storage (Art. 33):
  - Regulated TPA when technically or economically necessary.
- ✓ Exemptions (Arts. 48–49):
  - Until 31 Dec 2031;
  - Geographically limited networks may be exempted.

Is the EU Decarbonisation Package too ambitious?

01
Unrealistic timelines

- ✓ Directive requires transposition within 18 months (5 August 2026), but past delays (e.g.) Third Gas Package) suggests this is optimistic.
- ✓ Regulatory holidays expire in 2033, potentially before full national implementation is achieved.

02
Impact of external crises

- ✓ Ukraine was shifted focus to energy security and LNG.
- ✓ Short-term responses under REPowerEU overshadowed the structural goals of the Gas Package.

03
Overly rigid framework for an immature market

- ✓ Hydrogen lacks a mature infrastructure, market and demand base.
- ✓ Yet, regulation mirrors natural gas rules (e.g. Full unbundling, regulated TPA).

04
No dynamic regulatory model

- ✓ CEER/ACER proposed a flexible, evolving approach – not adopted.
- ✓ Instead: fixed cut off dates and one-size-fits-all rules, risking under-regulation.

Dutch legislation and policy: Hydrogen Infrastructure

Progress on the Dutch Hydrogen Network Rollout

June

December

2025

February

Letter to Parliament
30 May 2024 – First steps towards execution

- ✓ Construction of the first hydrogen pipeline begins in Rotterdam (32 km, ready by 2026).
- ✓ Other coastal industrial clusters move into permitting and design phases.
- ✓ Government activates support schemes (OWE, H2Global, refinery route) to boost production.
- ✓ Growing concerns: higher costs across the hydrogen chain, and delays in wind energy and infrastructure projects.
- ✓ 2030 target of 4 GW electrolysis capacity under pressure due to slow market development.
- ✓ HyRegions report confirms need for regional infrastructure and early-stage public intervention.
- ✓ Momentum builds, but early warning signs appear.

Letter to parliament
10 December 2024 – Revised planning and slower progress

- ✓ Hynetwork proposes a new rollout plan: 4 phases through 2033+ (consulted in December).
- ✓ Rotterdam still on track, but major connections (e.g. Delta Rhine Corridor) now delayed to 2031–2032.
- ✓ Most network segments remain in pre-construction or procedural stages.
- ✓ New Energy Act under preparation to legally secure access and infrastructure operation.
- ✓ International collaboration intensifies (e.g. cross-border links with Germany/Belgium).
- ✓ Despite delays, government expands support: new obligations, subsidies, and low-carbon hydrogen as a temporary bridge.
- ✓ Strategic vision intact, but execution slows, and complexity increases.

Letter to Parliament
21 February 2025 – Cost shock and reassessment

- ✓ Gasunie announces cost estimate doubles: from €1.5 billion to €3.8 billion.
- ✓ Key drivers: less reuse of existing gas pipelines, rising material and supplier prices.
- ✓ Cost estimate still uncertain due to pending spatial procedures.
- ✓ Network remains a priority, but financial pressure mounts.

Rollout of Hydrogen Transport Network in the Netherlands

Expected Completion:

Q3 2026

Phase 1:
Rotterdam

Expected Completion:

Q1 – Q4 2030

Phase 2:
Infrastructure within coastal industrial clusters

Phase 3:
Connections between clusters and Limburg

Expected Completion:

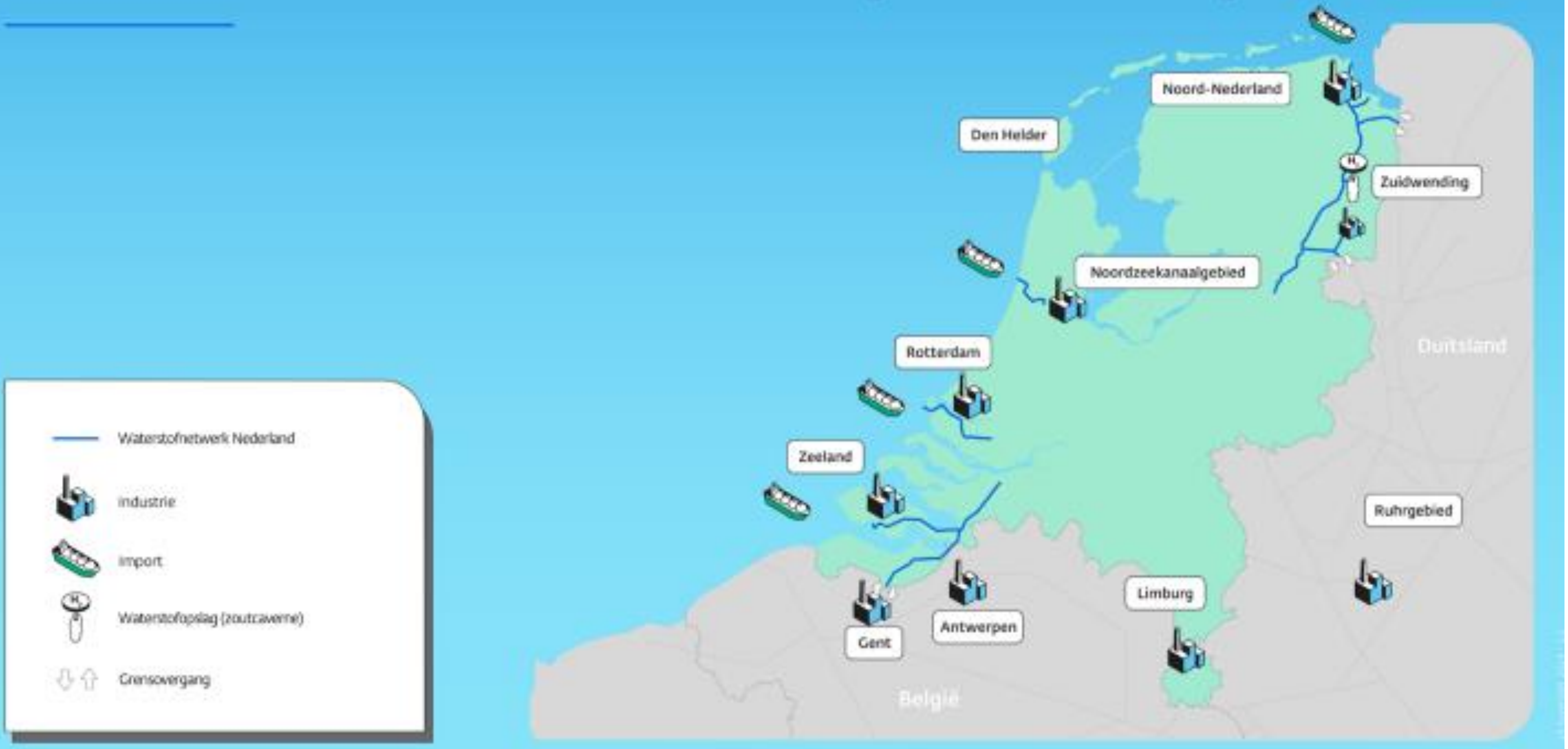
Q2 2032 – Q2 2033

Phase 4:
Strengthening the network

Expected Completion:

After 2033 (TBD)

Fase 2: Industrieclusters aan de kust (in of voor 2030)



hynetwork

Current and Upcoming Legislation

Subsidy instruments & eligibility conditions

Key programmes: IPCEI, OWE, SDE++, H2Global, IMKE.

General criteria

- Additionality;
- Proximity;
- Temporal correlation;
- Certification.

Current Legal Situation

✓ No formal legal framework for hydrogen transport.

✓ HyNetwork Services (HNS):
  - No legal TSO designation, no regulated tariffs or access rules;
  - Only negotiated third-party access (TPA) applies.

Legal transition via Energy Act (*2025-2026*)

Draft Energy Act (*Energiewet*) = amendment → Consultation in early 2025

✓ Establishes legal rights and obligations for public and private parties.
✓ HNS expected to operate as formal Hydrogen TSO, supervised by ACM.
✓ Aims to balance clarity and flexibility as the market develops.
✓ Two-tier access regime for shared infrastructure:
  - Transport & storage: Negotiated access until 1 Jan 2033, then regulated TPA.
  - Import infrastructure: Negotiated access continues beyond 2033.
✓ Stakeholder engagement ongoing to ensure market-fit regulation.
✓ Lower-level regulations will follow via the Energy Decree (*Energiebesluit*)

Post-implementation into Energy Act

(*From 2026 / fully regulated from 2033*)

✓ Hydrogen transport becomes a regulated utility under national (*Energiewet*) and EU legislation.

✓ Legal framework includes:
  - Cost-based tariff regulation;
  - Unbundling of network operation from hydrogen production/supply;
  - Transparent and non-discriminatory access rules;
  - Capacity management and balancing obligations.

Questions?

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