

Renewable Energy Directive & Delegated Acts: Impact on Hydrogen Production

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13.11.2024



600+

Members

We encompass the entire value chain of the hydrogen ecosystem: from production, distribution to end uses, including Industry, Non-Profits, EU regions, H2 National Associations and Global Partners.

40

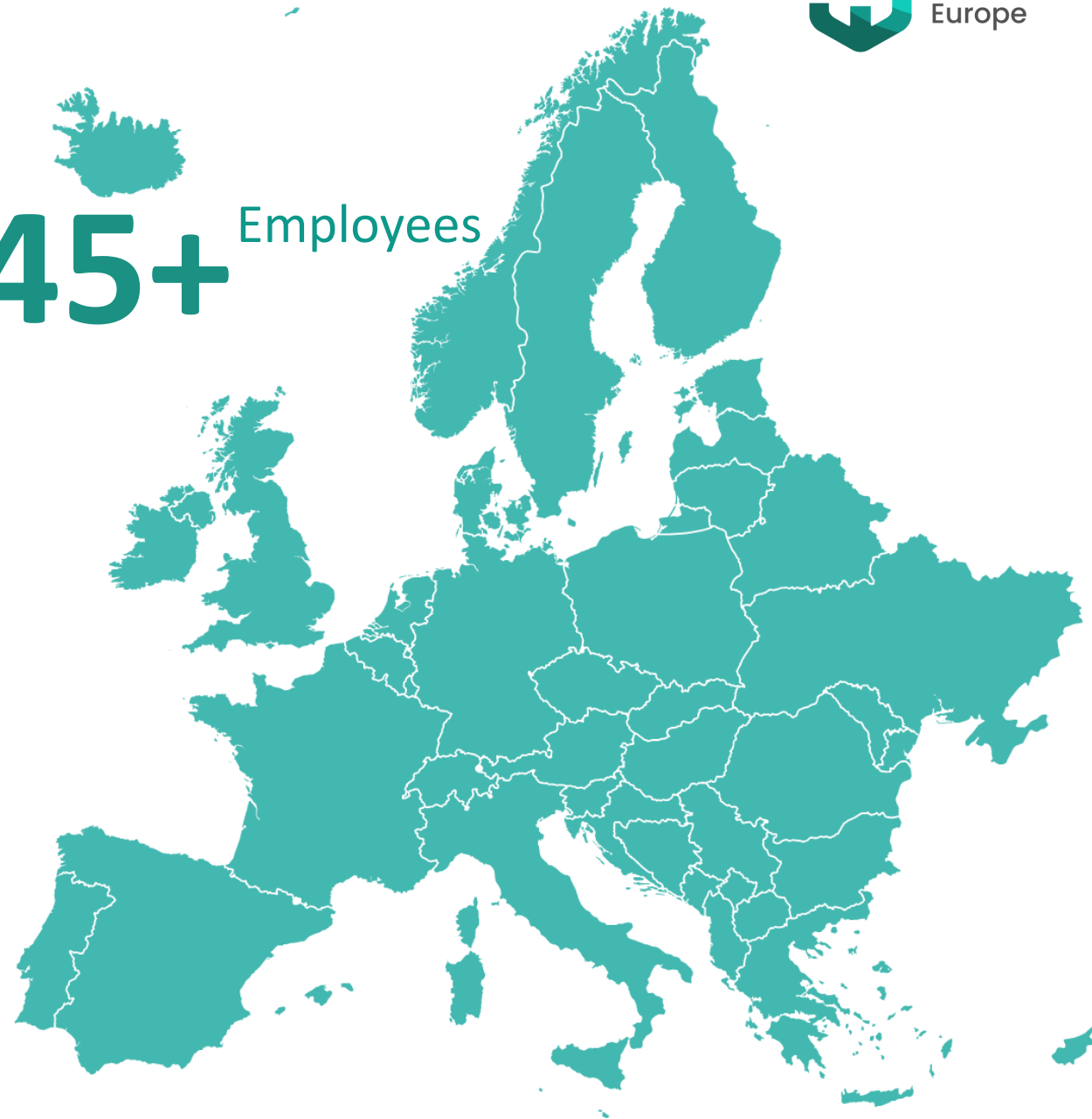
**Countries from Europe
and beyond**

Follow us on:



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45+

Employees

Hydrogen Europe - our vision and mission

Our Vision: Hydrogen Europe is **propelling global carbon neutrality** by accelerating the European hydrogen industry.

Our Mission:

- ❖ Hydrogen Europe effectively supports and facilitates its members in the transition towards a (circular) **carbon-neutral economy** while creating and maintaining sustainable jobs.
- ❖ We **drive markets** to hydrogen-based solutions **guiding decision-makers** for hydrogen technology and applications.
- ❖ We **partner with the European Commission** and the research community in a public-private partnership, **the Clean Hydrogen Partnership**.

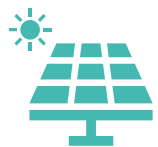


What do we bring to the table?



Renewable Energy Directive & Delegated Acts

Regulatory Framework for 2030



RED III

Renewables energy targets, **RFNBOs binding targets in industry and transport**



ReFuel Aviation

Quotas for **sustainable aviation fuels (SAF)** and **specific quotas for synthetic fuels**



FuelEU Maritime

GHG saving targets and **specific quotas for RFNBOs**



Gas & hydrogen Package

H2 Grid development (TYNDP) and operational rules, creation of ENNOH



CO2 Standards for Light & heavy-duty vehicles

Targets for the share of new sales of zero emissions

RED III

- Industry: 42% of all H2 consumed from **RFNBO**
- Transport: 5% adv biofuels + RFNBO (1% min RFNBO)

ReFuel Aviation

- 6% Sustainable aviation fuels
- 1.2% **synthetic fuels** (RFNBO + LC electricity H2)

FuelEU Maritime

- 6% GHG savings through low carbon fuels. Multipliers for H2
- 1% RFNBO by 2031, 2% RFNBO by 2034

Gas & hydrogen Package

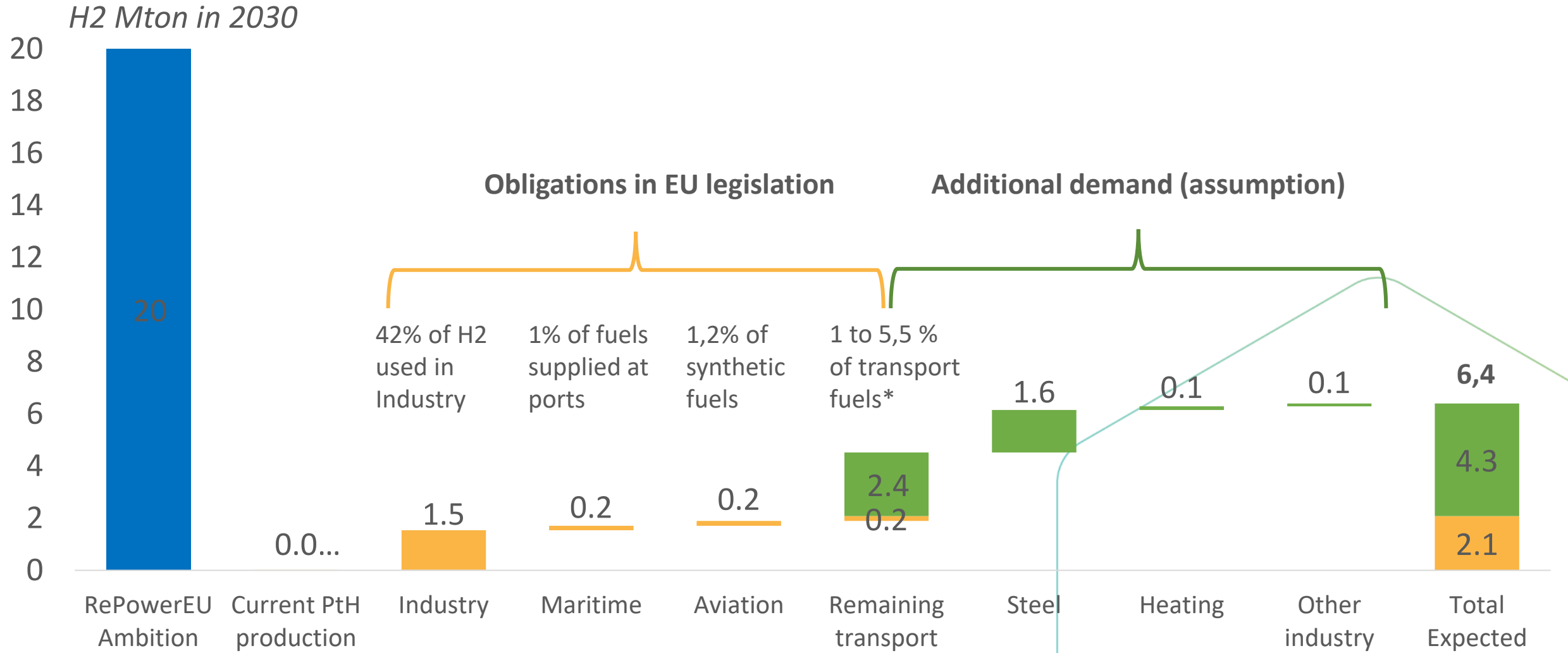
- Low carbon Hydrogen
- Blending allowance, gas quality

CO2 Standards for LDVs and HDVs

- LDVs: -55% for cars, -50% for vans (-100% by 2035)
- HDVs: -45% for trucks (90% by 2040), -90% for urban buses

Political ambition under test...

Dedicated targets in industry and transport will drive demand of RFNBO to a minimum of 2,1 and up to 6,4 Mtons by 2030, largely depending on the uptake in the steel sector and road transport



*1% RFNBO in transport fuels with a x2 multiplier - i.e. effectively 0.5% RFNBO share

RED III General provisions & Sectoral targets

General

- **Binding renewable share of 42.5%** by 2030
- **Review of the additionality DAs** / re-assess the capacity to meet the binding RFNBO goals
- Transposition 18 months for overall provision

Transport

- **Binding target on fuel suppliers:** either 14.5% GHG reduction OR at least 29% RES share by 2030.
- Binding **combined sub-target** of 5.5% for advanced biofuels and RFNBOs - minimum requirement of 1% RFNBOs .
- **Multipliers** of x2 apply for biofuels and RFNBO, (so actually 0.5% target- to be confirmed)

Industry

- **Binding target on Member states**
- **42% of the hydrogen used in industry** should come **from RFNBOs by 2030** and 60% by 2035
- MSs could discount the RFNBOs target by 20% under two conditions:
 1. if the MS meet its RES target by 2030,
 2. MS's share of hydrogen from fossil fuels consumed is not more than 23% in 2030 and 20% in 2035.

Next Steps:

Directive published in Official Journal of the European Union
Member-states to transpose in national law by 21 May 2025

Menu of Options

Keeping the target
at Member State
level

- No explicit obligations on industry
- To be achieved positive incentives
- E.g. Feed-in-tariffs

Passing the target
on industry as a
whole

- Targets on individual companies
- Uniform on all H2 consumers
- E.g. MRV, Book & Claim, tax-based systems

Passing the target
on industry with
sectoral
differentiation

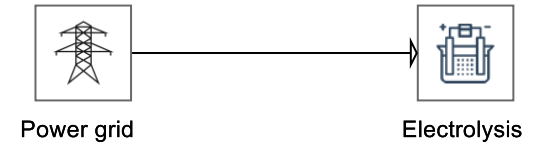
- Targets on individual companies
- Differentiated across end-uses
- E.g. MRV, Book & Claim, tax-based systems

Possibility of flexible hybrid-systems

Four scenarios for sourcing electricity

Case 1: Grid-mix electricity

- The default option
- RES-E share and CI equal to that of grid average
- No other conditions apply



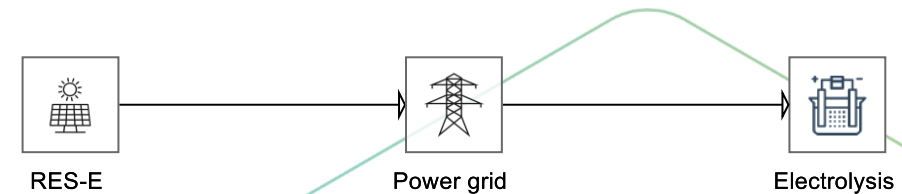
Case 2: Directly connected RES-E

- Fully renewable electricity
- Additionality rule applies
- Electrolyser operating in load following mode



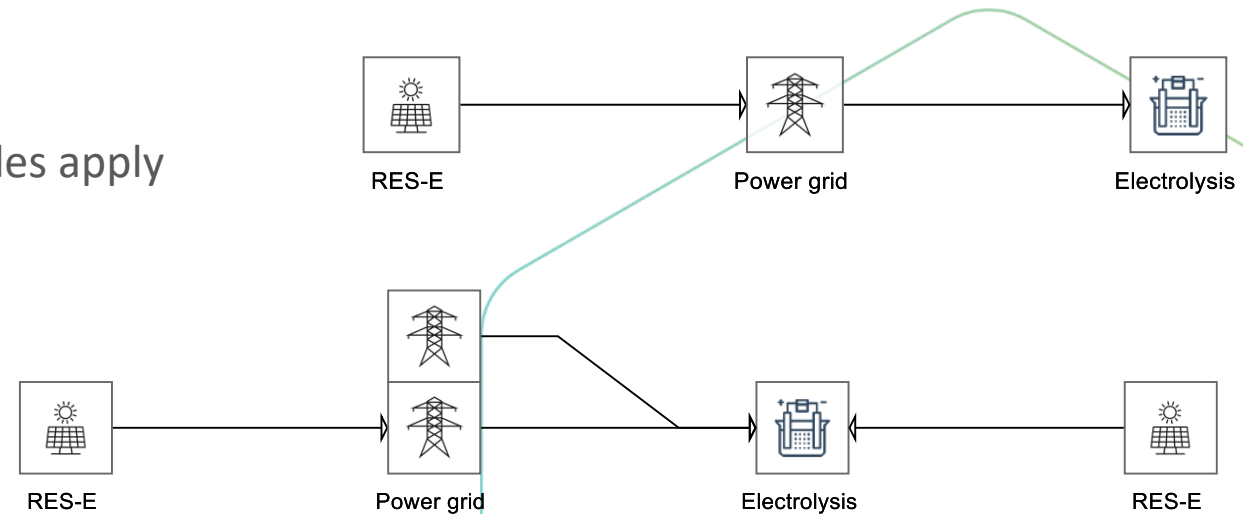
Case 3: RES-E PPA

- Fully renewable electricity
- Additionality, temporal and geographical correlation rules apply
- Needs relaxed temporal correlation rules



Case 4: Combination of various sources

- Combining RES-E PPA with grid electricity to increase the electrolyser capacity utilization
- Important case for industrial use of hydrogen



Case 1: Grid-mix electricity

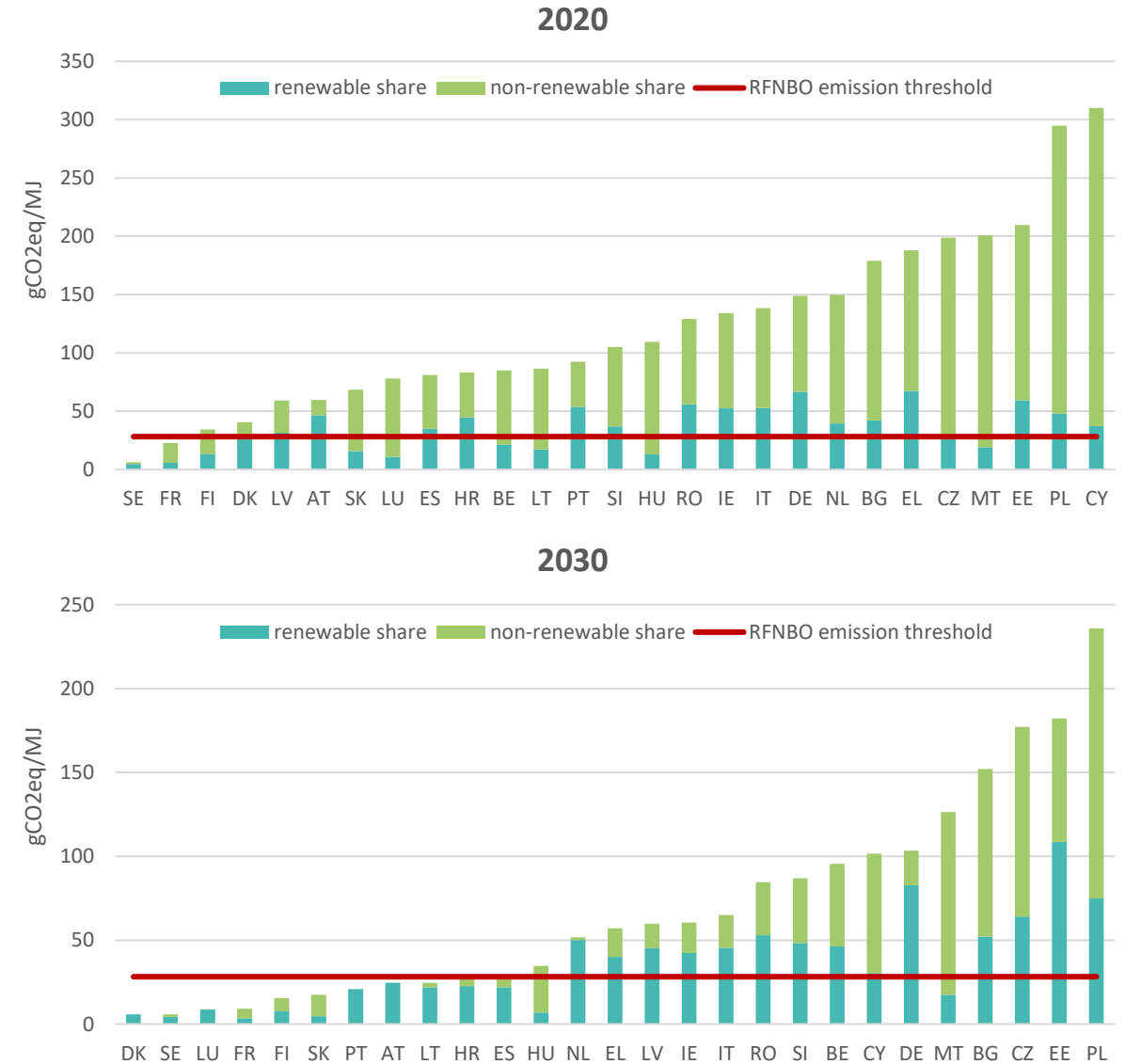
Renewable Energy share

- No more than the average RES-E share in the country of production, as measured two years before the year in question

Electricity carbon intensity

- Average annual greenhouse gas emissions intensity determined at the level of countries or at the level of bidding zones - if the required data are publicly available.
- Attributed depending on the number of full load hours the installation producing RFNBO/RCF is operating.
- Based on the GHG emissions value of the marginal unit generating electricity at the time of the production of RFNBO in the bidding zone

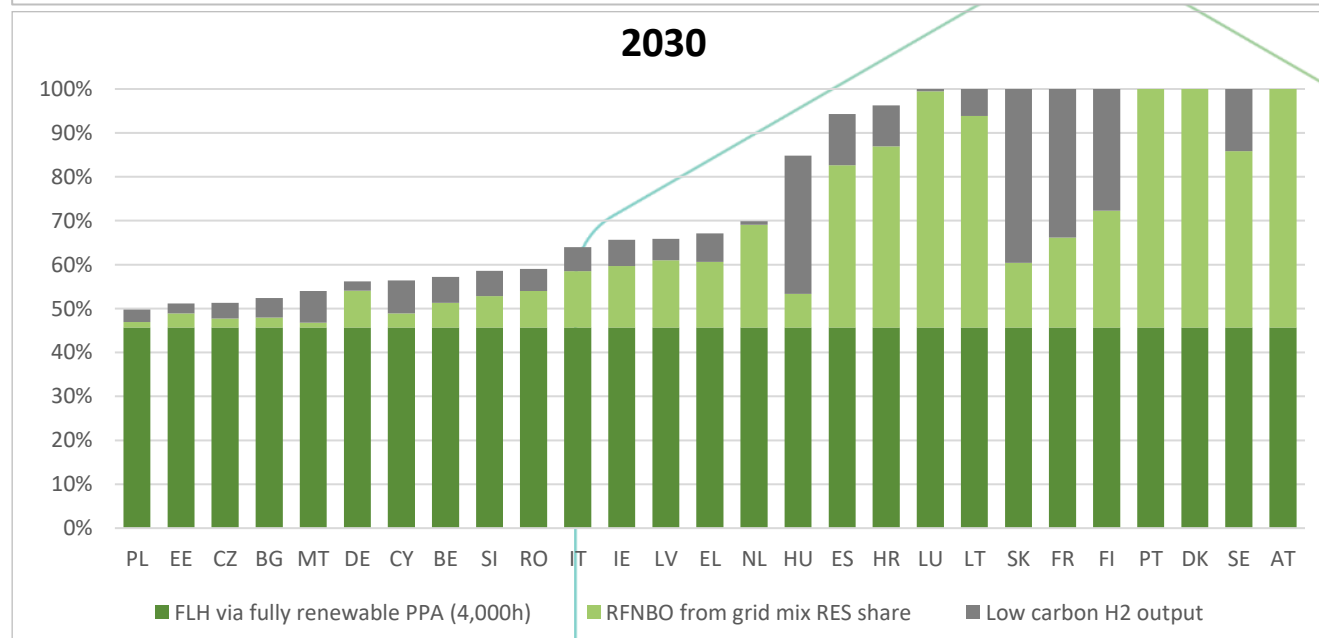
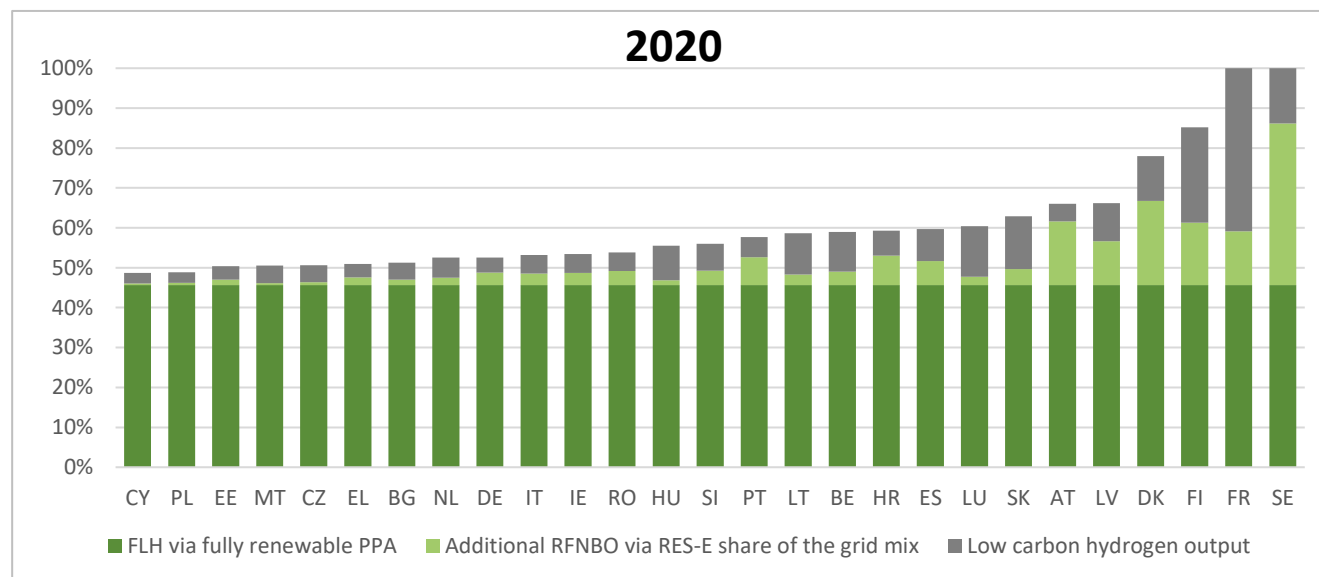
Estimated H2 GHG intensity (gCO₂eq/MJ) from grid-mix electricity



Mixing different electricity sources

- This case is important for industry – especially if strict hourly temporal correlation requirement is upheld – as it allows to provide steady H2 supplies without relying on PPA oversizing or Energy storage
- If targets defined in NCEPs are met, by 2030 the situation should improve in a number of EU Member States

Maximum annual capacity utilisation with 4,000 FLH of fully renewable electricity



RFNBO hydrogen is currently prioritised by EU policy and funding schemes

Clean hydrogen fuels play different roles depending on each regulation and target. RFNBOs enjoy highest priority and dedicated targets across all sectors. Fossil-based low carbon fuels can only contribute to maritime sector

	RED transport targets				RED industry targets	RefuelEU Aviation targets		FuelEU Maritime targets	
	1% RFNBO target	5.5% sub-target with advanced biofuels	Overall RES target (29%)	GHG reduction target	42% RFNBO target	Synthetic aviation fuels (1.2% by 2030)	SAF (6% by 2030)	RFNBO (1% by 2030)	GHG reduction target
RFNBO	x2 multiplier x1.5 multiplier for aviation and maritime			YES	YES	YES	YES	YES	X2 multiplier until 2033
Bio-hydrogen (advanced)	NO	YES	YES	YES	NO	NO	YES	NO	YES
Bio-hydrogen (1 st gen)	NO	NO	YES (limited)	YES	NO	NO	NO	NO	NO
Low-carbon	NO	NO	NO	NO	NO	NO	NO	NO	YES
Low-carbon non-fossil	NO	NO	NO	NO	NO (but can reduce the target)	YES	YES	NO	YES
RCF	NO	NO	YES (if the MS choses to do so)	YES (if the MS choses to do so)	NO	NO	YES	NO	YES
By-product	NO	NO	NO	YES (if low-carbon)	NO (but reduces the target)	NO	YES (if low-carbon)	NO	YES (if low-carbon)

Complete, but
complex legal
framework that
prioritises RFNBOs

National
transposition of
REDIII targets will be
key for the national
hydrogen markets

Difficulties for
project
developers due to
RFNBOs DAs



18 - 22 November 2024
Brussels, Belgium
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evenings**





Q&A

Thank You



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