Hydrogen at a glance – legislative context and market outlook

Jorgo Chartzimarkakis, CEO Hydrogen Europe

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Hydrogen Europe

Hydrogen Europe Family

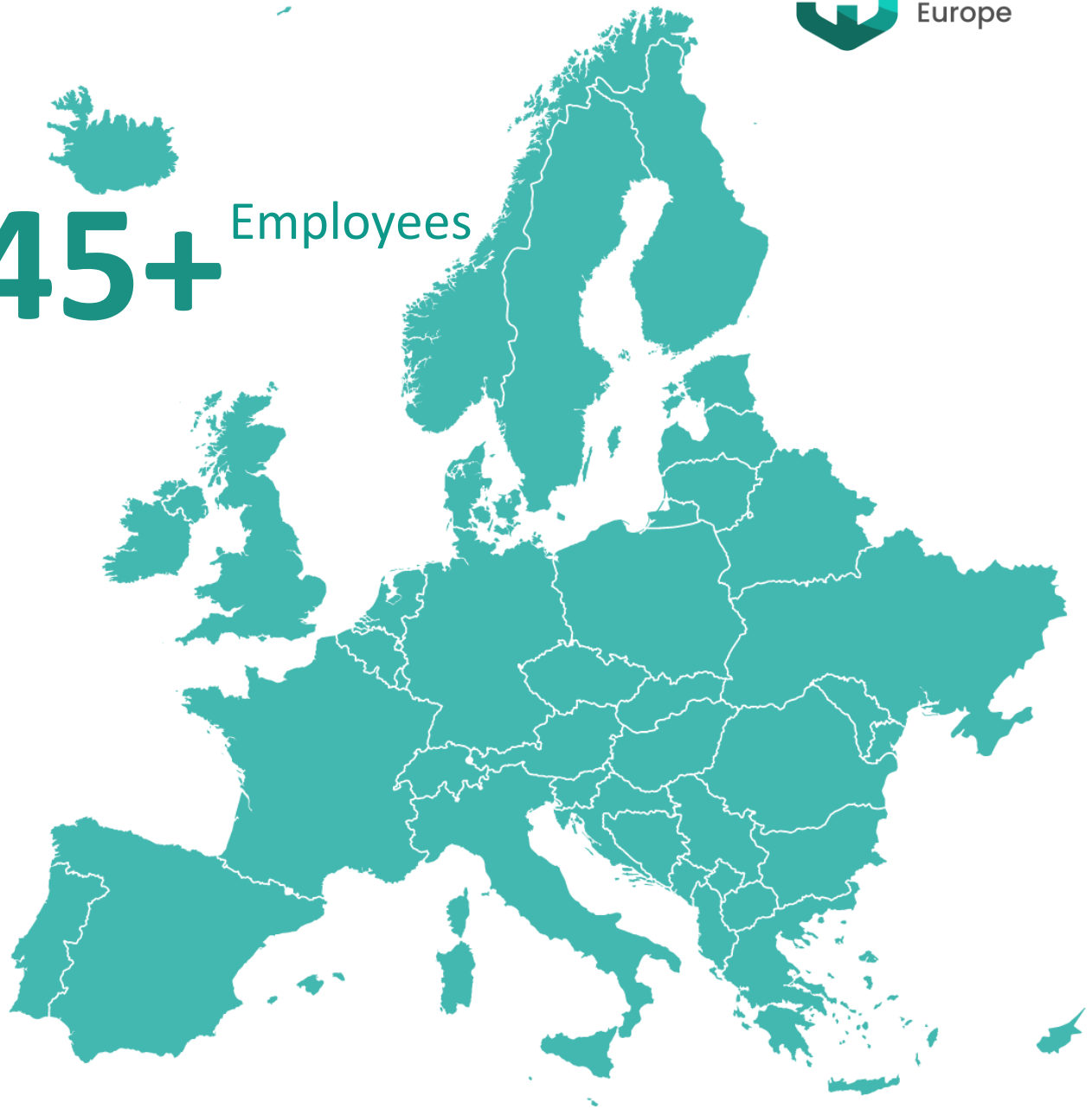
Hydrogen Europe

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

45+ Employees



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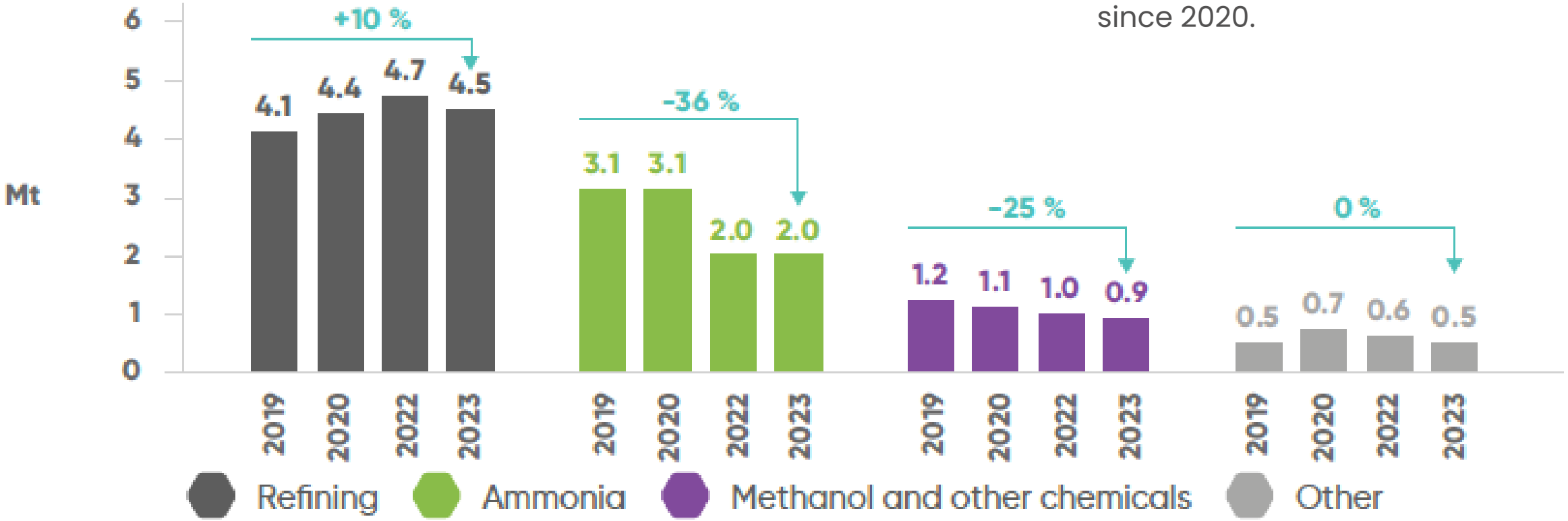
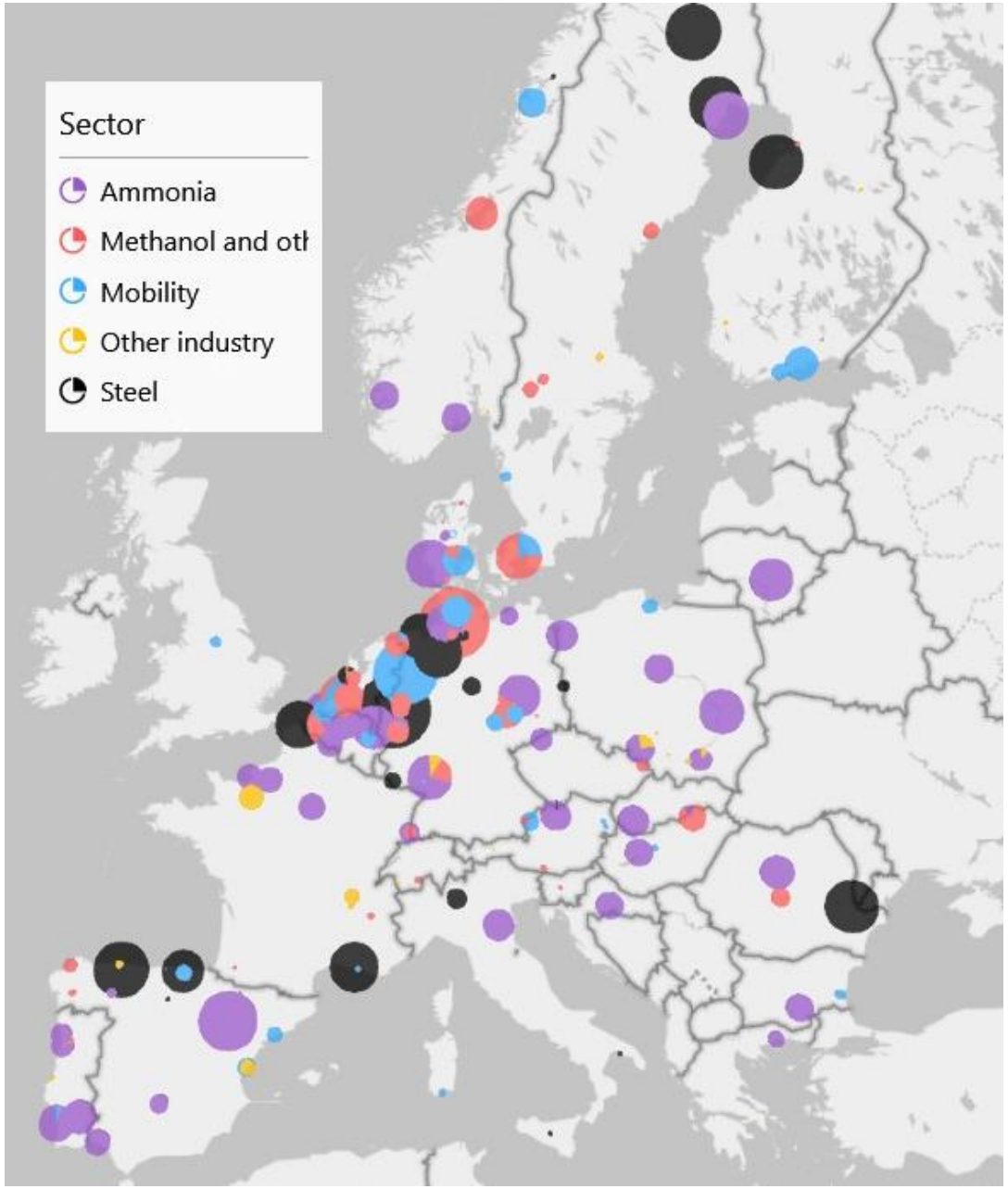
Consumption of hydrogen in industry has not yet recovered after the gas prices increase in 2022

Hydrogen demand in Europe was **7.9 Mt in 2023**, a 3% decrease compared to the 8.2 Mt reported for 2022 and close to a 15% fall since 2020.

European hydrogen demand per sector 2019-2023

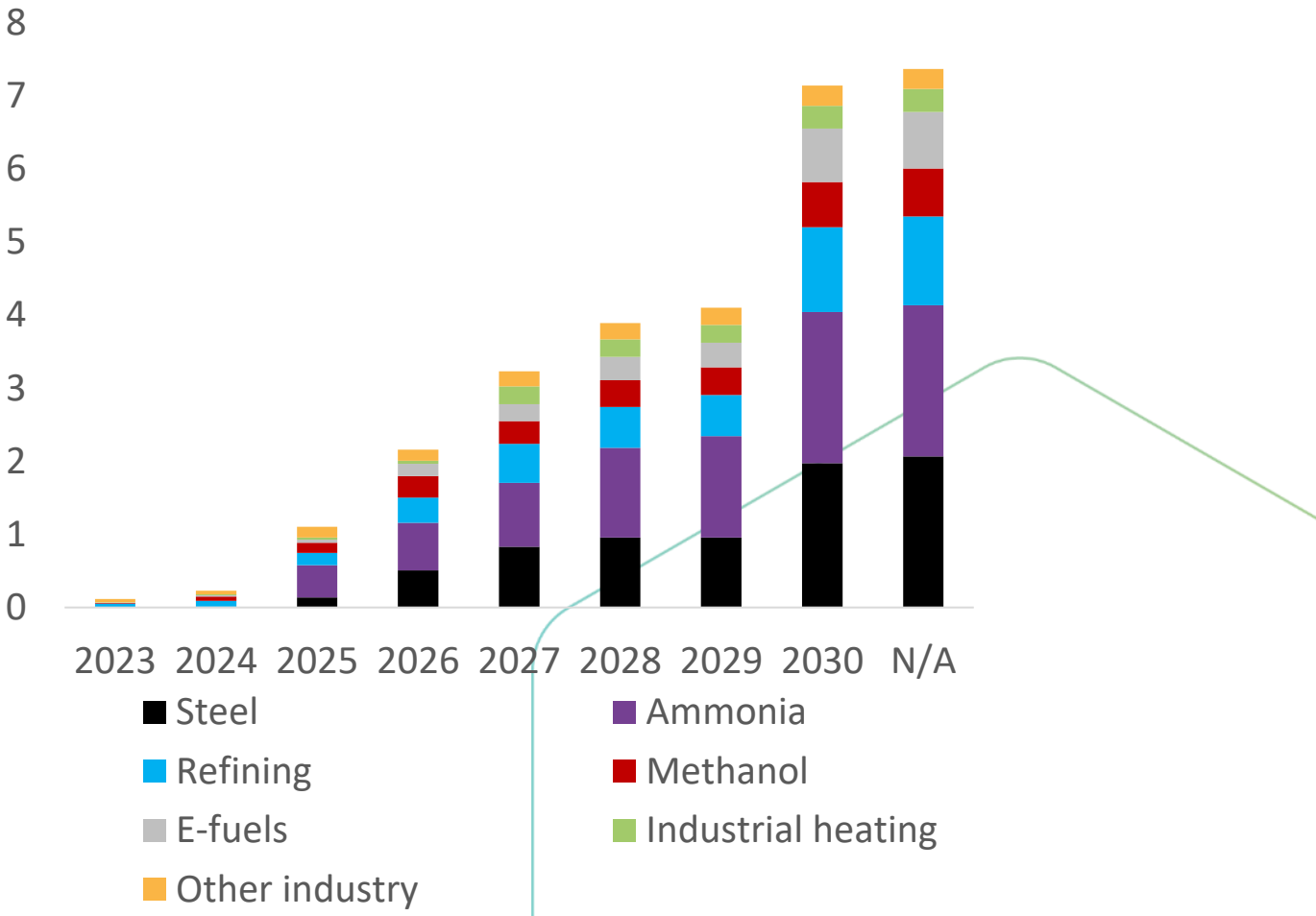


Potentially large hydrogen demand driven by industrial sector



Industrial off-takers have so far announced high demand plans for clean H2 consumption by 2030

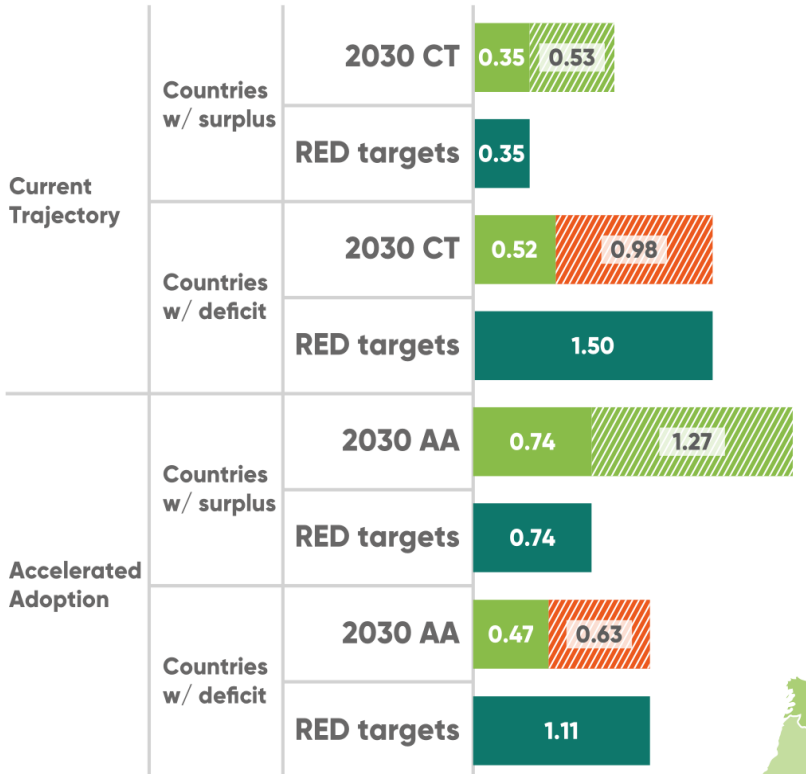
Cumulative announced consumption of clean hydrogen in industry (Mt/y)

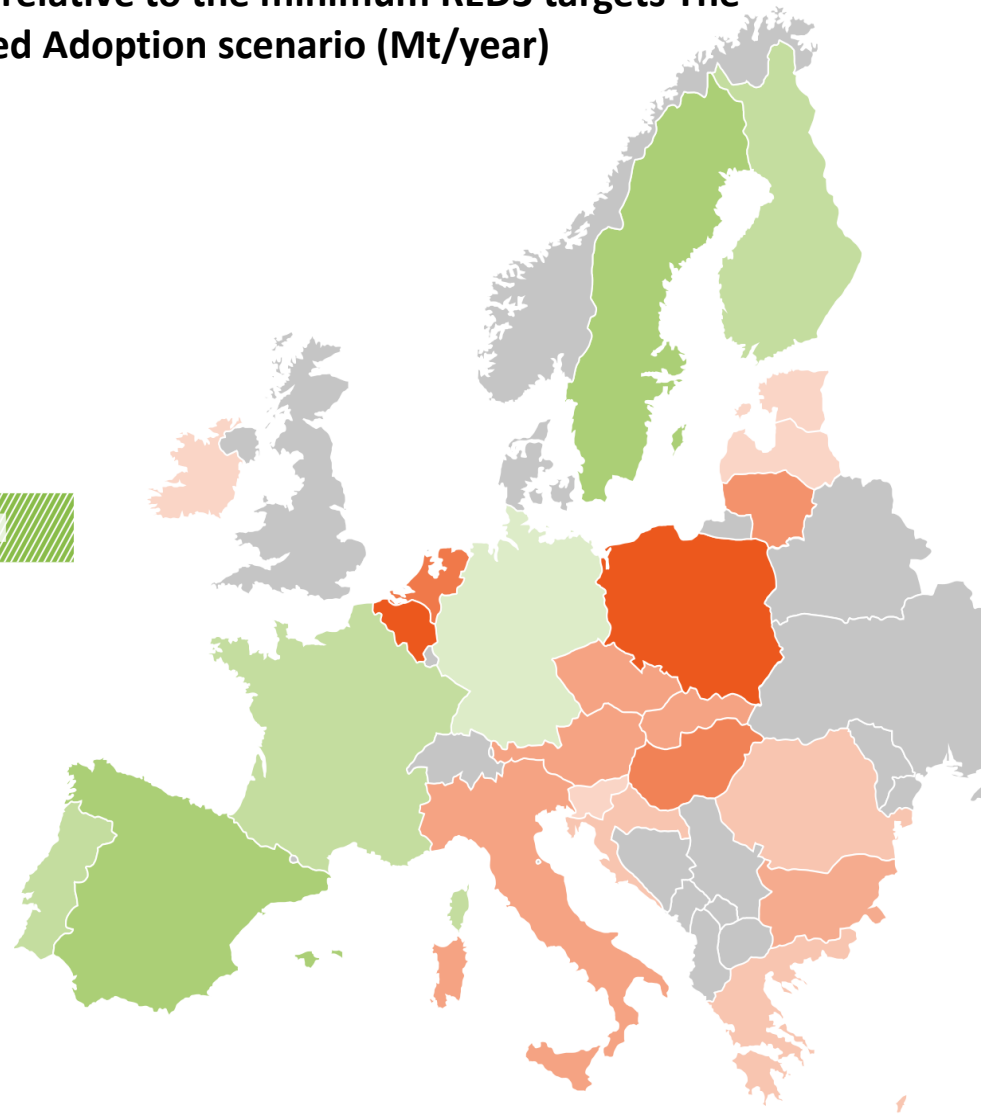


Hydrogen trade could enable achieving Europe's 2030 RED3 targets if the infrastructure is built on time to support trade flows from within and outside Europe

- Compliance with **RED3** could require around **1.85 Mt of RFNBO by 2030**.
- However, targets must be met at Member State level and results show varying progress across countries.
- Infrastructure is key
- Imports are key

Hydrogen supply deficit and surplus relative to the minimum RED3 targets The map shows results for the Accelerated Adoption scenario (Mt/year)

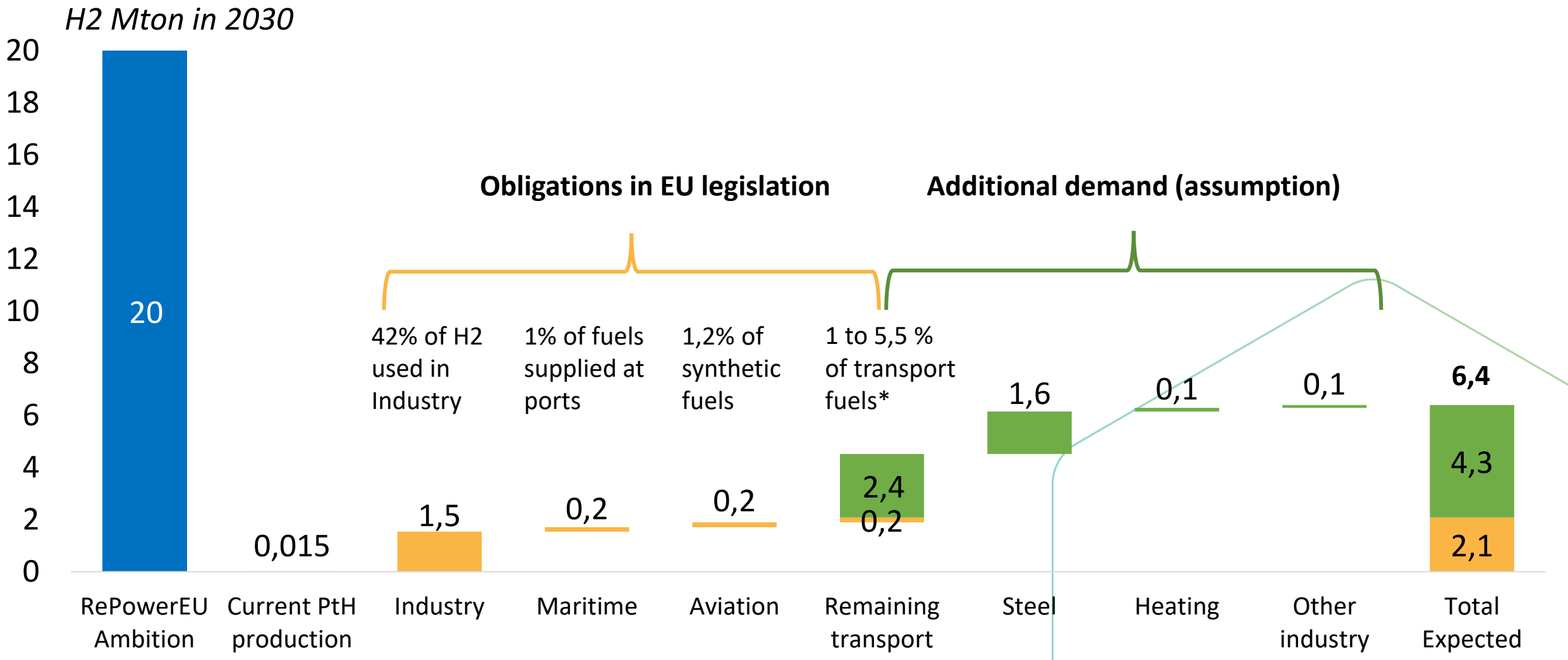




Notes: RED3 targets are calculated based on 2023 consumption and do no any volumes from the target due to specific exclusions. For the purposes calculation, electrolytic hydrogen supply from the two scenarios equals F hydrogen supply.

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

A framework to reach demand targets

Regulatory certainty framing the functioning of the market

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

2030 Targets

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

Hydrogen Europe

EU CLEAN INDUSTRIAL DEAL FOR THE EU HYDROGEN INDUSTRY

AFFORDABLE ENERGY & RAW MATERIALS

- Accelerate renewables deployment
- Design EU strategies for H2 imports, grids & energy storage; revise the H2 Strategy
- Develop critical raw materials procurement, processing & recycling
- Improve permitting for advanced & raw materials

SIMPLIFICATION

- Fine-tune the RFNBO delegated act
- Adopt a clear Low-carbon hydrogen delegated act
- Enhance RED III compliance
- Facilitate workable environmental regulation

DEMAND FOR EU SUSTAINABLE PRODUCTS

- Incentivise off take of green products and, stimulate demand in lead markets
- Develop resilience and sustainability-based non-price criteria

GLOBAL COMPETITIVENESS

- CBAM scope review
- Develop global H2 certification schemes
- Act against unfair trade practices

FUNDING AND FINANCING

- Strengthen the Hydrogen Bank, including its international leg
- Ensure CEF support for hydrogen infrastructure
- Keep current State Aid designs and enhance NZIA support schemes

SKILLS & FAIR TRANSITION

- Build up the NZIA Academies
- Streamline training funding opportunities
- Develop common European training certifications and standards

Hot policy topics today in the Hydrogen sector

Hydrogen Europe

National transposition of hydrogen targets

- RED3 target in industry (exp. 2025)
- RED3 target in transport (exp. 2025)
- AFIR action plans (exp. 2025)

Hydrogen infrastructure development

- National Funding for infrastructure
- Dimensioning & Planning process
- Next ONDP to include H2

Certification and standards

- RFNBO H2 certification
- LCH definition
- International compatibility

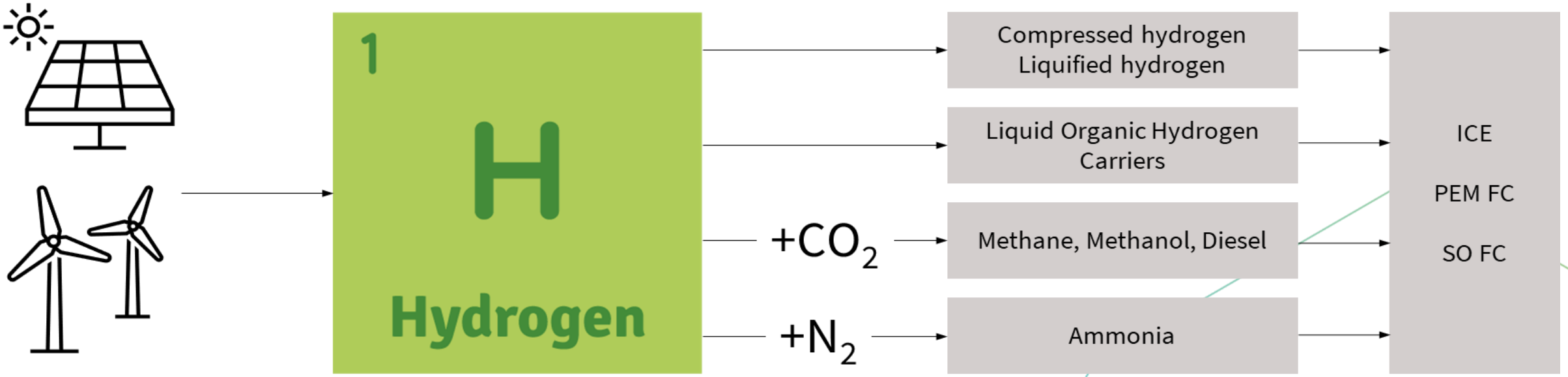
Funding

- EHB design/Auctions-as-a-Service in MS or national schemes

Practical aspects – hydrogen for shipping

Hydrogen-based options for shipping

Lack of a clear preferable option is holding back investments



Why hydrogen for water transport ?

Advantages:

- Can be used in fuel cells, dual fuel mixture with conventional fuels, or replacement in the combustion process
- If produced from RES, H2 enables **reduction of up to 100% of Well-to-wake GHG emissions**
- Less air pollution in cities with inland ports ;
- Offers potential synergy opportunities between the shipping sector, industrial base in ports and the energy system
- **Ports are set to become key hubs of the hydrogen economy**

Issues and challenges:

- Relatively low volumetric energy density
- High production costs of renewable hydrogen
- Safety concerns and high flammability