



HYDROGEN EUROPE

Meeting of the UNECE Group of Gas Experts
24.03.21

Hydrogen Europe: Who we are

Our Vision

Hydrogen enabling a zero-emission society

Number of members:

+250 (companies + National Associations)

+90 Research organisations

Our Mission

We bring together diverse industry players, large companies and SMEs, who support the delivery of hydrogen and fuel cells technologies. We do this to enable the adoption of an abundant and reliable energy which efficiently fuels Europe's low carbon economy.







Hydrogen: From a niche technology...



“A different growth model is possible. I see the climate transition as a huge opportunity for the European economy...we have the technologies...just think of hydrogen...”

European Commission President Von der Leyen
@Business Europe Day, March 2020



European Commission Executive Vice-President Timmermans

National Hydrogen Strategies – Reaching a momentum

Hydrogen deployment plan for the energy transition

National strategy for the development of decarbonised hydrogen in France

In preparation:



2017 2018

N D J F M A M J J A S O N D

2019

J F M A M J J A S O N D

2020

J F M A M J J A S O N D

2021



In preparation:



- Publication dates of national hydrogen strategies across the world per country
- Japan, France and South Korea are pioneers in the adoption of hydrogen deployment strategies.
- In 2020, the publication of NHSs reached a peak.

Billions to be invested in hydrogen in the EU

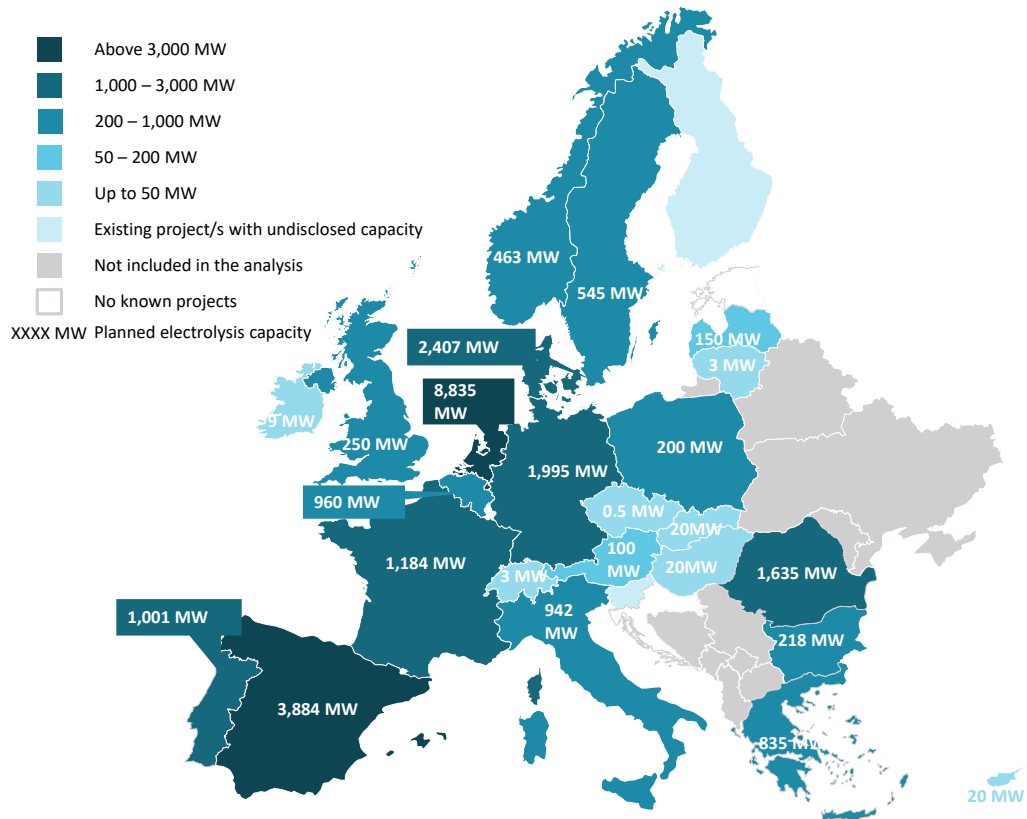
EU governments propose hydrogen strategies with dedicated 2030 investment plans:

	€ 7 bn	for hydrogen technology
	€ 2 bn	for international cooperation
	€ 8.9 bn	estimated mobilised investment
	€ 5.7 bn	public support
	€ 1.5 bn	for an IPCEI project
	€ 7 bn-€ 9 bn	estimated mobilised investment (public funds around €1bn)
	€ 2 bn	Draft: public support by 2030 (€1bn by 2024)
	€ 10 bn	Draft: estimated mobilised investment

Planned PtH projects amount to 53 % of EU's 2024 6 GW goal

Planned electrolyzer capacity by 2030 (MW)

Data as of 22/02/2021



Comments

- **25 GW announced capacity by 2030***
 - 153 projects
 - 63% of EU's 40 GW target
 - Capacity to produce **7,4 Mt of H2 annually***
- Annual capacity growth rate **80%**
- 3.1 GW by 2024
 - **53%** compared to 6 GW EU target
- New PtH facilities are being announced regularly across Europe
- **~€ 12.5 billion worth of investments in electrolyzer technology by 2030**

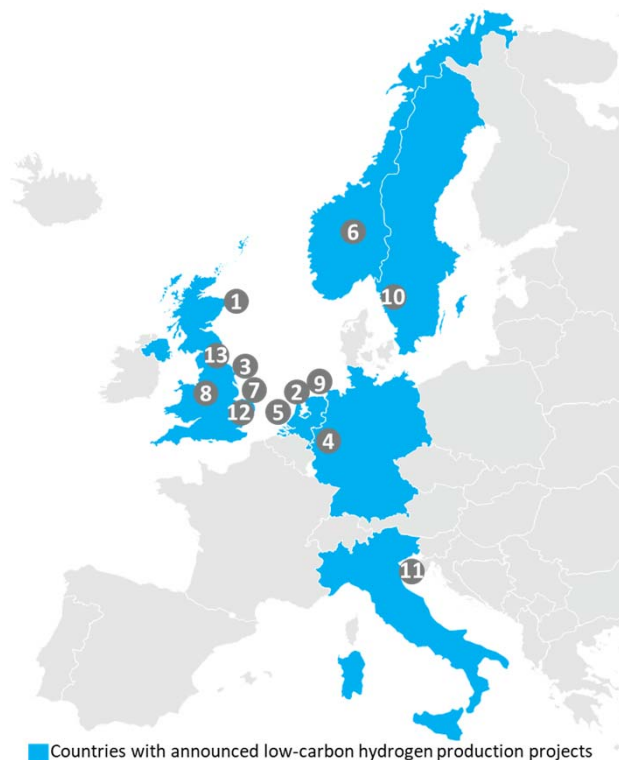
8 Notes: Displayed electrolyzer capacities reflect projects that have an official starting date by 2030. There are numerous other projects with unknown starting dates that could be finished by 2030, but are not included in this analysis. These numbers also don't reflect the HyDeal project that aims for 67 GW of electrolysis by 2030 alone. Source: Hydrogen Europe



Low-carbon (Blue) hydrogen production by 2030

Data as of 22/03/2021

- 1  Acorn CCS / H2
- 2  Aramis (Blue H2 Den Helder)
- 3  H21 North of England
- 4  H2morrow
- 5  H-Vision
- 6  HyDemo
- 7  H2H Saltend
- 8  HyNet
- 9  H2 Magnum
- 10  Preem CCS
- 11  Adriatic Blue Project
- 12  Humber Zero
- 13  H2Teesside



Comments

- 12 out of 13 projects on the map will produce **5.9 million tons of low-carbon hydrogen per year by 2030***
 - 71% of the 2018 EEA hydrogen consumption (8.3 Mt)
- Non-public projects* may add another 1.2 Mt by 2030
- **52 million tons of captured CO2 emissions per year by 2030**
 - ~Denmark's 2018 total GHG emissions (CO2 equivalent)

Strategic topics and challenges for the H2 sector

“Efficiency”



- Complementing the “efficiency first” principle;
- Develop the principle of “system efficiency”.

“Additionality”



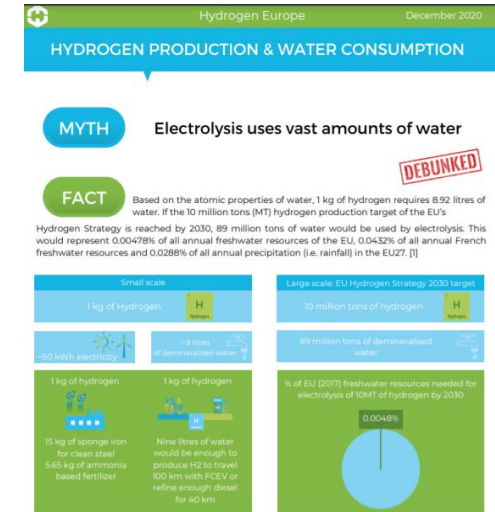
- Major stumbling block to renewable h2 production;
- Fight against extension of principle beyond transport/refineries.

“H2 infrastructure considerations”



- Gradual regulation of networks;
- Separate h2 legislation;
- Blending in the gas legislation;
- Pure h2 needs its own framework;
- Value of long-distance transport.

“Water consumption”



Comparing water consumption for electrolysis with other energy processes, the water footprint of certain fossil-based pathways exceeds that of hydrogen. [2] Crude oil recovery and diesel refining uses around 40% more water than the production of green hydrogen per unit of energy. This means that nine litres of water would be required to refine enough diesel to travel for 40 km or produce enough hydrogen to travel 100 km. [3] From a circular economy perspective, hydrogen technology doesn't consume water as water is produced, in its purest form, at the end of the cycle. It also avoids water contamination associated with various fossil-fuel processes.

10 recommendations for the EU Hydrogen Strategy

1 Define an EU wide terminology for renewable and low carbon hydrogen together with a methodology to calculate life cycle greenhouse gas emissions in order to enable a functioning clean hydrogen economy

2 Establish the principle of CO₂ as the new “currency” of the energy system

3 Promote and support hydrogen market stimulation programs including quotas/targets, dedicated programs and support schemes

4 Enable a competitive hydrogen economy by clarifying the market design and supporting sectoral integration

5 Revise the Trans-European Networks for Energy (TEN-E) Regulation to support the development and roll out of hydrogen networks

6 Revise the directive for the Deployment of Alternative Fuels Infrastructure (DAFI) to boost the use of hydrogen in the mobility sector

7 Support for a strong, effective and all-encompassing Clean Hydrogen for Europe Partnership

8 Remove undue barriers to hydrogen production and hydrogen infrastructure

9 Unlock hydrogen’s potential by leveraging innovative financial instruments

10 Launch the Clean Hydrogen Alliance and establish hydrogen as a key element in global EU climate diplomacy and neighbourhood policy

Thank you for your attention!

HYDROGEN EUROPE SECRETARIAT

Avenue de la Toison d'Or 56-60
BE-1060 Brussels

secretariat@hydrogeneurope.eu

+32 (0) 2 540 87 75

www.hydrogeneurope.eu

