



An introduction to the European Hydrogen Backbone

eh₂b

Who we are

31 member TSOs spanning the European continent, collaborating to lead the development of renewable and low-carbon hydrogen infrastructure

2023 members



Collective mission of all 31 members



Accelerate the decarbonisation of the **European Energy system**



Enable renewable and low-carbon hydrogen to contribute to a **stable, secure, affordable, and sustainable energy supply**



Emphasize the critical role of **hydrogen infrastructure in Europe's future energy system**

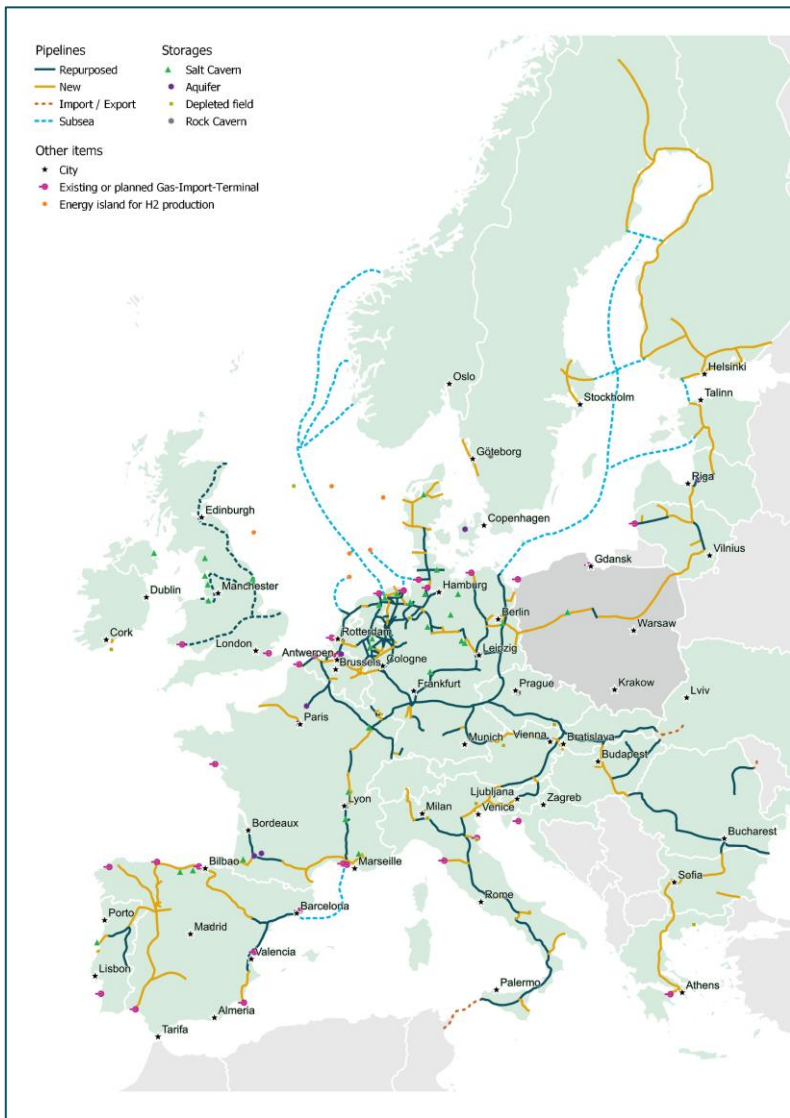


Support the development of a **competitive and open, equitable, and transparent European hydrogen market**

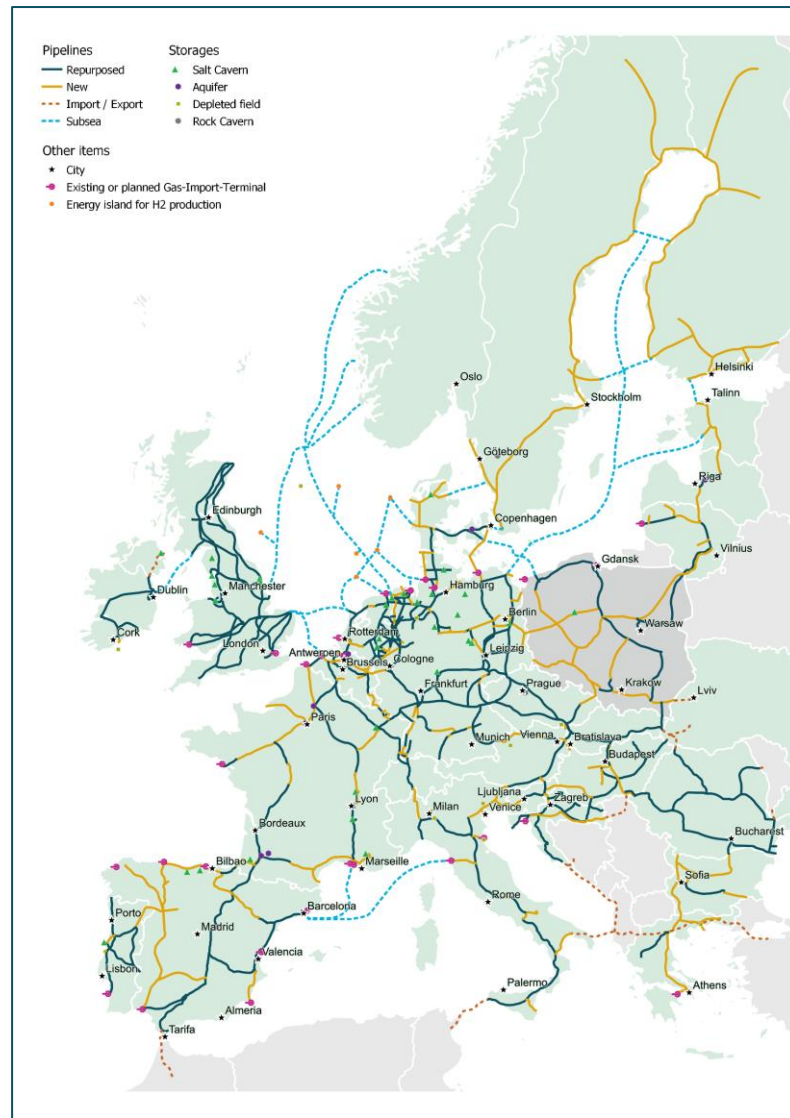


Foster cross-border collaboration between Europe and its neighbors

EHB Maps: Acceleration of hydrogen infrastructure across Europe by 2030



2030



2040

Mature infrastructure stretching towards all directions in 2040

The European Hydrogen Backbone vision for 2040:

~53,000 km

hydrogen pipeline infrastructure

In **28** countries

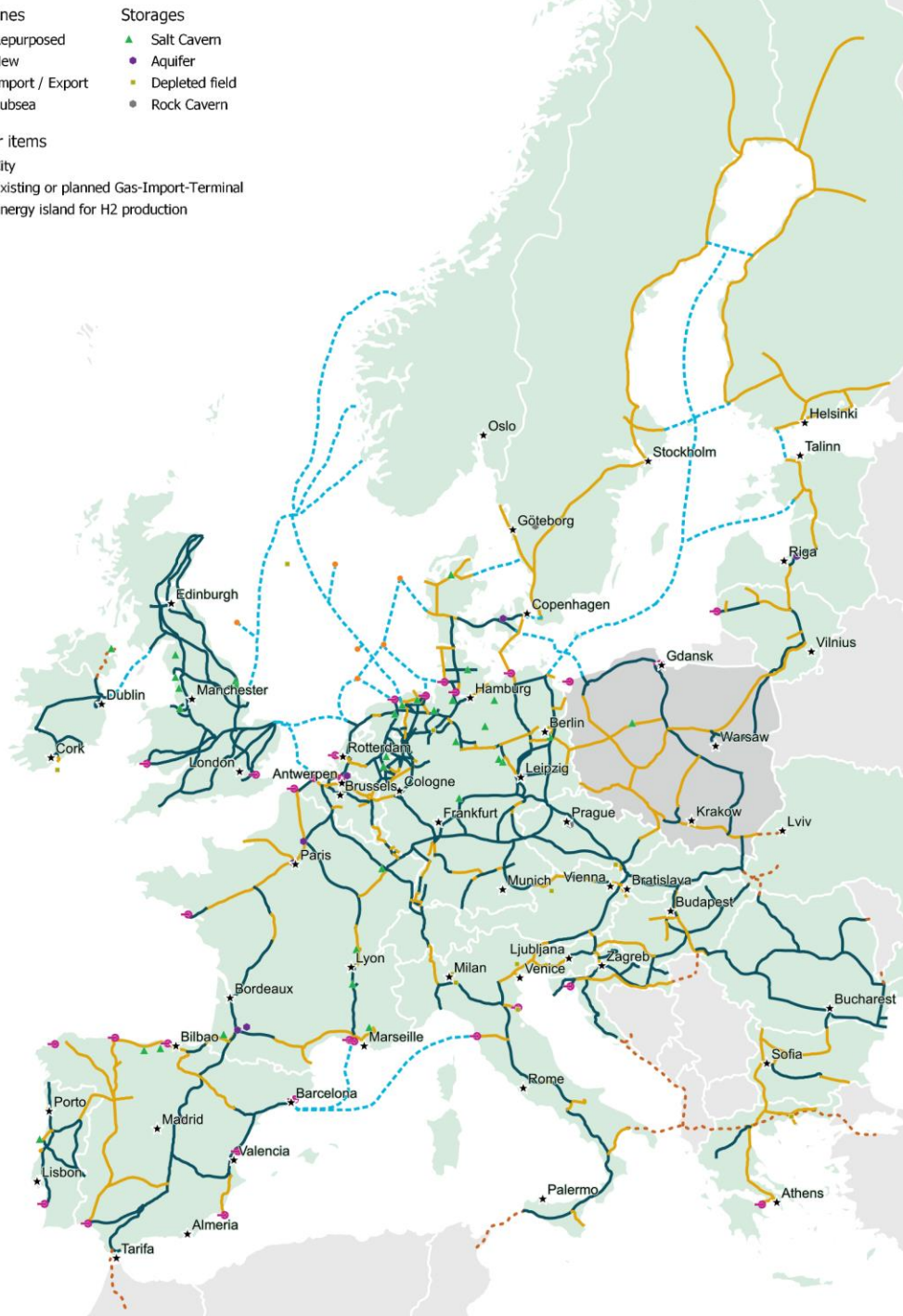
over **60%** of which is based on repurposed natural gas pipelines



Making it possible to create the European Hydrogen Backbone at affordable costs

*Statistics and figures to be updated based on EHB Maps updates coming in June 2023

- Pipelines**
 - Repurposed
 - New
 - Import / Export
 - Subsea
- Storages**
 - Salt Cavern
 - Aquifer
 - Depleted field
 - Rock Cavern
- Other items**
 - City
 - Existing or planned Gas-Import-Terminal
 - Energy island for H2 production



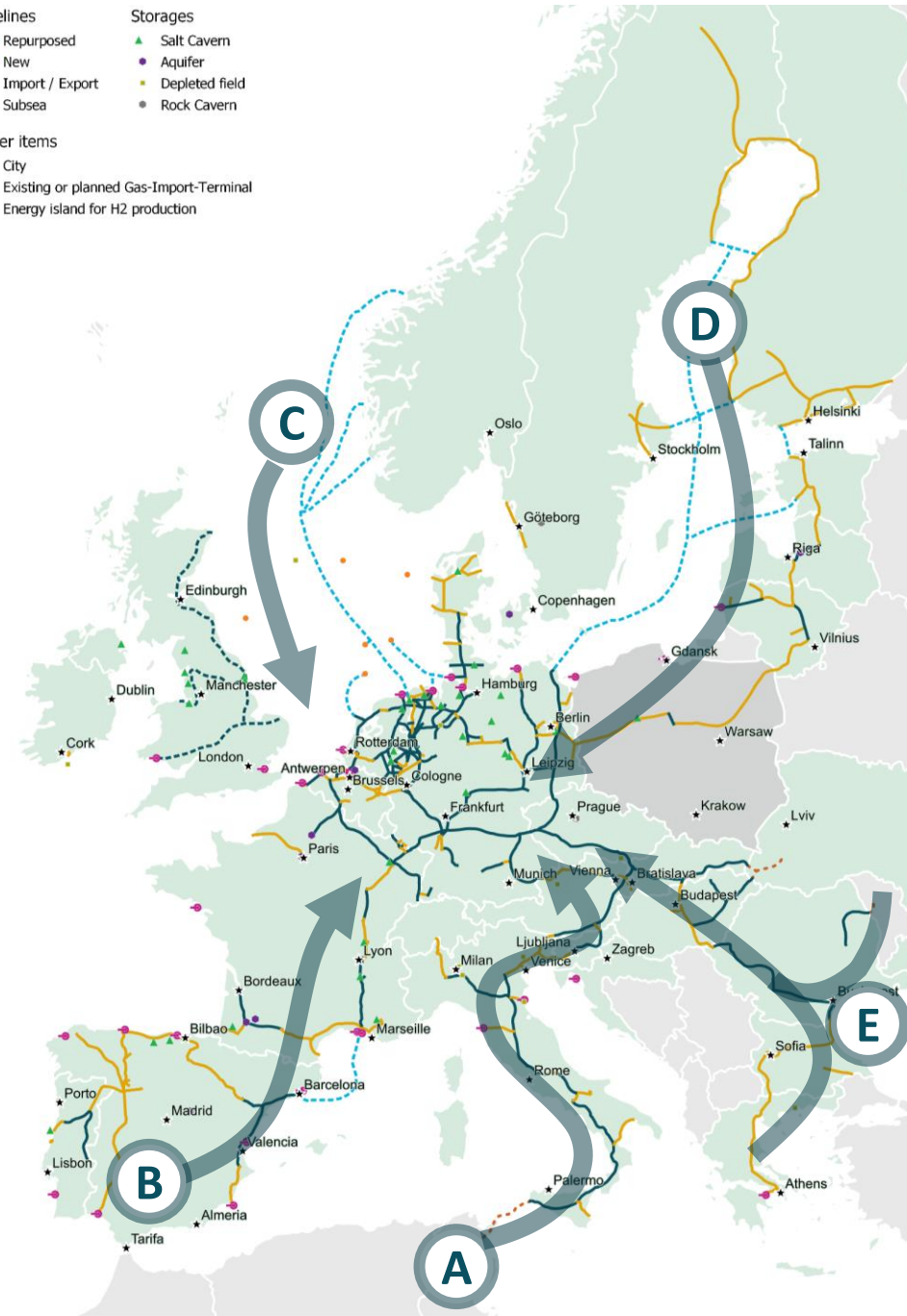
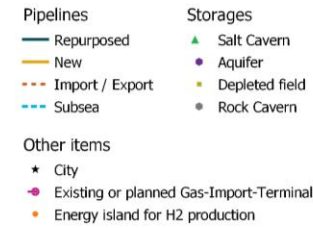
Most Recent Publication (May 2022): Five hydrogen supply corridors for Europe in 2030

Large scale, collaborative corridor development envisioned to **initially connect local clean hydrogen supply and demand** in different parts of Europe, **before expanding and connecting Europe with neighboring regions** with export potential

The five hydrogen supply corridors are:

- **Corridor A:** North Africa & Southern Europe
- **Corridor B:** Southwest Europe & North Africa
- **Corridor C:** North Sea
- **Corridor D:** Nordic and Baltic regions
- **Corridor E:** East and South-East Europe

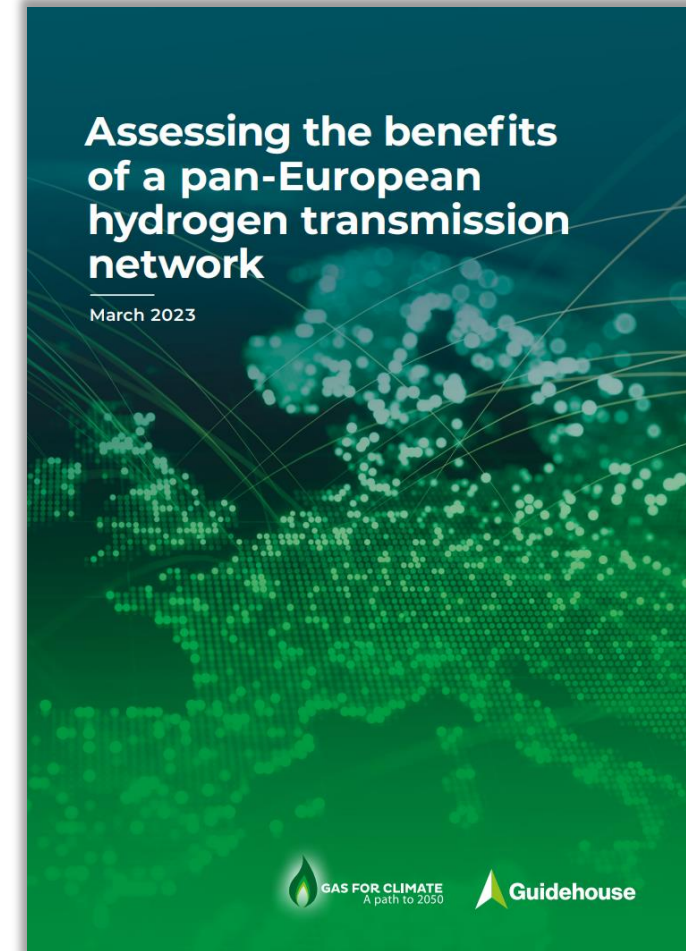
These five corridors span both domestic and import supply markets, consistent with the three import corridors identified by the REPowerEU plan.



Assessing the Benefits of a Pan-European H2 Transmission Network

Gas for Climate was initiated in 2017 to analyse and create awareness about the role of renewable and low carbon gas in the future energy system. Gas for Climate is committed to achieve net zero greenhouse gas emissions in the EU by 2050.

Consortium members



Background and objective of study

Background:

- GfC highlighted the important role of renewable and low carbon gases for the energy transition
- EHB created a vision of a future pan-European H₂ transmission network

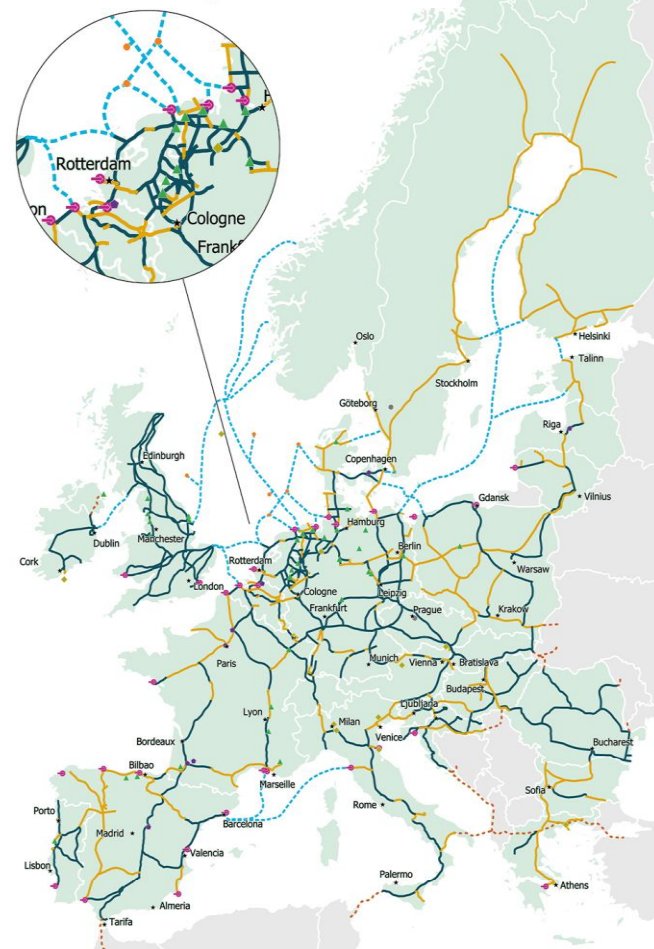
Objective of study:

- Assessing the benefits of a pan-European H₂ network compared to a national, clustered approach

Pipelines
— Repurposed
— New
- - Import/Export
- - Subsea

Storages
▲ Salt cavern
● Aquifer
● Depleted field
● Rock cavern

Other
● City
● Existing or planned gas-import-terminal
● Energy island for H₂ production



European Hydrogen Backbone 2040 Vision Map

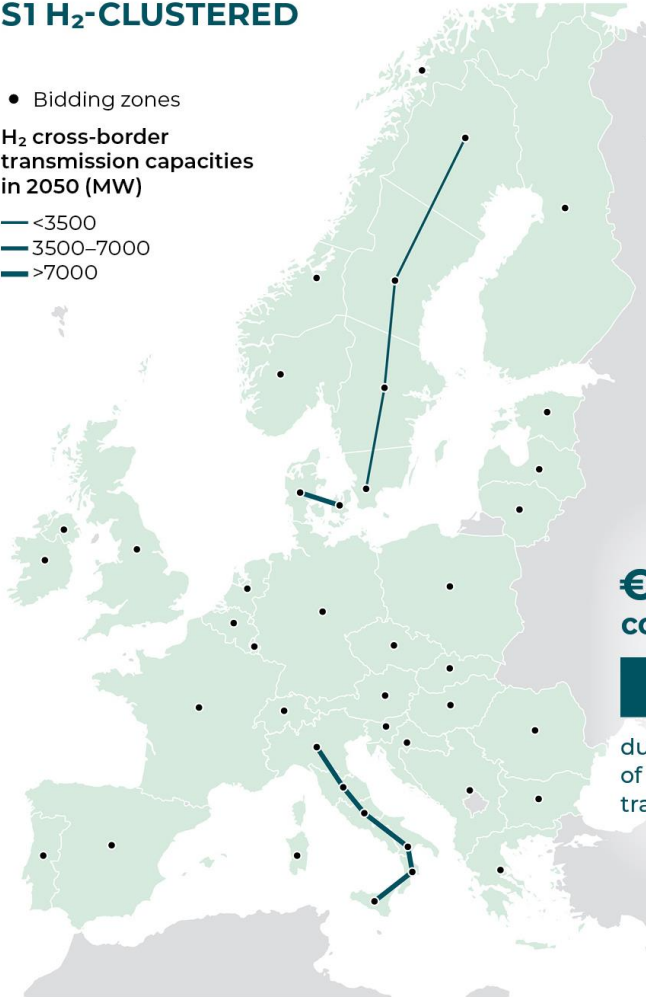


Key Finding 1

A pan-European H₂ network contributes to an affordable energy supply

S1 H₂-CLUSTERED

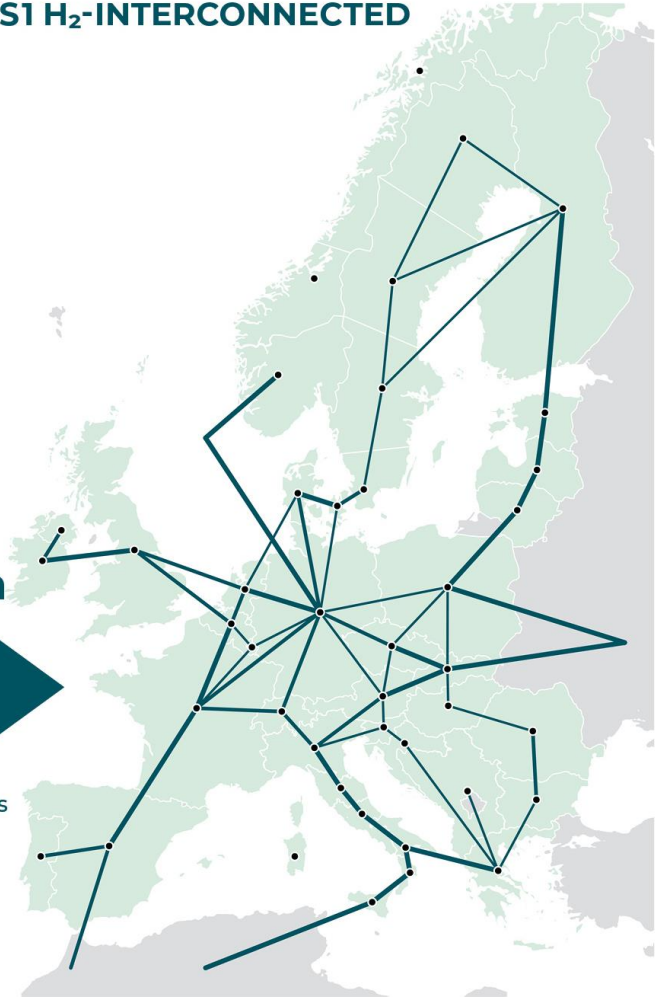
- Bidding zones
- H₂ cross-border transmission capacities in 2050 (MW)
- <3500
- 3500–7000
- >7000



S1 H₂-INTERCONNECTED

€330 billion costs savings

due to the expansion of H₂ cross-border transmission capacities

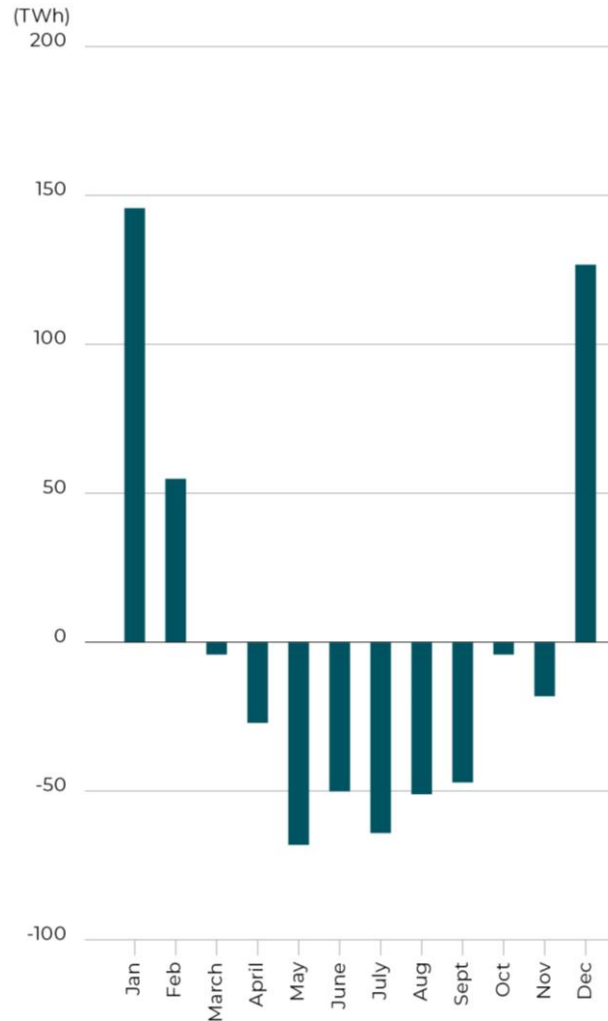


Installed hydrogen cross-border capacity in 2050 and cost savings due to investments into a pan-European H₂ network over timeframe 2030 - 2050



Key Finding 2

A pan-European H₂ network provides access to bulk energy storage for all European countries



S1 H₂-INTERCONNECTED

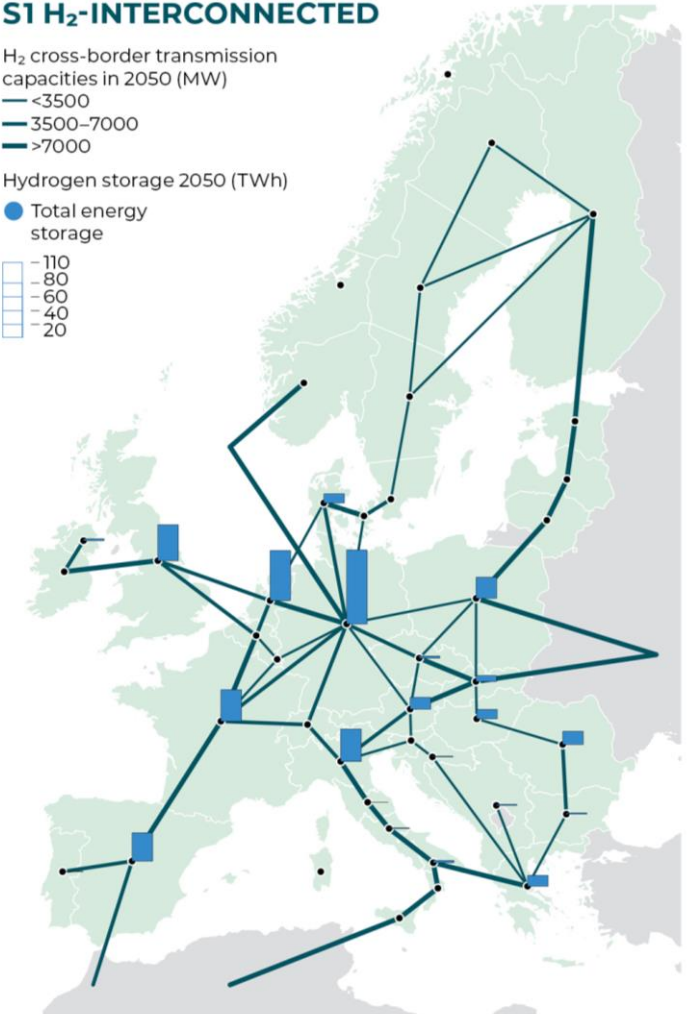
H₂ cross-border transmission capacities in 2050 (MW)

- <3500
- 3500-7000
- >7000

Hydrogen storage 2050 (TWh)

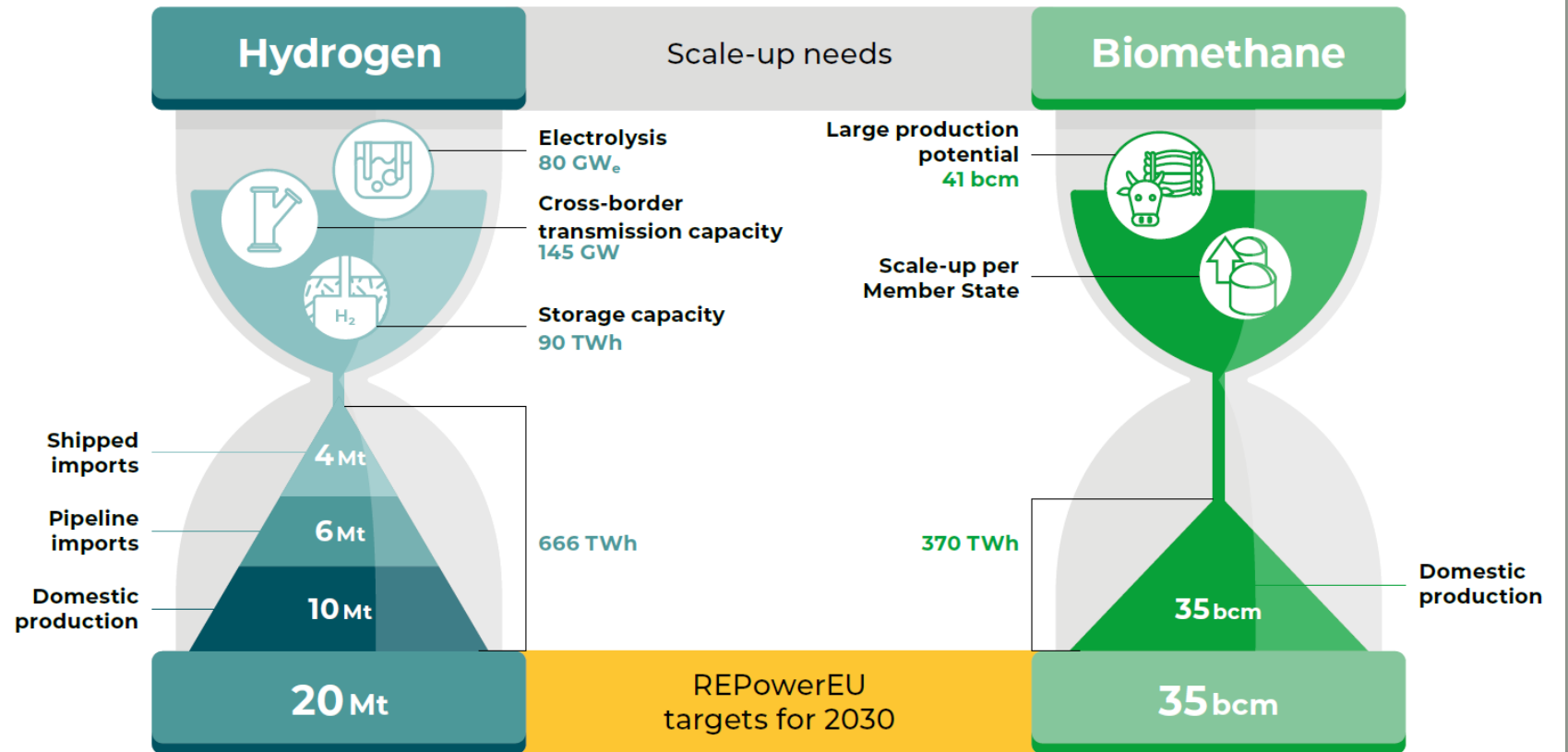
● Total energy storage

- 110
- 80
- 60
- 40
- 20



Net hydrogen discharging/charging in 2050 (left) & Hydrogen transmission and storage capacity (right) for S1 H₂-Interconnected scenario

Immediate actions are needed to meet 2030 targets



REPowerEU targets for hydrogen and biomethane update and infrastructure scale up needs **by 2030**

Coming in 2023:

September:

A vision for the scale, costs, and commitments associated with 2030 EHB build-out



Answering to REPowerEU

Announced PCI projects show that EHB TSOs are already playing a key role to

accelerate the hydrogen infrastructure development

to enable the 20 Mt of renewable hydrogen by 2030



EHB recommends:

- Accelerating the definition of H2 standards for blue hydrogen and the implementation of the Gas and Hydrogen decarbonization package at Member State level once adopted at EU level in 2023
- Reaffirming EHB corridor vision in 6th PCI list
- That the Gas Package introduces a governance on European hydrogen infrastructure planning that is conducive of a smooth development of the EHB
- Finalizing both the domestic and import legs of the European Hydrogen Bank as soon as possible
- Making funding reservations for accelerated infrastructure buildout towards 2030

For more information on the initiative, to become a supporting member of our Consortium and to get in contact with our team, please visit: www.ehb.eu

Stay connected with the EHB online



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