



FUEL CELLS AND HYDROGEN
JOINT UNDERTAKING

H₂ valleys to accelerate the energy transition

Bart Biebuyck
4th Oct. 2021 Dubai



**EXPO
2020
DUBAI
UAE**



OFFICIAL PARTICIPANT – EUROPEAN UNION

Strong public-private partnership with a focused objective

A combined private-public of **more than 2 billion Euro** has been invested to bring products to market readiness



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Hydrogen Europe
Industry grouping
±300 members
50% SME

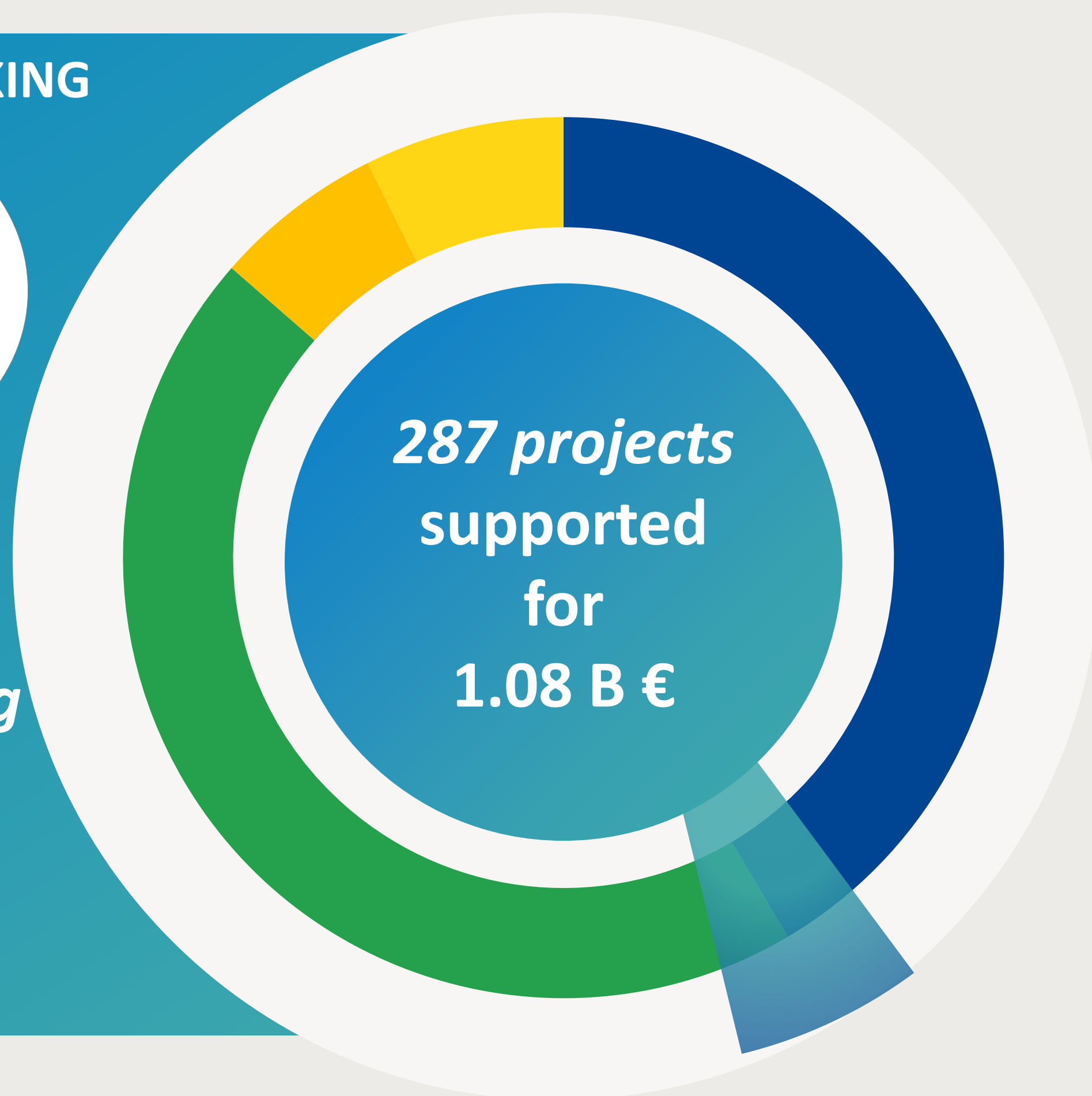
European Commission

Hydrogen Europe Research
Research grouping
±100 members

Energy
H₂ production and distribution
H₂ storage
F/C for CHP

Transport
Road vehicles
Non-road vehicles
Refueling infra
Maritime, rail and aviation applications

Cross-cutting
standards, safety, education, consumer awareness, ...



45 %
483.6 million euros
154 projects

41.4 %
446.7 million euros
78 projects

6.3 %
67.3 million euros
48 projects

7.3 %
78.9 million euros
7 projects



Similar leverage of other sources of funding: 1.08 B €

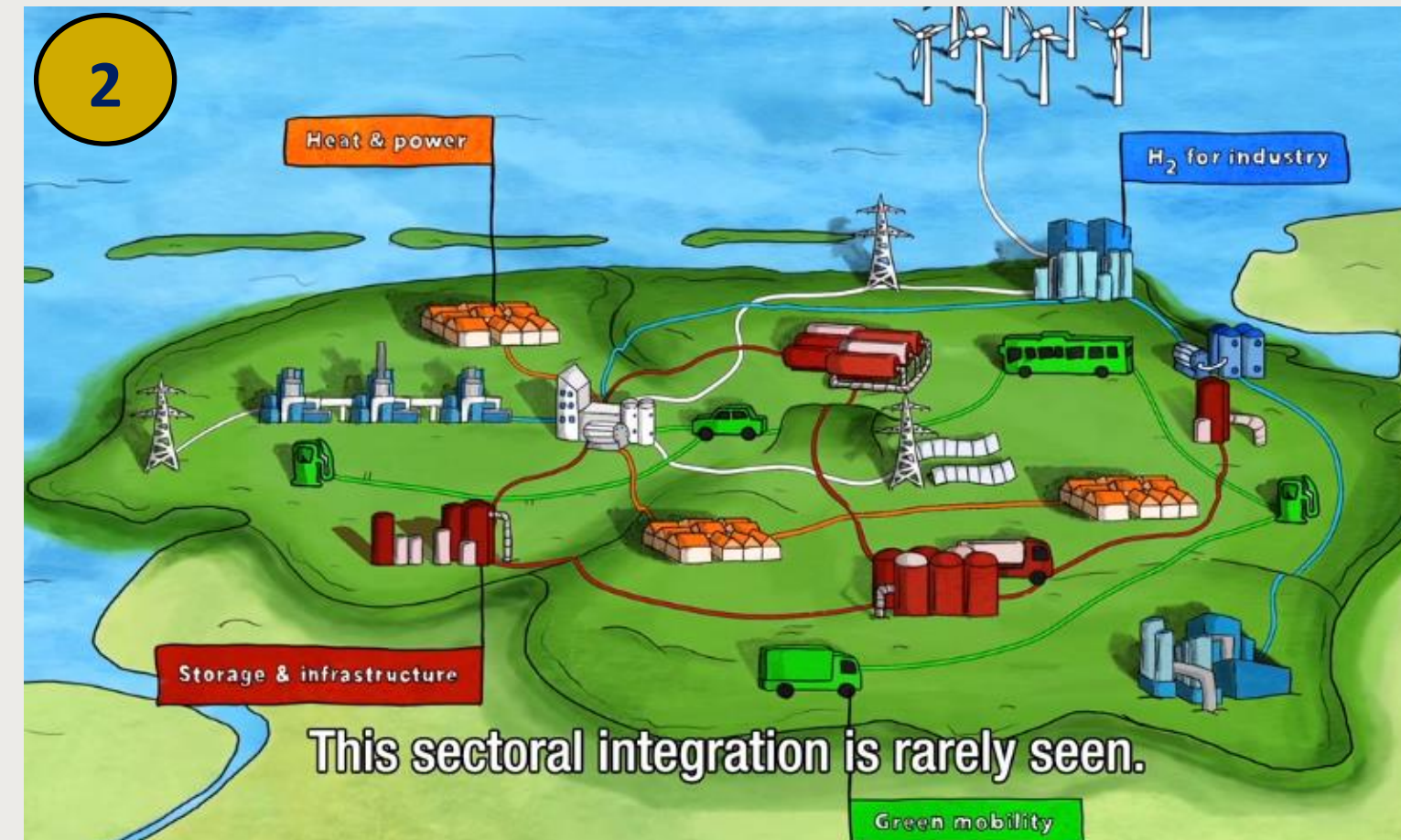
Hydrogen valleys as an accelerator for a European hydrogen economy

Its scope is system integration: Production of renewable H₂, storage, distribution and end use (transport, stationary & industry)



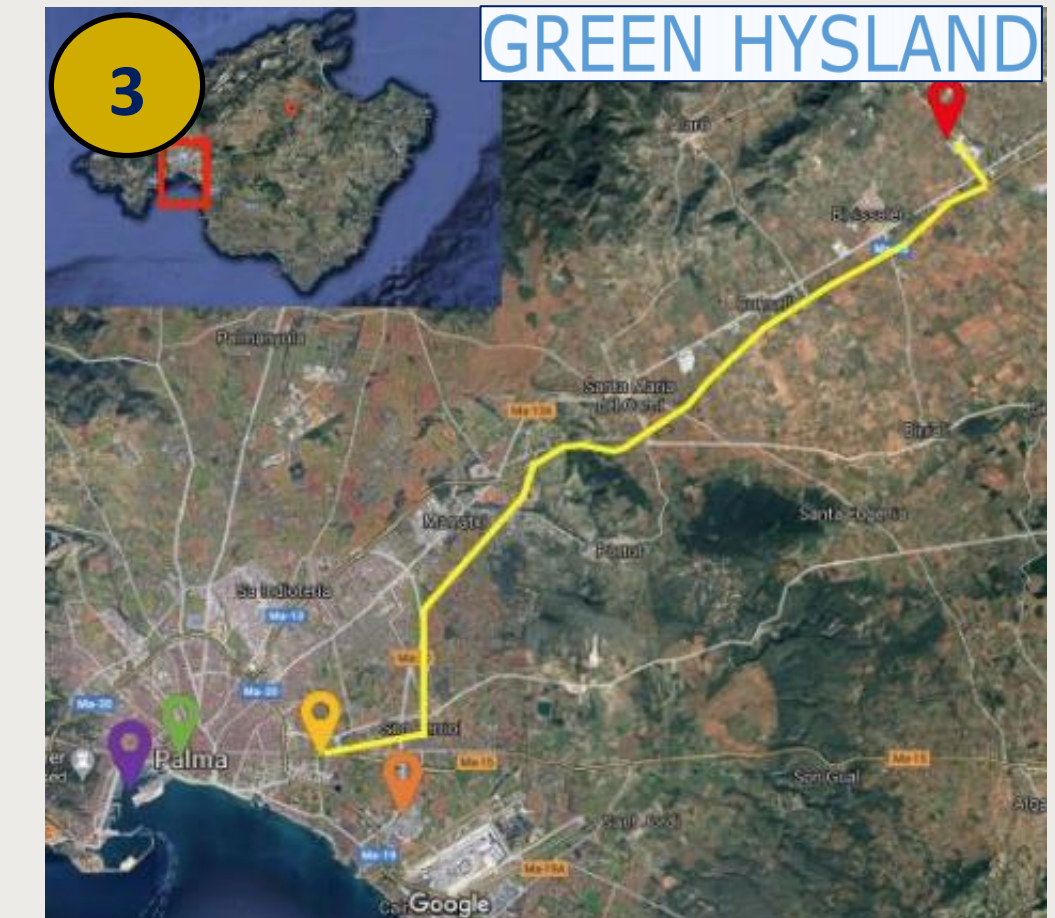
Orkney's Island (Scotland):

- H₂ production by wind on Islands
- Storage and transportation by truck
- Use: heat (school), power (ferries) & mobility (municipality cars)



North Netherlands (Groningen):

- 31 partners (public + private)
- Electrolysis for green H₂ production,
- H₂ Mobility: buses, passenger cars and trucks
- H₂ Refueling stations
- E-Kerosene for aviation
- H₂ for an inland water transport barge
- Domestic Heat applications
- Underground H₂ storage (Hystock)



Hydrogen Island (Spain)

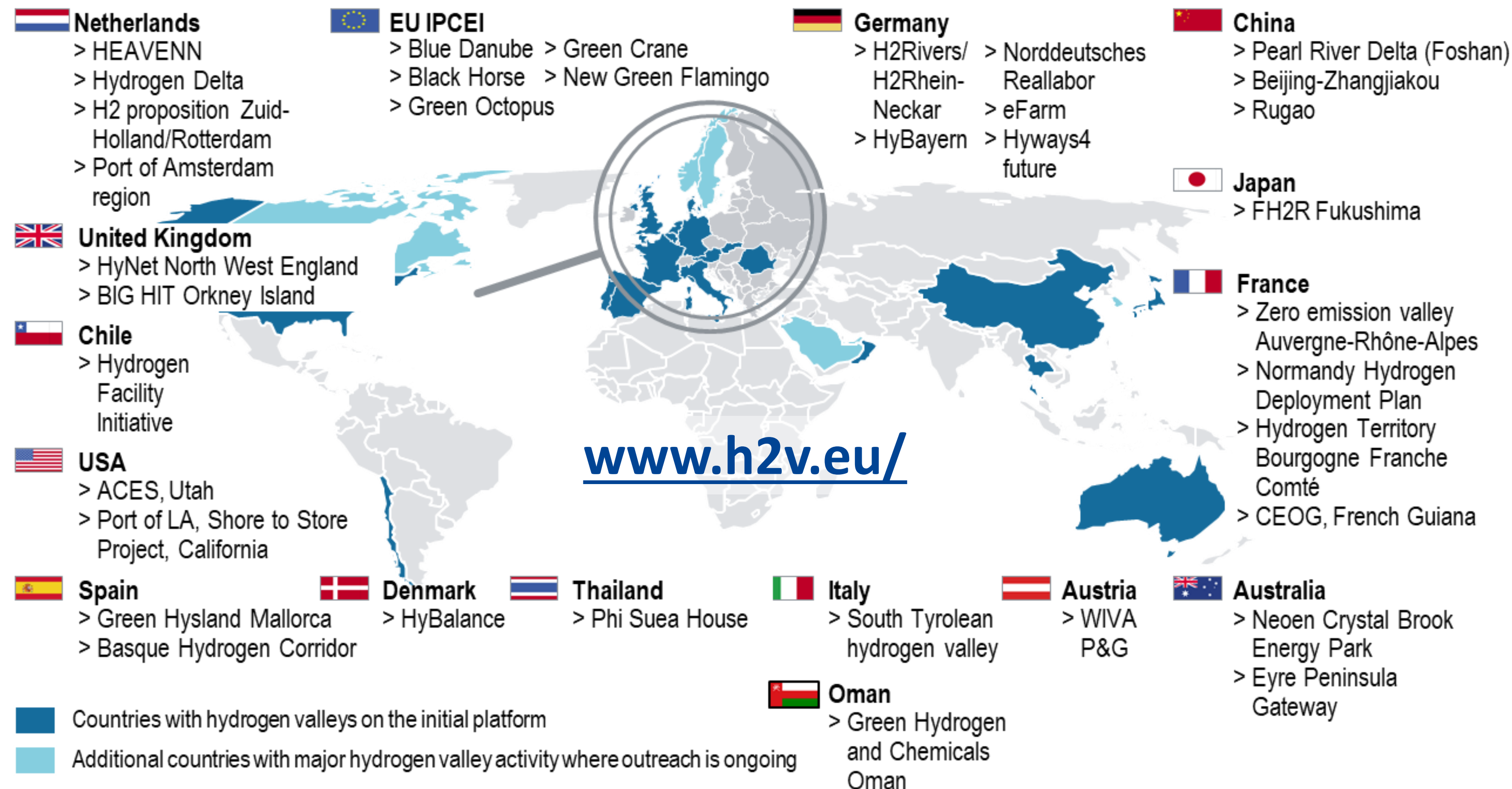
- H₂ production from solar
- H₂ injection in gas-grid
- Use: heat (hotel, municipality buildings), power (port of Palma), mobility (buses)

Hydrogen Valleys have become a global phenomenon

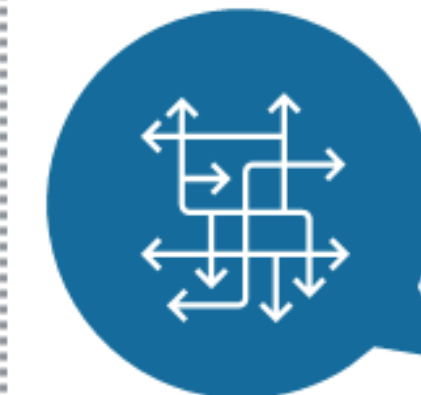
Integrated projects are emerging all around the world and sharing lessons learned to accelerate the energy transition



A fast-growing landscape of globally leading projects ...



... featured on the new platform



> 34 valleys from 19 countries



> 3,500 data points



10 in-depth best-practice profiles

Hydrogen Valleys continue under MI2.0 Clean Hydrogen Mission

Final report identified key barriers to be tackled under the next Hydrogen Mission



MI identified Key Remaining Barriers:

- Obtaining **public funding support** to close funding gaps
- Finding green hydrogen off-takers and signing long-term contracts
- Ensuring FCH applications **Technology readiness**
- Ensuring adequate **legal regulatory support** (carbon pricing, standardization, fast permitting, etc)

Next steps under MI 2.0:

Further development and enhancement of the MI Hydrogen Valley Platform.
Target for 100 Hydrogen Valleys and minimum three in each member country.



Hydrogen – Research and Innovation

Partnership under Horizon Europe Programme with hydrogen valleys as an integral part of the program



Maintain and strengthen EU's global leadership role
Clean Hydrogen Partnership with **1 billion** EUR budget; start Jan. 2022

PILLAR H2 PRODUCTION

SO1 Low carbon H2 production

1. Electrolysis
2. Other modes of production

SO2 Integration of renewables

3. Role of electrolysis in the energy system

PILLAR H2 DISTRIBUTION

SO3 Storage & delivery of H2

4. Large scale storage
5. Pipeline transport (grid)
6. Liquid carriers
7. Non-pipeline transport
8. Key technos for distribution

SO4 Refuelling infrastructure

9. HRS for multiple applications

PILLAR H2 END USES

SO5 Transport vehicles

10. Building blocks
11. Trucks & large vans
12. Maritime (inc. ports)
13. Aviation
14. Rail
15. Coaches

SO6 Heat & Power

16. Stationery H2 fuel cells
17. H2 burners and turbines

SO7 Industry

18. H2 in industry

SO9 Supply Chain
Manufacturing & scale-up

Comms

Knowledge

Safety

Int'l coop.

SO8 Hydrogen Valleys

Integrated H2 ecosystems combining multiple applications (ports, industrial hubs, cities, etc.)

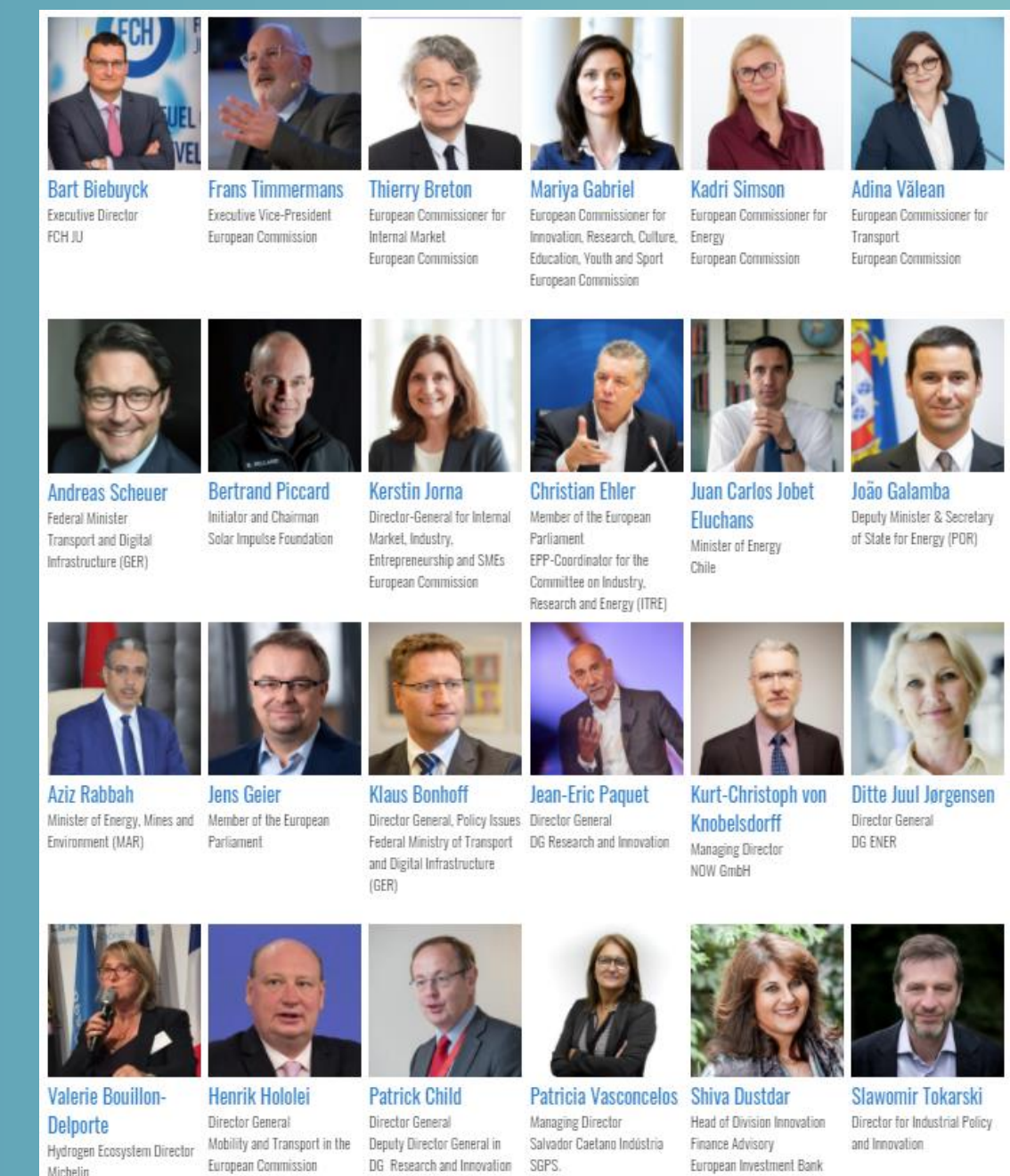
S10 Cross-Cutting

Regulations, Codes, Standards, Training, Safety, social, etc.



The 2nd European Hydrogen Week

The biggest European hydrogen conference hosting key policy makers at European, National and regional level.



2020: >10.000 people, 63 countries





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