

Status of Implementation of the Clean Hydrogen JU

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Mirela Atanasiu

Head of Unit Operations and Communications



Clean Hydrogen Partnership/JU

- Council Regulation establishing the Joint Undertakings under Horizon Europe
(adopted 19 November 2021 & into force 30 November 2021)
- Addressing complex challenges that require EU partnership between Commission and industrial stakeholders

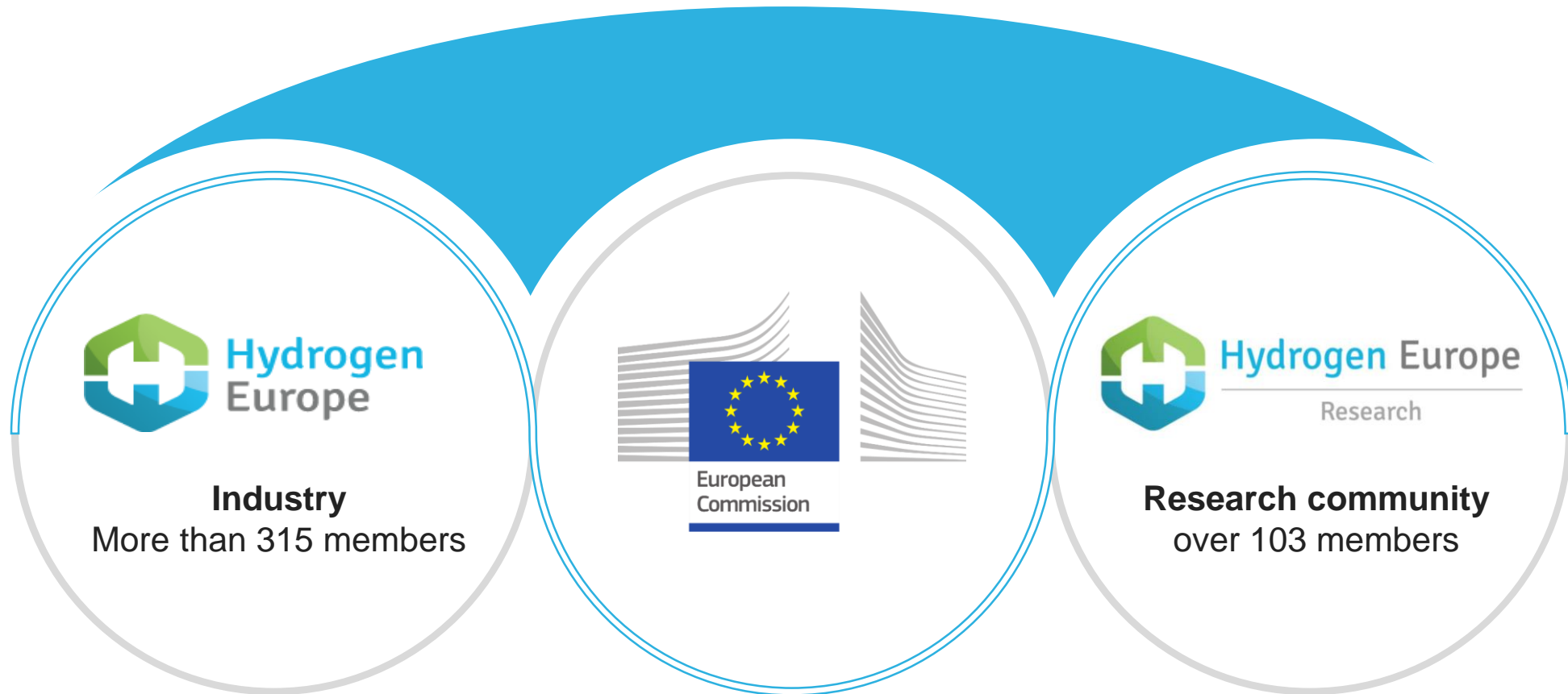
- Budget: 1 billion EURO from Horizon Europe (to commit until 2027 and implement until 2031)
- Governance: Governing Board (three members: Commission, HE, HER) + advisory bodies (SRG, SG)
- *Need also to collect independent opinions of the wider scientific community, through a scientific advisory workshop (during H2Week/H2Forum)*

Research & Innovation Activities (SRIA multi-annual doc)

- Renewable hydrogen production
- Hydrogen transmission, distribution and storage
- End-use technologies in transport, buildings and industry (incl. fuel cells, burners, boilers, etc.)

Clean Hydrogen Joint Undertaking

EU Institutional Public-Private Partnership (IPPP)



1 billion EURO from Horizon Europe to implement R&I activities and facilitate the transition to a greener EU society through the development of hydrogen technologies

Clean Hydrogen JU (Specific) Objectives


Support a sustainable hydrogen economy, contributing to EU's climate goals




Support the implementation of the Commission's Hydrogen Strategy



Stimulate research and innovation on clean hydrogen production, distribution, storage and end use applications

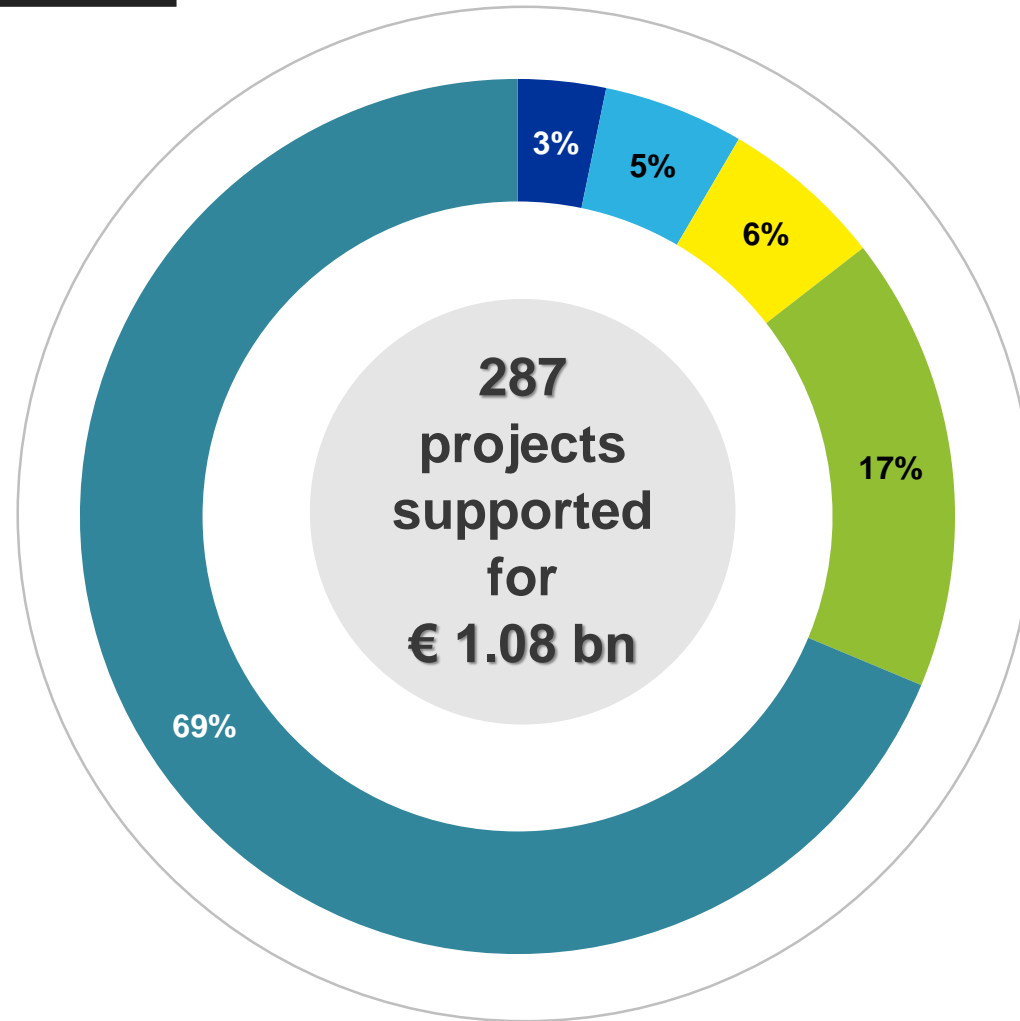


Strengthen the competitiveness of the EU clean hydrogen value chain



Contribute to the EU ambitious 2030 and 2050 climate ambition

Building on FCH JU Programme legacy



H₂ Valleys

3 Projects
€ 35 million

H₂ End Uses

- Transport Applications
- Clean Heat and Power

159 Projects
€ 739.6 million

H₂ Storage & Distribution

22 Projects
€ 55.8 million

Cross-cutting

46 Projects
€ 65 million

H₂ Production

- Electrolysis
- Other routes

57 Projects
€ 181 million

Electrolysis projects: increase capacity & lowering cost

Europe is world-leader in electrolysis systems (EU has the most patents and publications vs other parts of the world)



Next: building standard modules (10~20MW), replacing materials, cost reduction

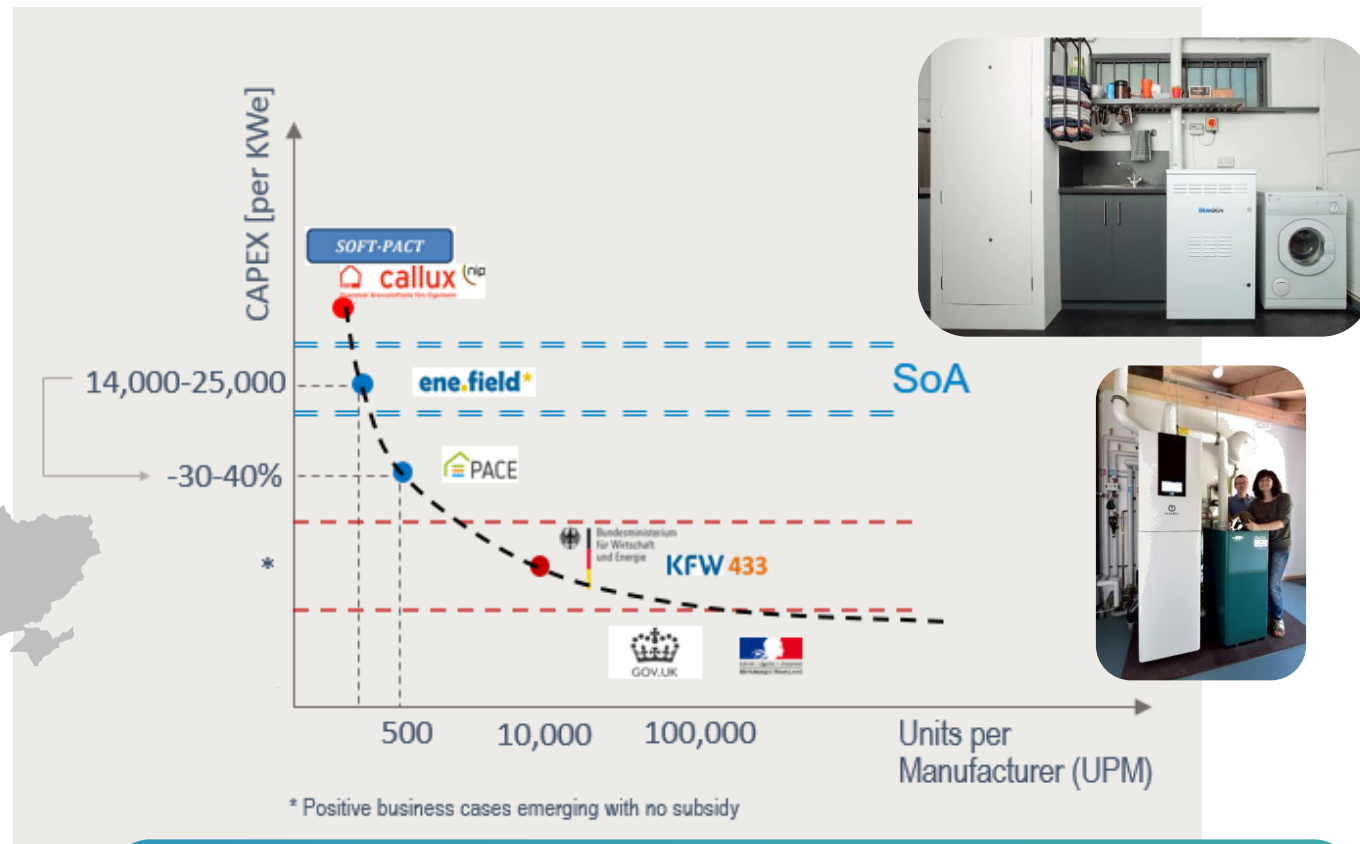
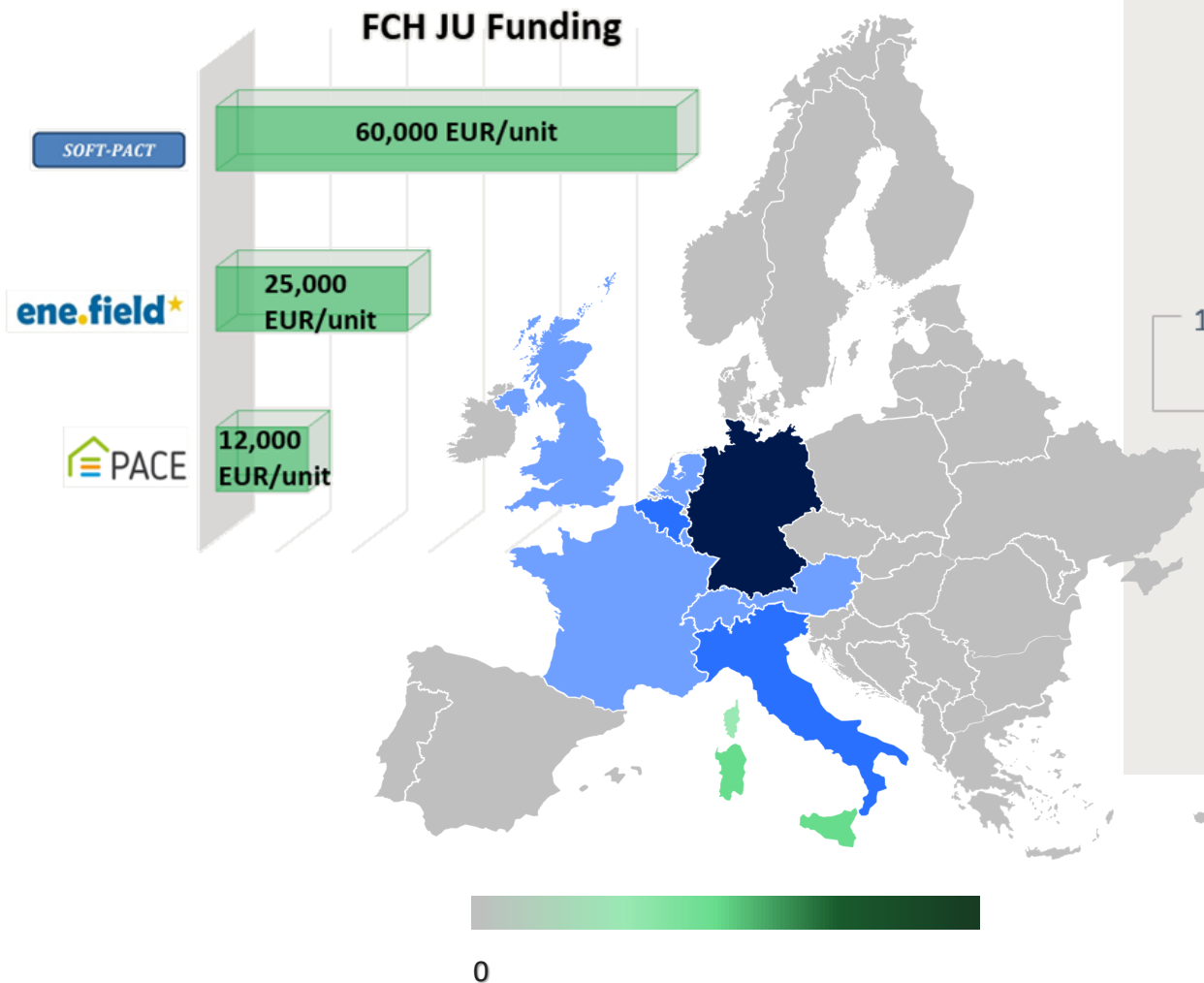
Clean Hydrogen JU has projects related to many different modes of transport

Heavy duty transportation is looking seriously to hydrogen due to the huge performance improvements of fuel cells



Over 10000 fuel cell μ CHP systems installed across EU

Track record of domestic heat and power systems created



1046 units deployed under ene.field project
Over 1 MWe capacity installed
>5 million operating hours
Additional >1,000 units deployed under German scheme


Educational Activities – Overview

Preparing the European workforce is crucial for scaling up the industry.

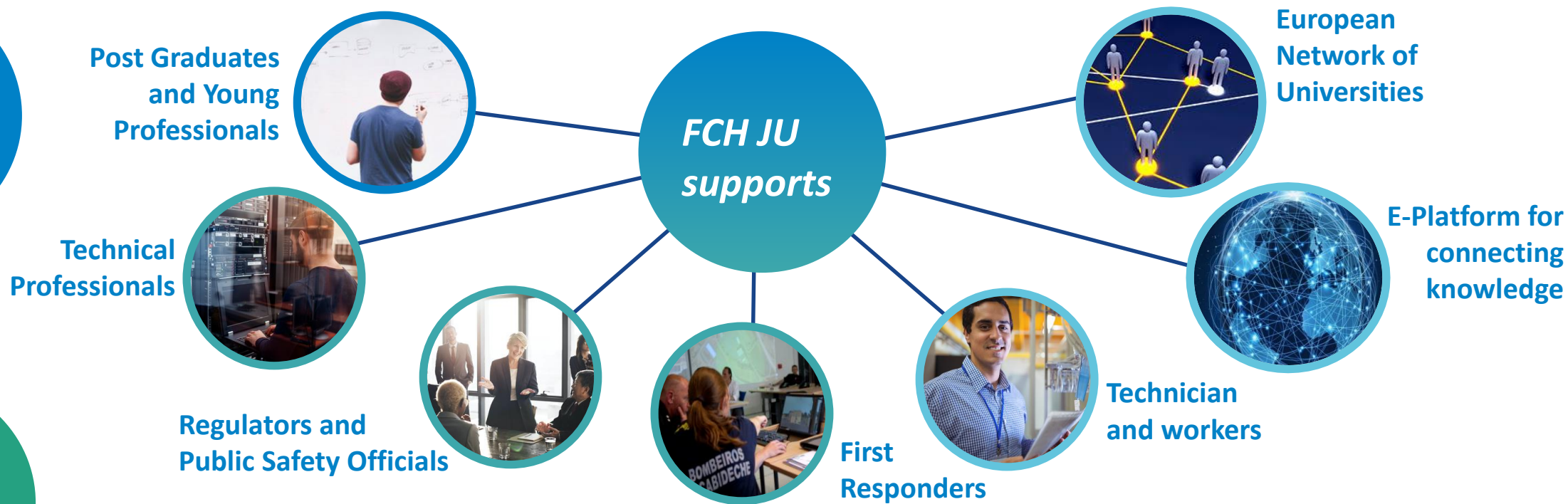
Educational and training programs tailored to multiple target groups



15 projects
10 – FP7
5 – H2020
+ complementary initiatives & studies



Budget
Overall
18,6 M€
FCH 2 JU Funding
14,7 M€



Multiple levels and types of education, learning formats, features...

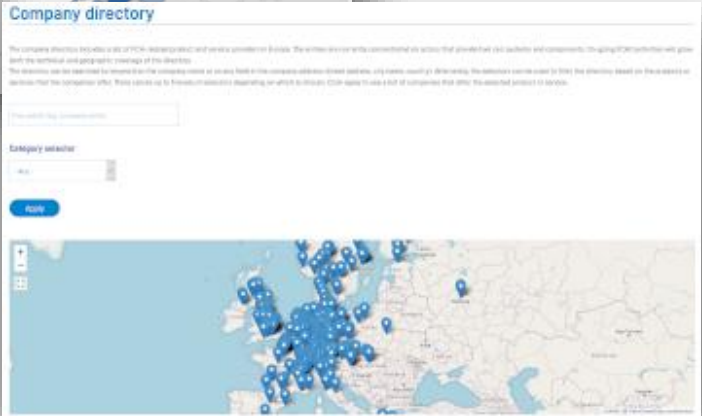
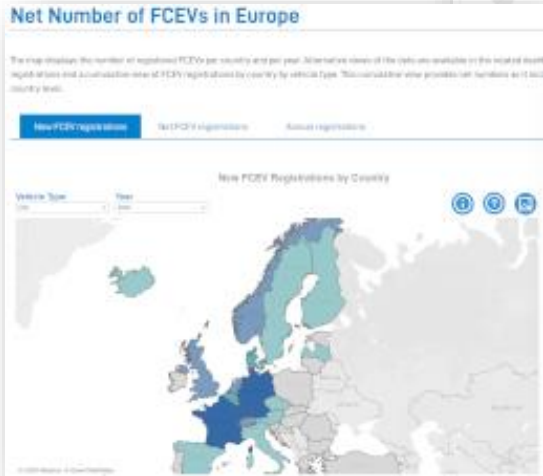
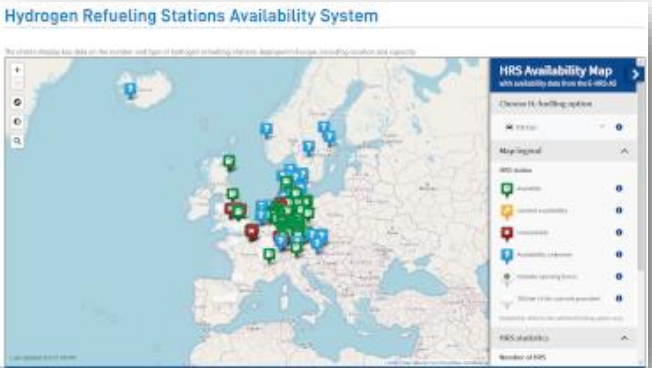
Graduate Undergraduate ... In person training ... Serious Mock-up installations
Vocational Compulsory ... e-learning blendedgames Virtual reality

Happy to share best practices, learnings and material.

Fuel Cells and Hydrogen Observatory (Launched 15 Sept '20)

One stop shop to understand where the Clean Hydrogen sector is at and how it is evolving

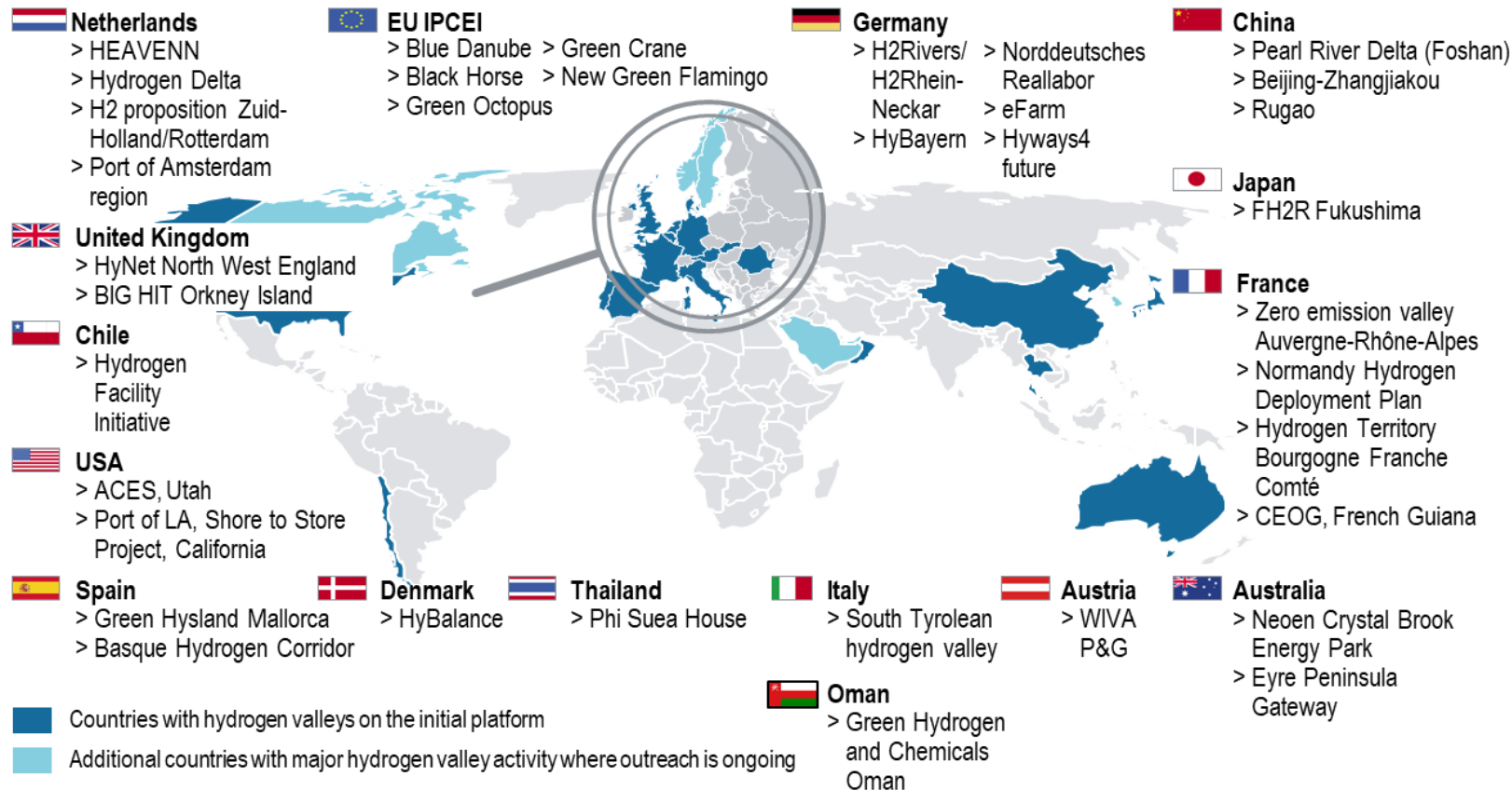
- Go to resource for all things on fuel cells and hydrogen
- User friendly and reliable output
 - charts, graphs and data downloads
 - reports
- It covers
 - Technology & Market
 - Policies & regulation
 - Codes & Standards
 - Patents & Publications
 - Funding
 - Education & Training





Hydrogen valleys have become a global theme

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 ...

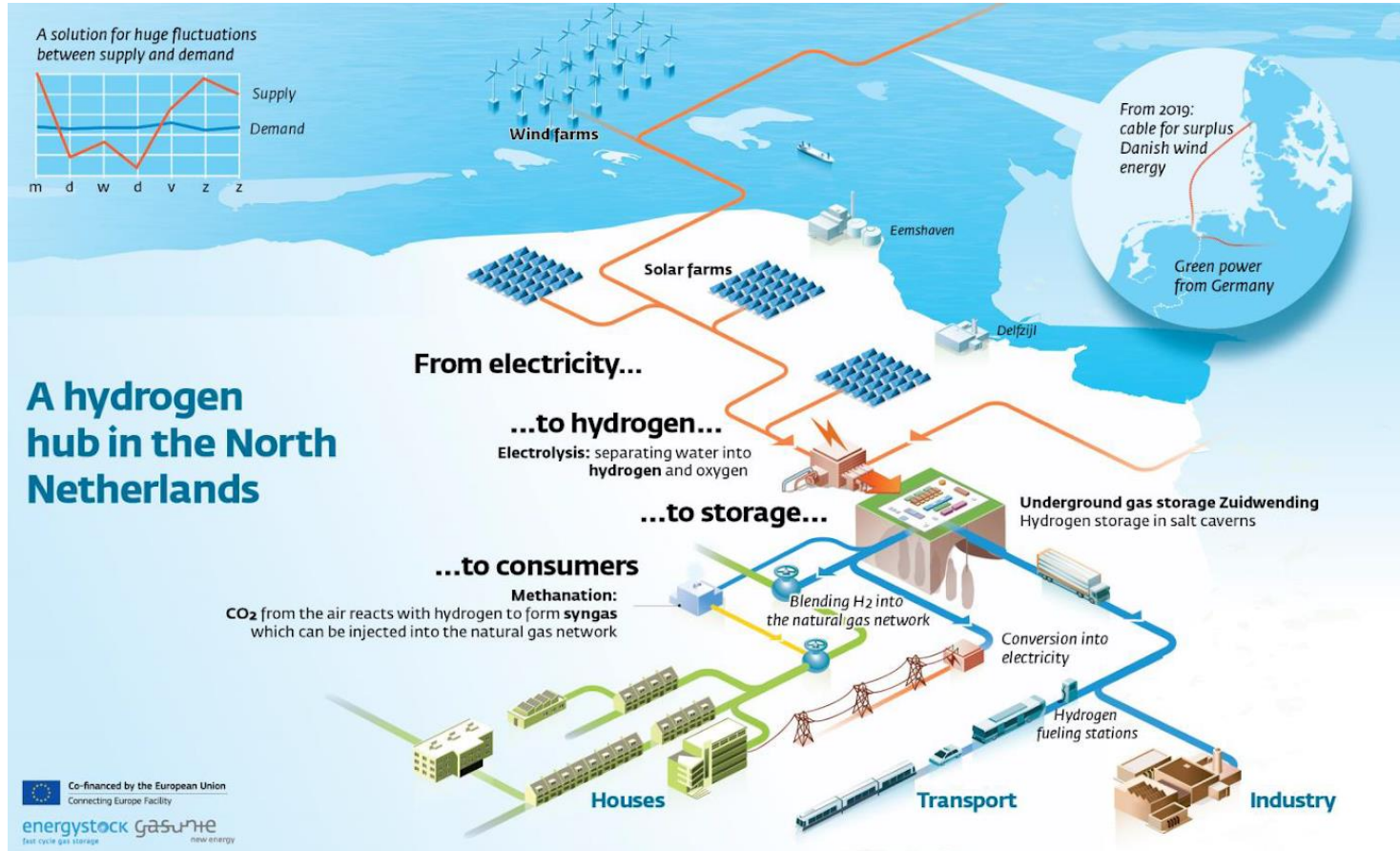


... featured on the new platform

-  > 34 valleys from 19 countries
-  > 3,500 data points
-  10 in-depth best-practice profiles

Hydrogen Valleys

HEAVENN project - Hydrogen Energy to decarbonize an entire region in Northern Netherlands



Integration of existing & planned project clusters across 6 locations

Integration of RES (onshore and offshore)

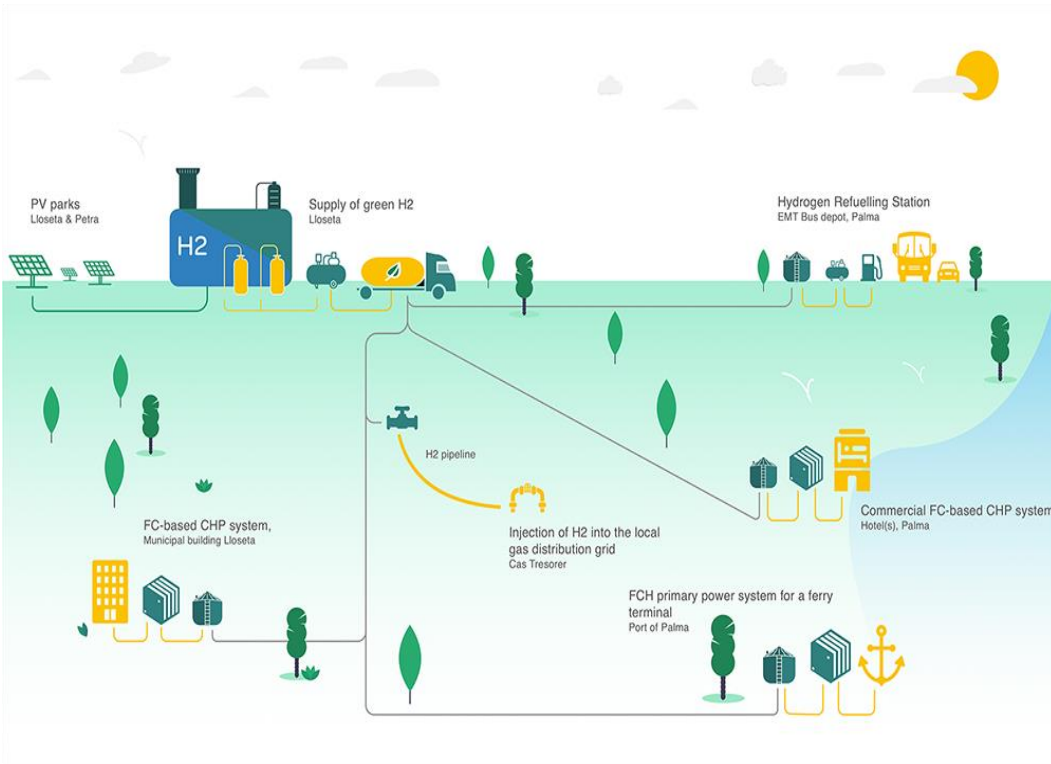
Deployment of key transport & distribution gas infrastructure

Deployment of 11 HFC end-user applications across the project

Part of the H₂ to be injected up to 3% in NG prior to firing in Gas Turbine

Hydrogen Valleys/Islands

GreenHysland: deployment of a H₂ Ecosystem on the Island of Mallorca



Green Hydrogen production using RES (PV) , 300 tonnesH₂/year

Injection of H₂ into the local NG distribution grid

**HRS at bus depot in Palma
H₂ buses, Light vehicles**

**Fuel Cells-based (CHP)
(municipal building, hotels, port)**

2050 roadmap for long-term vision for the development of a H₂ economy in Mallorca and the Balearic Region

Replication experiences and business models are foreseen in five other EU island

Hydrogen Valleys continue under Mission Innovation 2.0

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

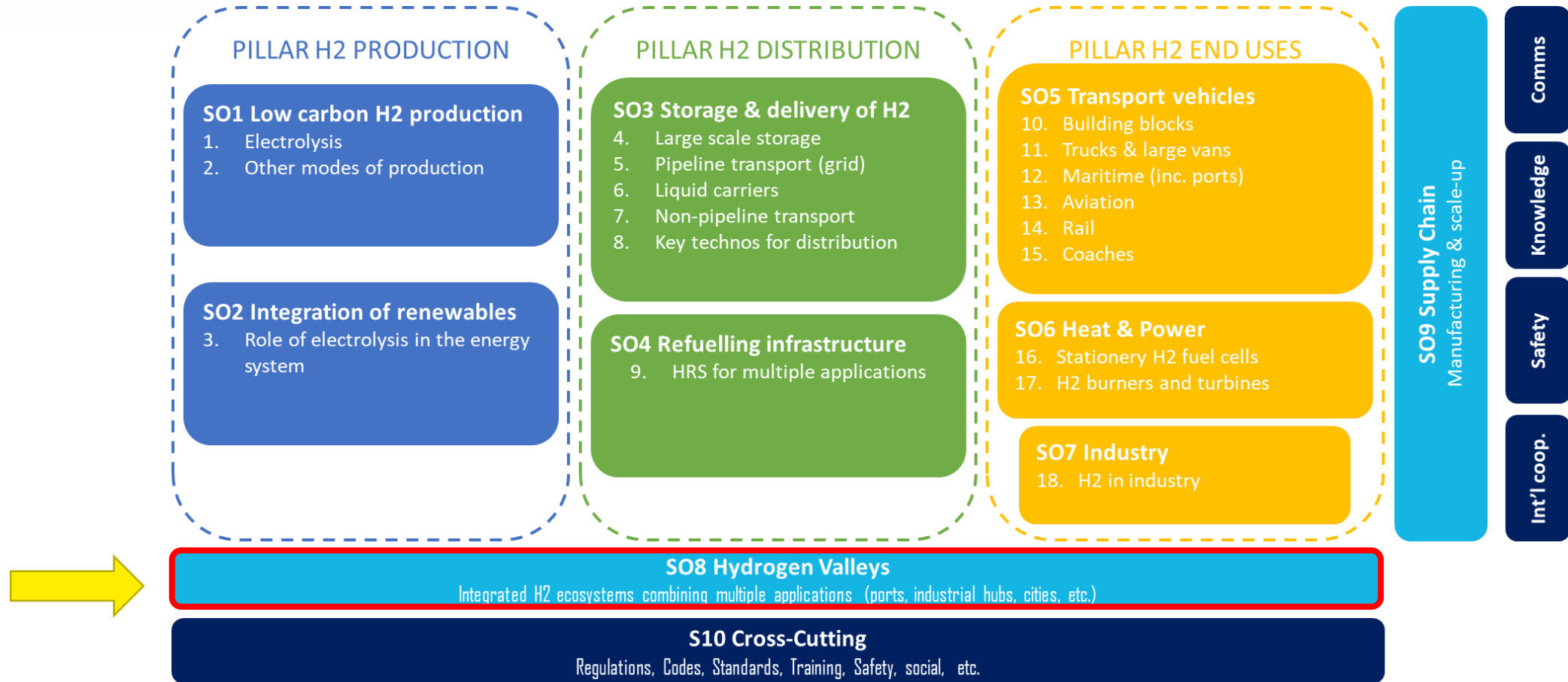


MI 1.0 identified Key Remaining Barriers:

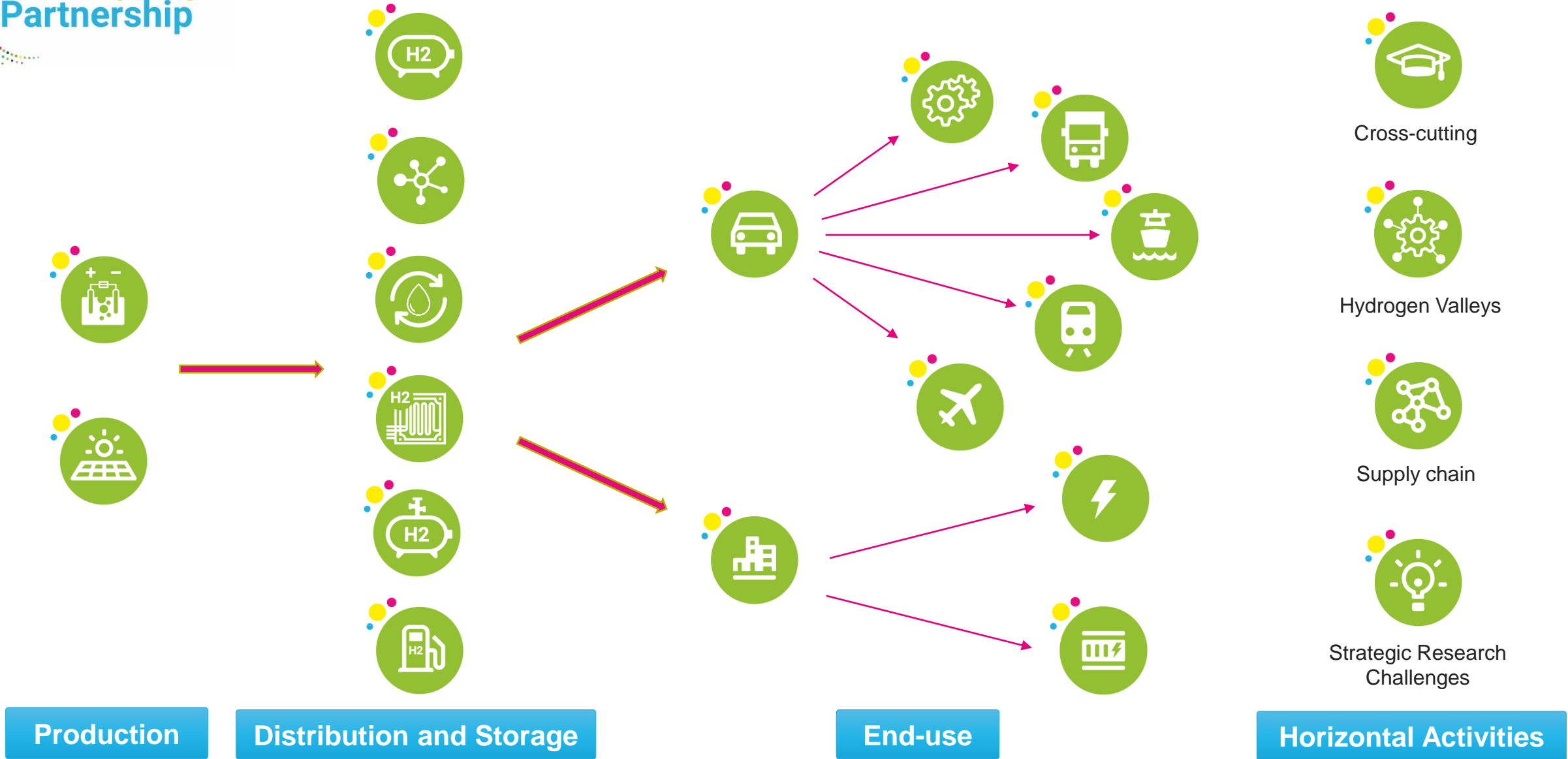
- Obtaining **public funding support** to close funding gaps
- Finding green hydrogen off-takers and signing long-term contracts
- Ensuring Clean Hydrogen applications **Technology readiness**
- Ensuring adequate **legal regulatory support** (carbon pricing, standardization, fast permitting...)

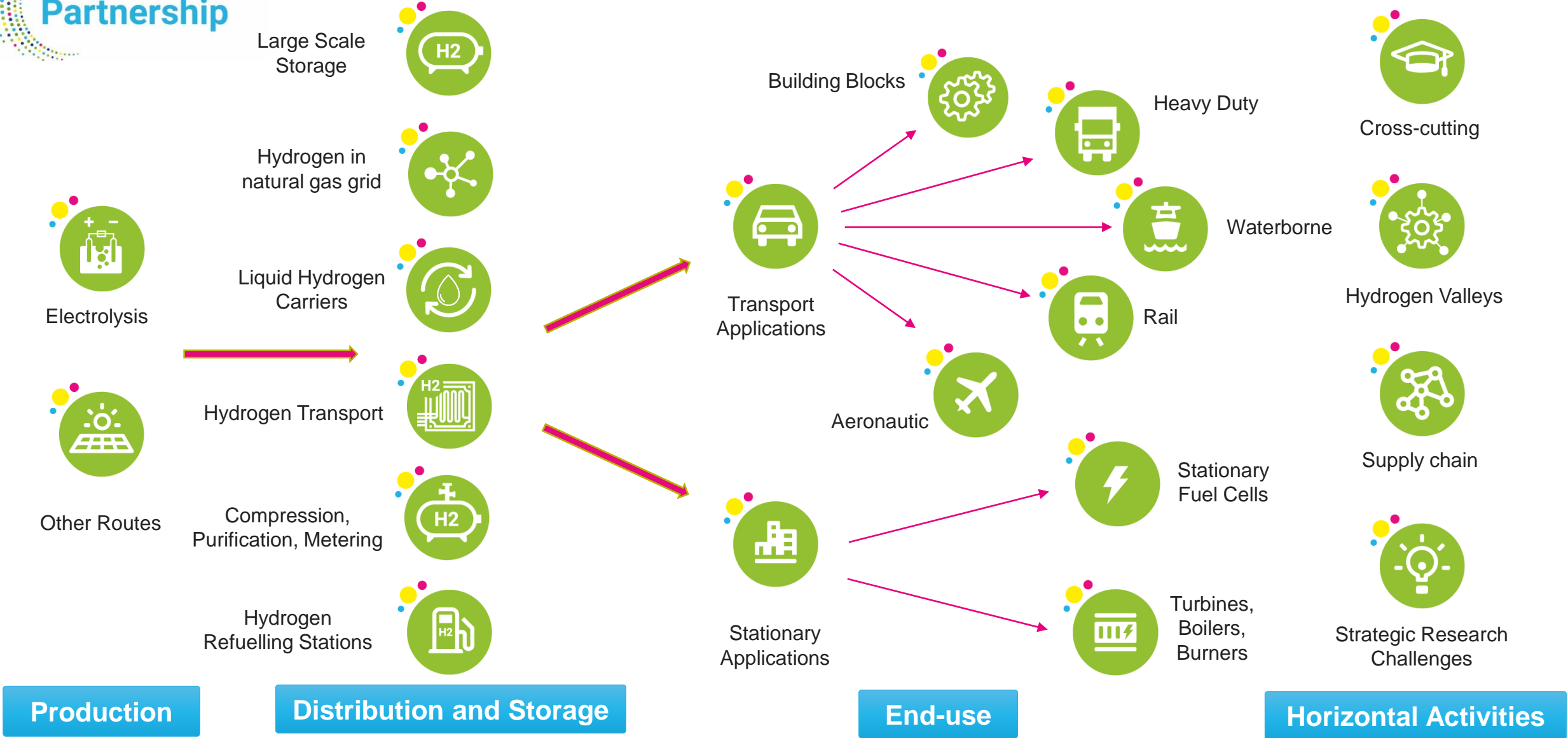
Next steps under MI 2.0:

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



1st Call Q1 2022 for 300 m€, including a hydrogen valley topic 30 million EUR

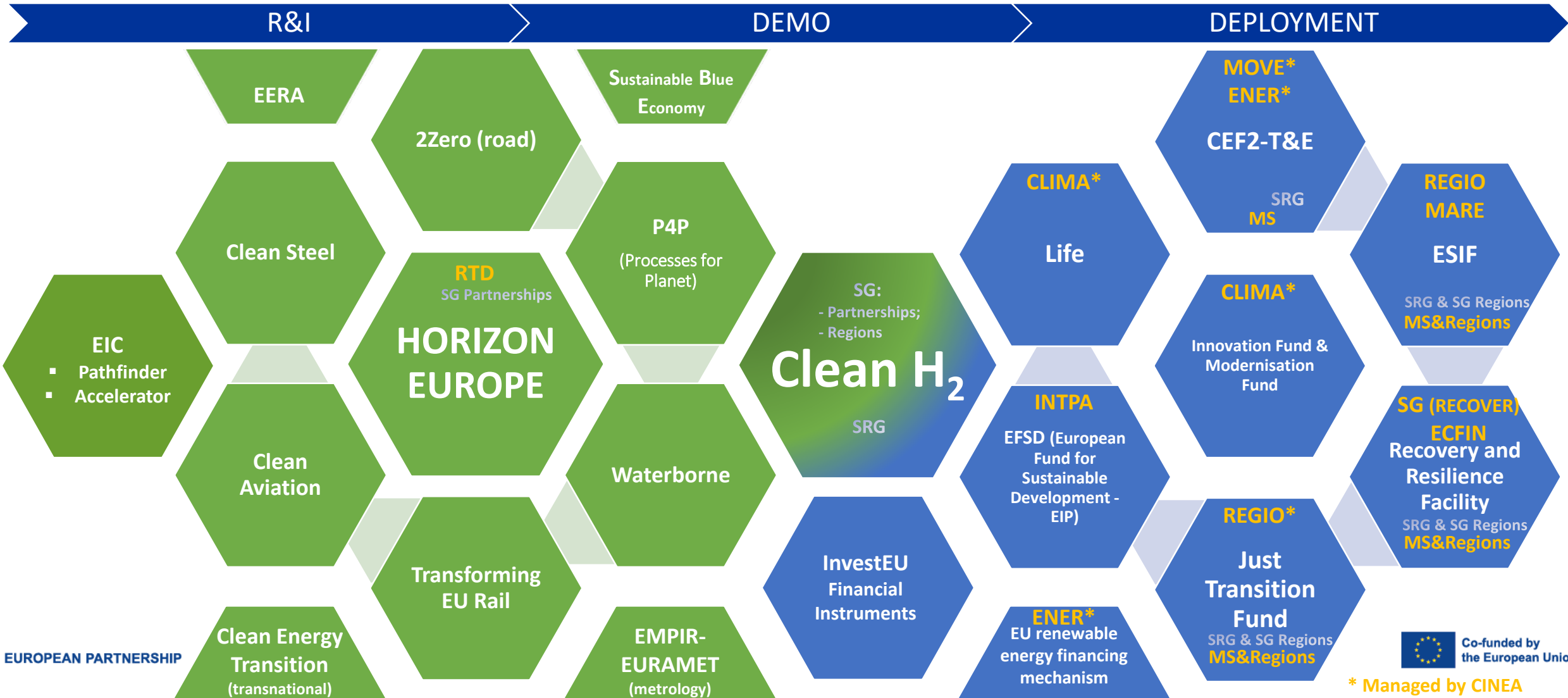




Synergies

H2 evolving and growing: from R&D&I to large Demos and full Market Deployment

Strong cooperation is Key to deal with bigger yet fragmented EU Funds to meet EU Green Deal Ambition!



Synergies

Strong cooperation is Key to deal with bigger yet fragmented EU Funds at EU, National and Regional levels

Tools to generate Funding Synergies on R&I and Clean H2 deployment



Joint roadmaps and align priorities
Align the different WP timeframes, introducing joint targets and objectives, as well as coordinating annual topics to ensure strong complementarity and synergies



Seal of Excellence
Explore the attribution of Seal of Excellence in the calls on hydrogen topics run by all the Partnerships to pave the way for direct support from other EU Funds + MS&Regions (+IPCEI)

Coordinated and co-designed Calls
Flagging in the call text the intention to collaborate with mirroring projects from other Funding Bodies (e.g. to have common status seminars, regular annual meetings or similar)

Synchronised Calls
Complementary calls in its scope and time, launched by at least 2 different Funding Bodies/Programmes with the aim of resource bundling for quickest path to market

Cumulative Funding Calls
Joint calls where 1 (linked) action can have separate grant agreements from different Funding Bodies/Programmes

Co-Programmed/Co-Funded Calls
Create links with the national R&I activities. This could lead to complementary joint calls using national funding or even hybrid Co-Programmed/Co-Funded calls

[Regulation \(EU\) 2021/695](#) establishing Horizon Europe: Art. 15 - Alternative, combined and cumulative funding and transfers of resources; Annex IV - Synergies with other Union programmes

1. First Governing board in December 2021 (adopted all legacy of FCH JU + criteria for Stakeholders Group establishment)
2. (Member) States Representatives Group, SRG established on 19th of January (25 MS + 4 AC represented)
3. Stakeholders Group, SG established on 9th of February (13 members across all sectors, incl other partnerships, regions and scientific community)
4. **Strategic Research and Innovation Agenda, SRIA** – consulted with both SRG & SG – currently under final adoption procedure;
5. **Annual Work-Programme 2022** – consulted with SRG + synergies with SG – currently under final adoption procedure;
 - **Call for proposals (approx. 40 topics, 300 mill EURO funding) – to be published on 1st of March, with two cut-off dates (end-May 2022 + end-Sept 2022)**
 - **Info-day (planned on 15th of March)**
 - Other activities (Knowledge Hub, Communication strategy/policy, synergies with other funding/financing opportunities etc)

Mirela Atanasiu
Head of Unit Operations and Communications
mirela.atanasiu@clean-hydrogen.europa.eu



For further information
<https://www.clean-hydrogen.europa.eu/>

