

Hydrogen Valleys: an accelerator of the European Hydrogen Economy

THE FAST TRACK TO THE HYDROGEN ECONOMY

EUROPEAN HYDROGEN
ENERGY CONFERENCE



Clean Hydrogen Partnership activities supporting Hydrogen Valleys

7 March 2024

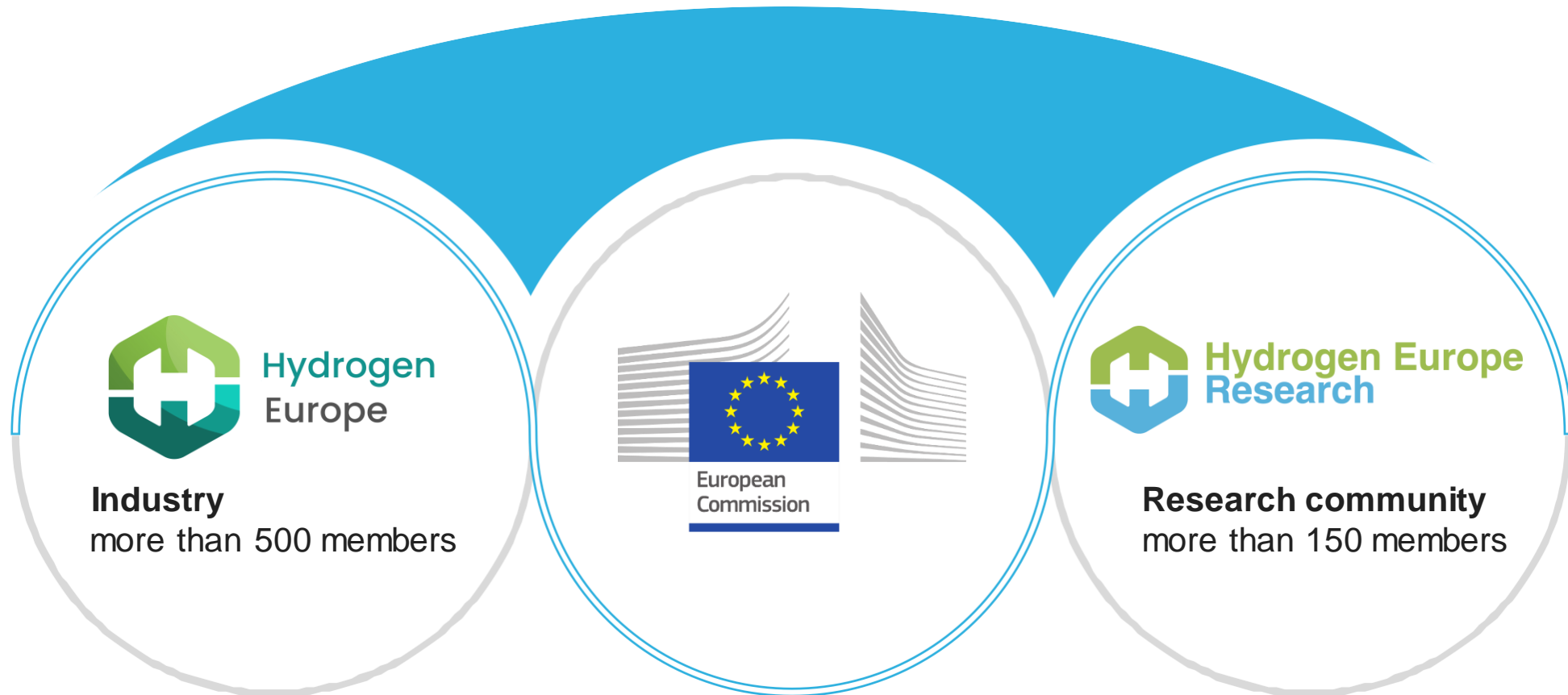
European Hydrogen Energy Conference, Bilbao

Antonio Aguilo, Team Coordinator



Clean Hydrogen Joint Undertaking

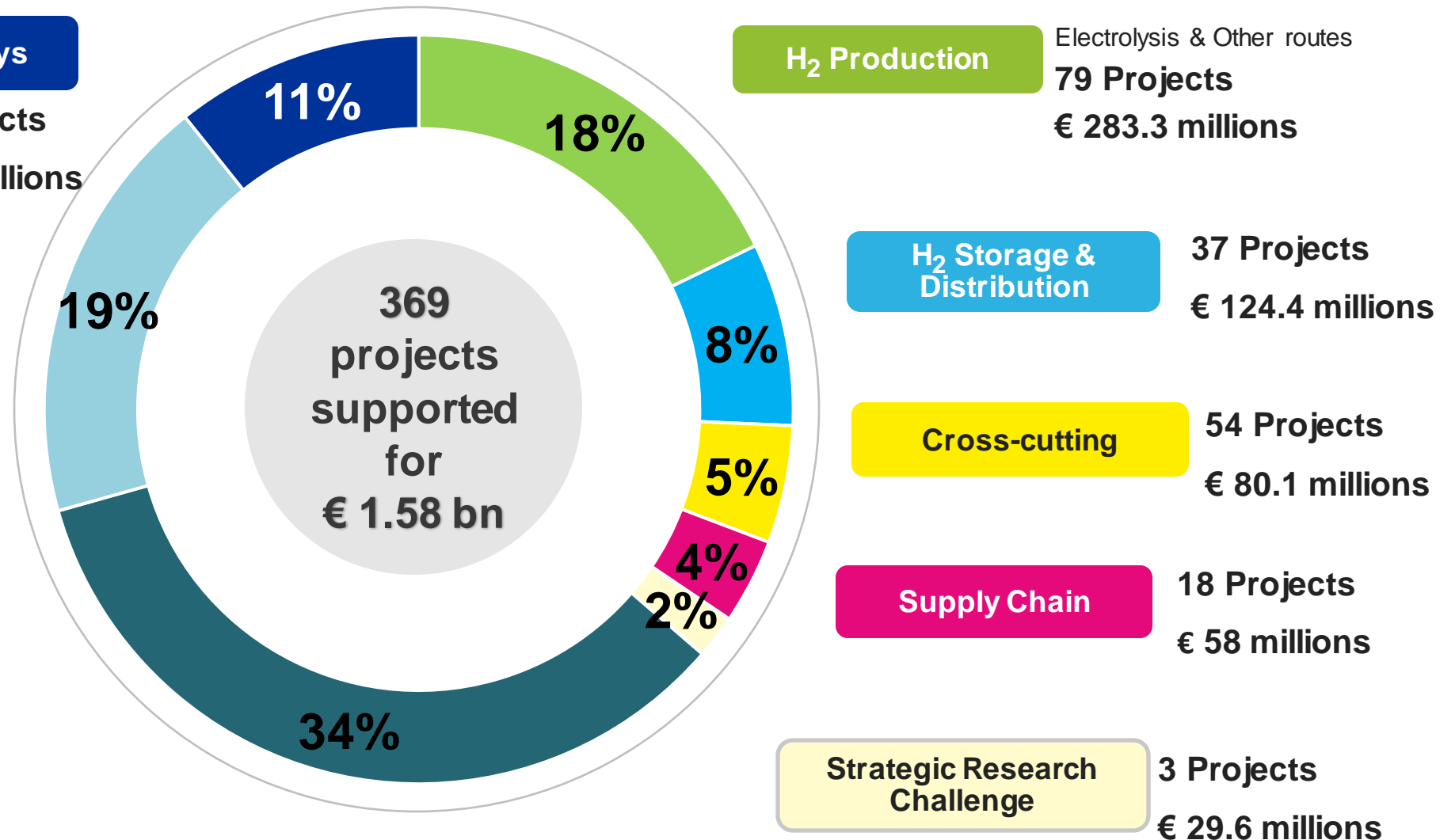
EU Institutional Public-Private Partnership (IPPP)



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

*** additional 200 million EURO for Hydrogen valleys (under RePowerEU)**

Projects across the whole Hydrogen value chain



Covering research at low technology readiness levels up to demonstration

*It excludes some projects of call 2023, recently signed

Working with regions - Raising awareness, developing ideas and implementing hydrogen projects

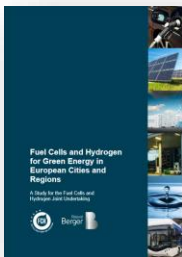
Regions initiative (2016-2018)

To support cities and regions with an interest in FCH technologies



Engagement

- Business cases for FCH applications;
- Mapping of local assets;
- Identification of existing funding;



Report

- FCH applications: status and potential;
- FCH plans and ambitions;
- Way forward;



MOU

- 89 European Regions;
- 22 countries
- 1/4 of Europe's population, surface & GDP;

Hydrogen Valley S3P Platform

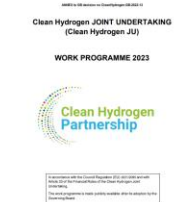
Project Development Assistance (2021-onwards)

From idea to project plan



JU Annual Work Plans

Support to investments: H2 projects including H2 Valleys

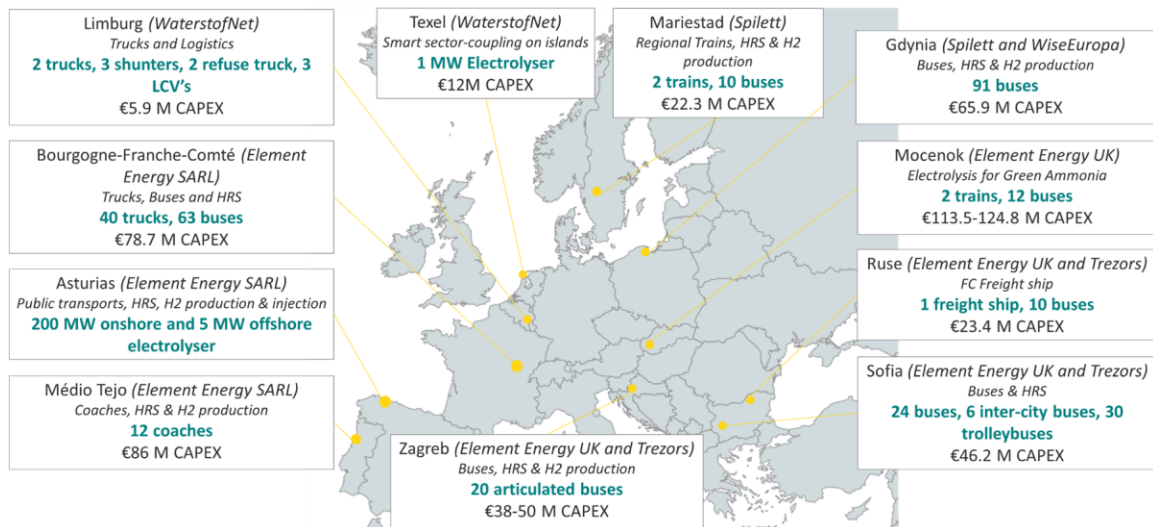


MI2.0 H2V Platform

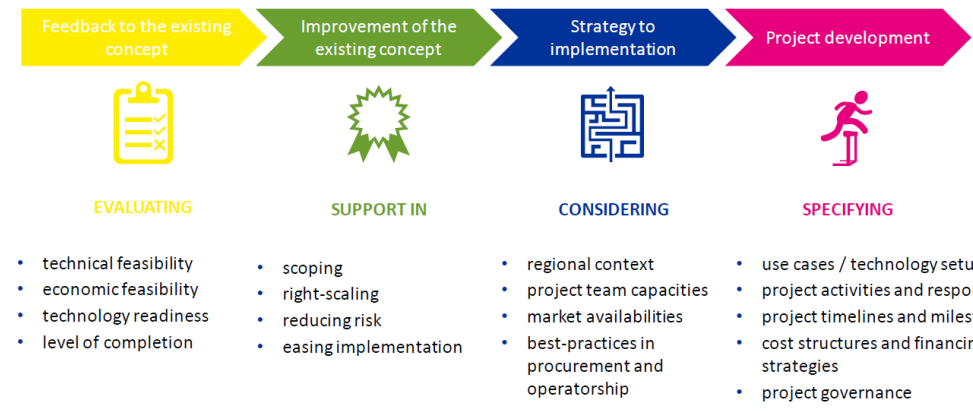
Global collaboration



26 Regions supported to move from Project Ideas to Concrete Hydrogen Plans



Services provided to the regions



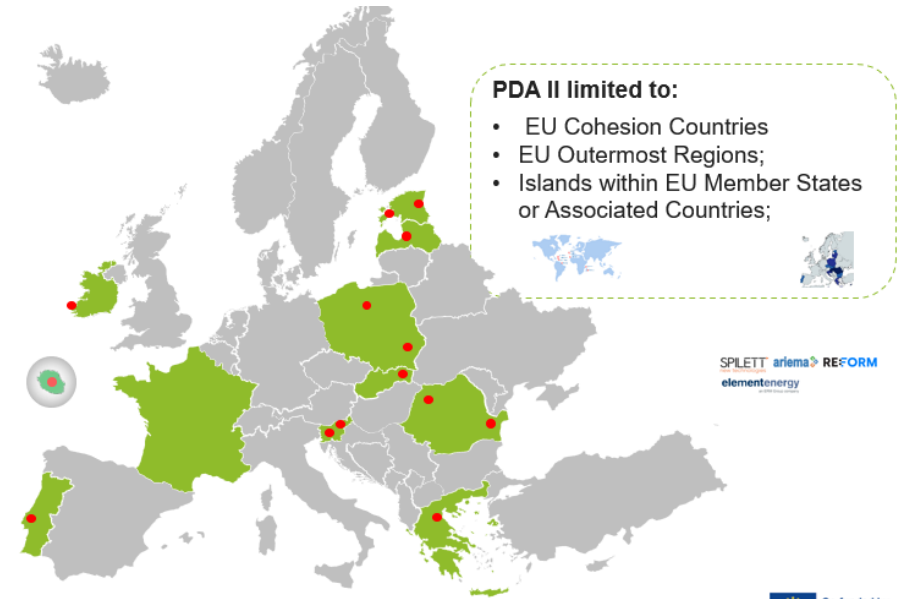
Project Development Assistance (2021-2022)

Led by: Supported by:

Project Development Assistance (2023-ongoing)

Location of the 15 selected projects

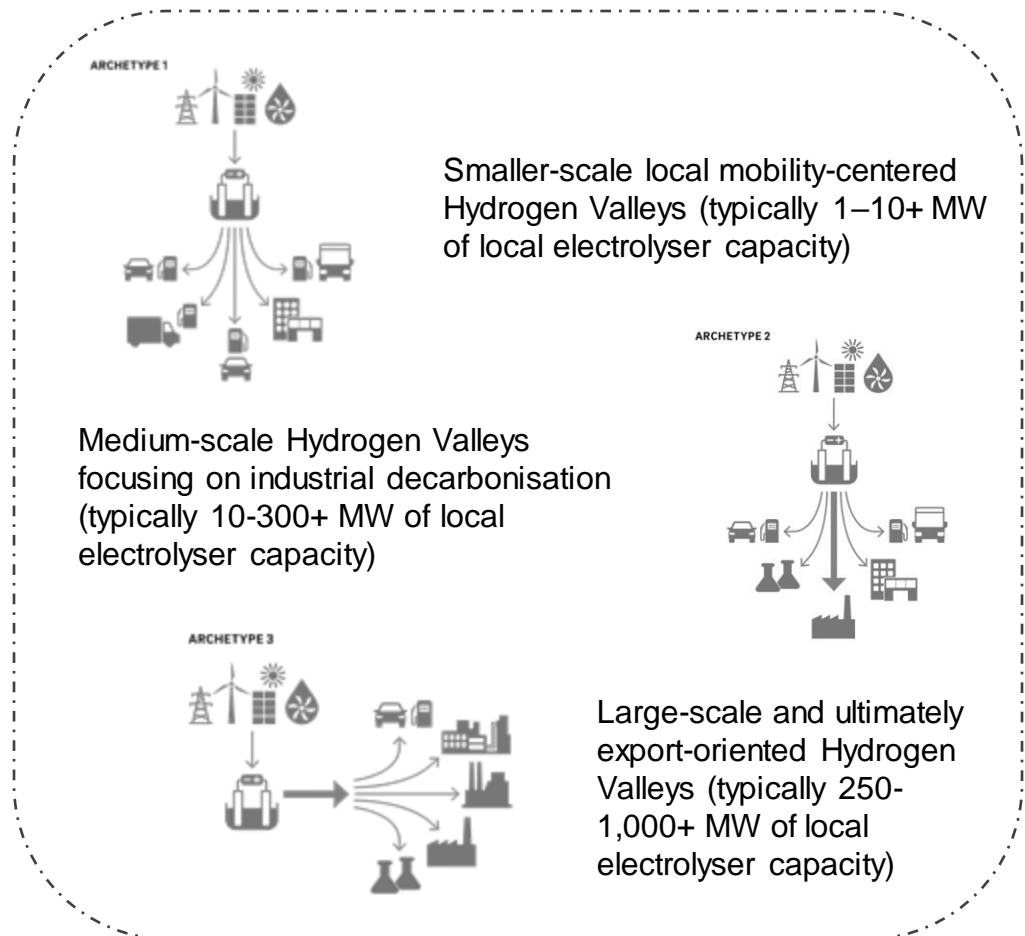
- Estonia**
 - Estonian Islands;
 - Tartu City;
- France**
 - Regional Council of La Réunion;
- Greece**
 - Region of Peloponnese;
- Ireland**
 - Valentia Island;
- Latvia**
 - Riga;
- Poland**
 - City of Plock;
 - Podkarpackie Region;
- Portugal**
 - Autonomous region of Medeira;
 - Municipality of Alenquer;
- Romania**
 - Cluj-Napoca;
 - Municipality of Galati;
- Slovakia**
 - Košice self Governing region;
- Slovenia**
 - Central Sava Region;
 - Velenje, Savinjsko-Saleška region



Through its annual Call for Proposals, we support Hydrogen Valleys across the all stages of the project

A ‘sound’ starting point needs to be demonstrated

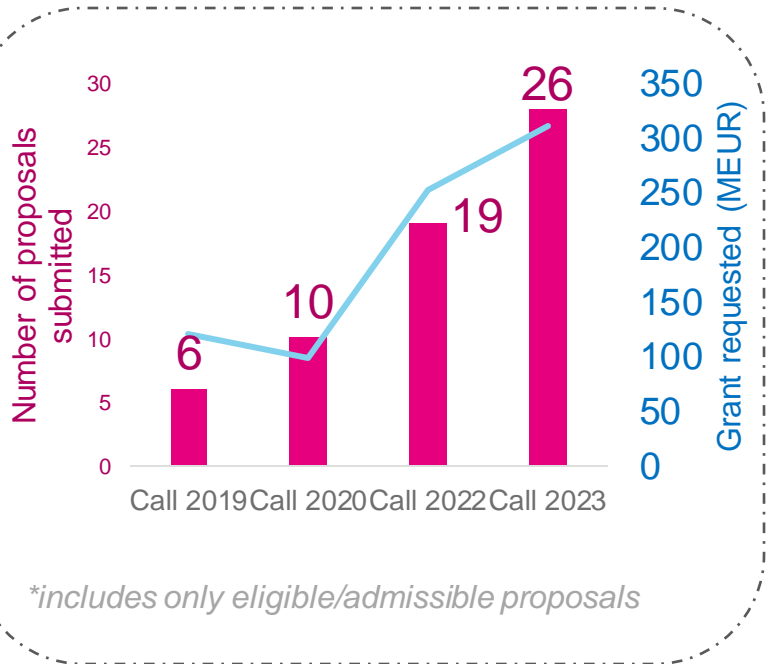
- Support to “**brains & bricks**”
 - e.g pre-FID activities, preparation of Call for Tenders, costs infrastructure/equipment & construction works, comisionning, monitoring.. -> for H2 related activities;
- **Minimum H2 production / use** per year & number of sectors/applications covered
- **New** hydrogen production **capacity**
- EU/JU funding represents (approx.) 20-30% of the total investment costs -> **additional sources of financing** needed;
- Demonstrate **scalability**;
- Foster **replicability** and cooperation -> knowledge transfer;
- Contribution to the **EU competitiveness**



Indicative archetypes, which do not necessarily representing the variety of projects supported by the Clean Hydrogen JU

Building on the Hydrogen Territory concept, introduced in the Call 2015 (BIG-HIT), the Clean Hydrogen Partnership has supported the demonstration of Hydrogen Valleys since 2019

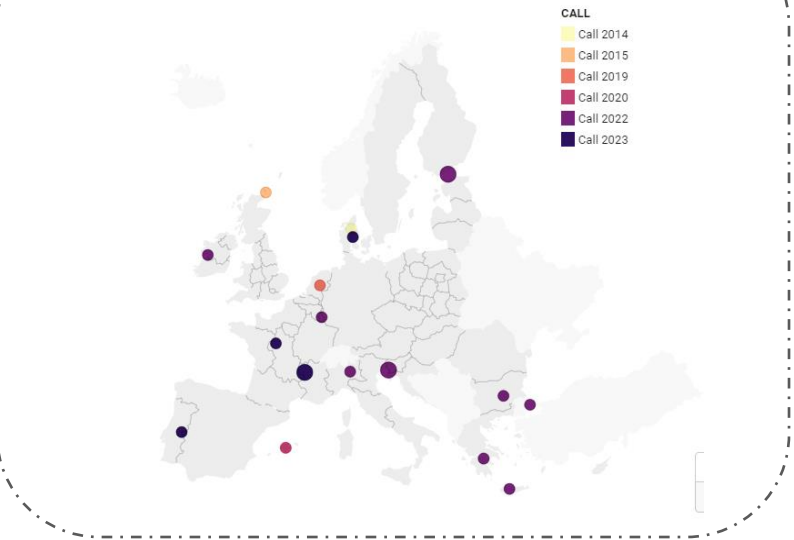
Increased interest in the Clean Hydrogen JU Calls



The appetite to develop Hydrogen Valleys across Europe has increased

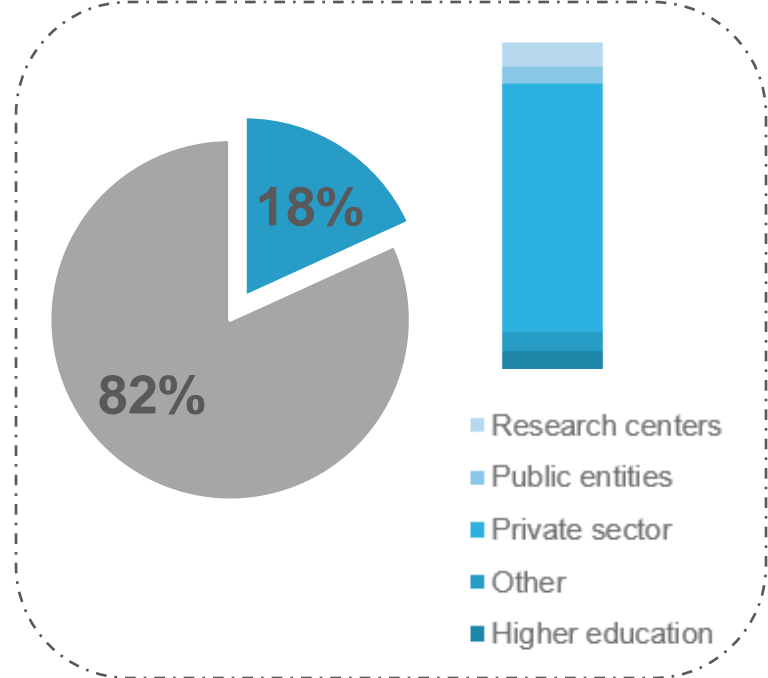
REPowering the EU with Hydrogen Valleys (May 2022)

200 M€* top-up, spread across 3 years, to double H2V in EU by 2025



16 Hydrogen Valleys supported to date:
 >21,000 tons H₂ / year
 ~ 200 MW equiv*. Electrolyser capacity

Total costs: **1,000 M€**
 JU funding: **187 M€**

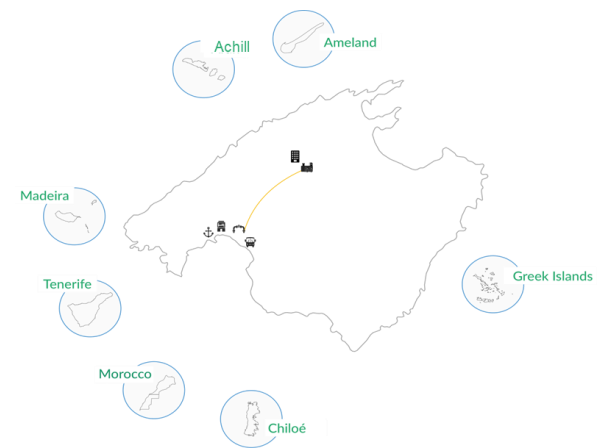
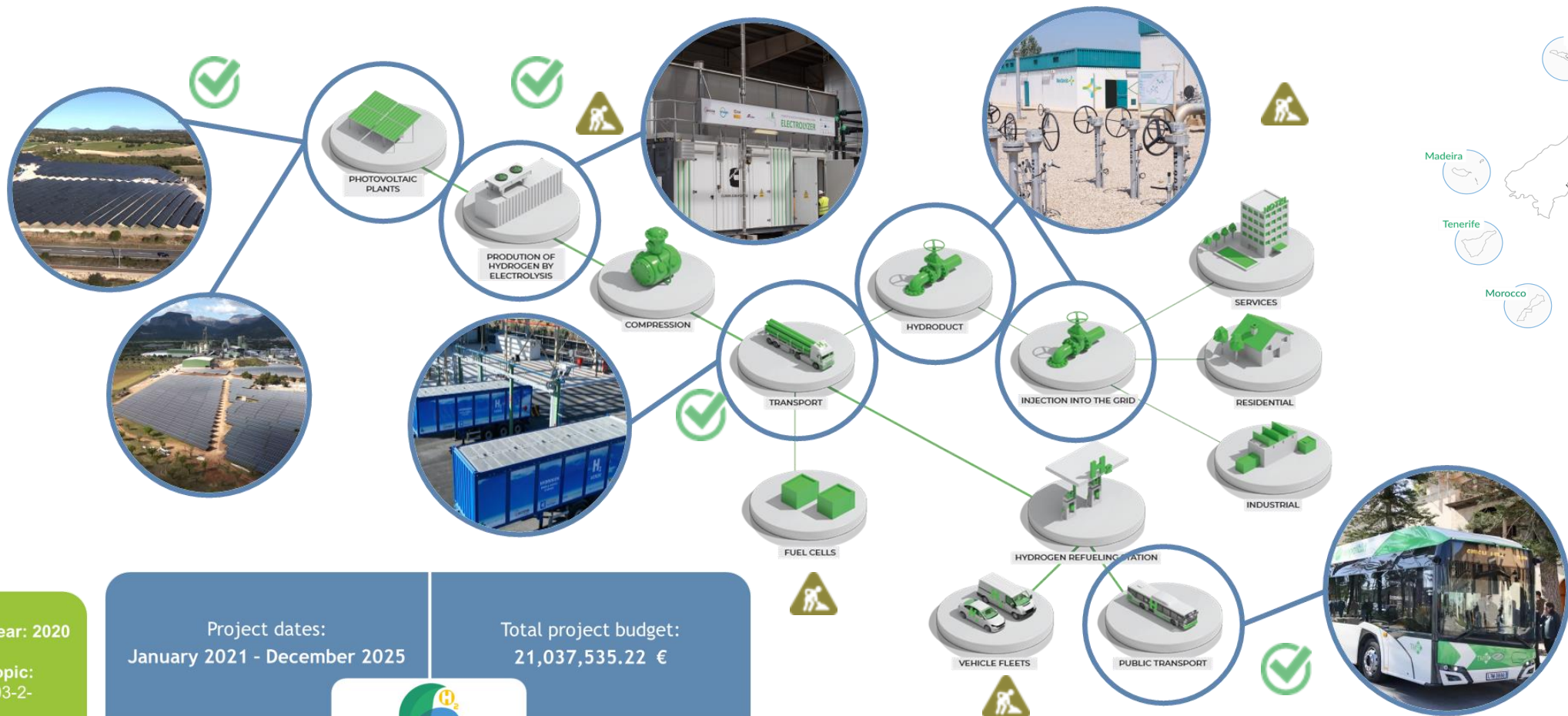


357 beneficiaries from 37 countries


** This is an estimated equivalent electrolyser capacity calculated using the H₂ production requirements of the Call topics. The "to be installed" capacity may vary.*

Hydrogen valleys: Green Hysland project

A Hydrogen Valley on the Island of Mallorca



Call year: 2020
 Call topic: FCH-03-2-2020: Decarbonising islands using renewable energies and hydrogen - H2 Islands

Project dates: January 2021 - December 2025	Total project budget: 21,037,535.22 €
	
% stage of implementation 01/11/2023: 58 %	Clean Hydrogen Partnership max. contribution: 9,999,999.50 € Other financial contribution: 14,617,515.72 € (own contribution + other grants)

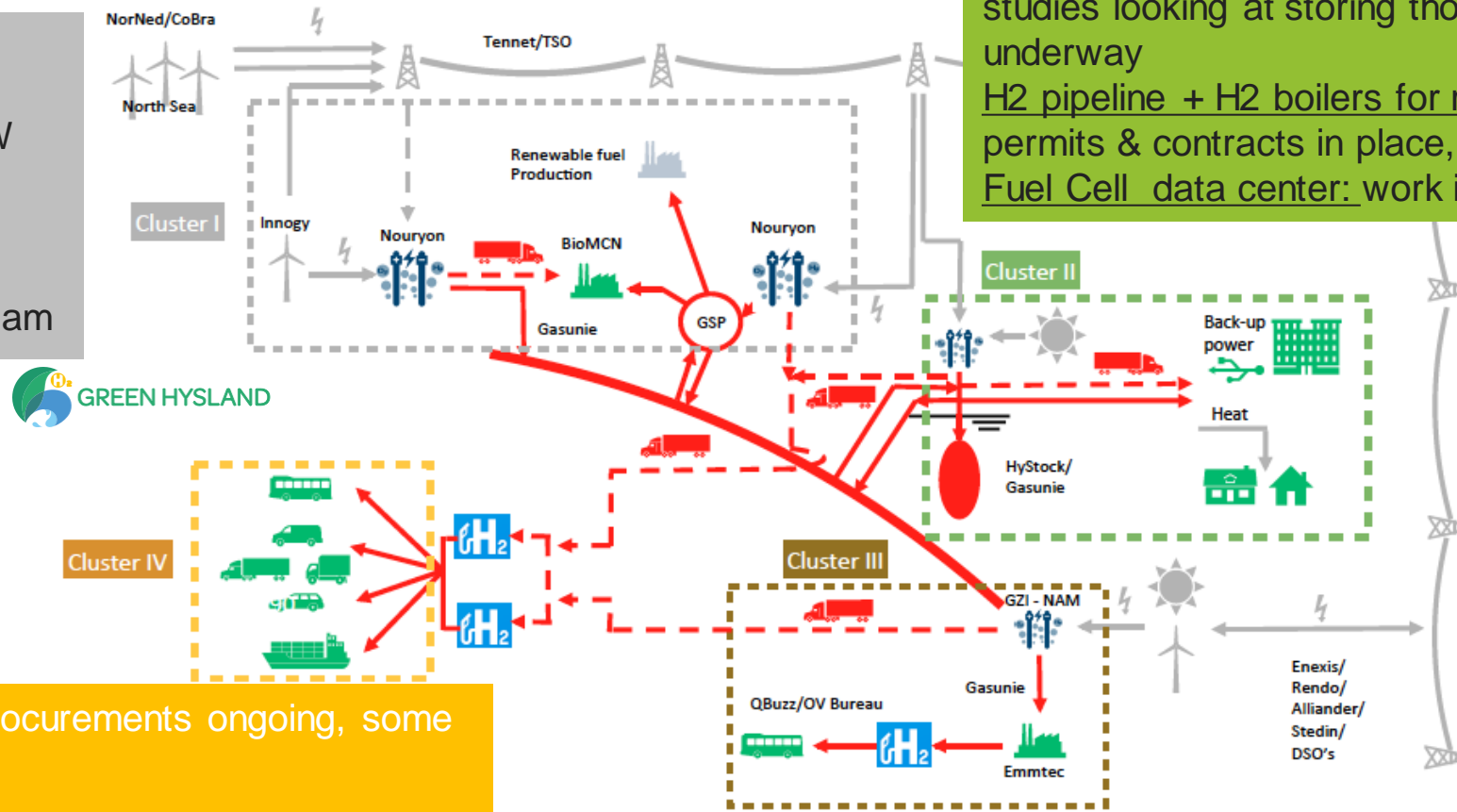
2021-ongoing
<https://greenhysland.eu>

Hydrogen valleys: HEAVENN project

A Hydrogen Valley in the Northern Netherlands

By-product H₂: from existing chloralkali plant
 RES H₂ production: Up to 60 MW planned (work in progress)
 H₂ pipeline: work in progress
 Salt barge (H₂ fuel cell): operational, route Delfzijl–Rotterdam

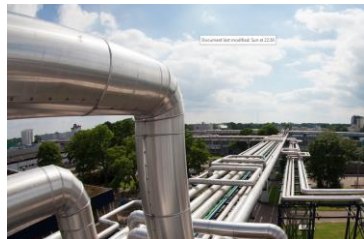
Salt cavern: tested and operating satisfactorily -> studies looking at storing thousand tones H₂ underway
 H₂ pipeline + H₂ boilers for residential heating: permits & contracts in place, (under construction)
 Fuel Cell data center: work in progress



Light and heavy-duty vehicles: procurements ongoing, some already purchased
 Multiple HRS: planned

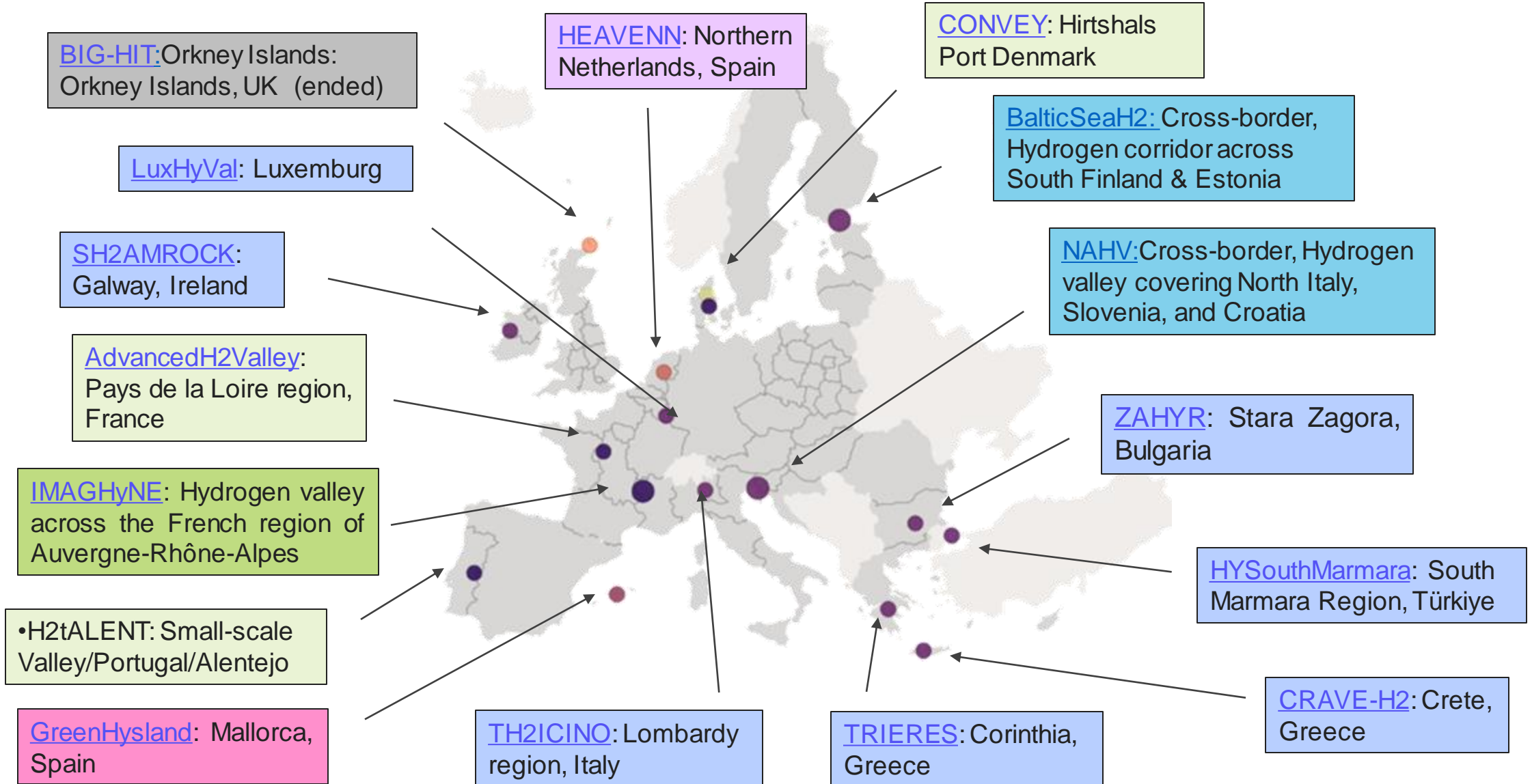
2020-ongoing
<https://heavenn.org/>

H₂ gas turbine: combustion system modified, waiting for H₂ supply
 H₂ pipeline: installed
 HRS for buses: deployed

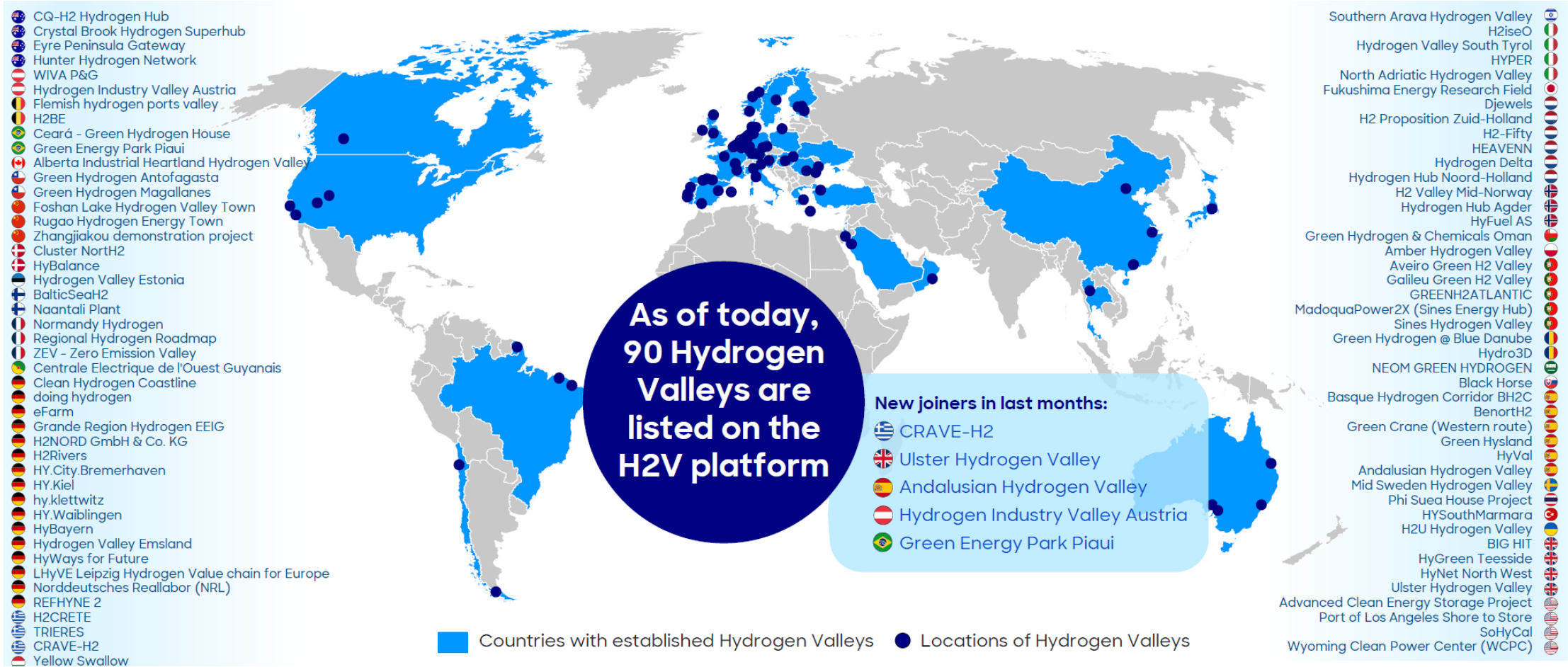


Hydrogen Valleys supported by the Clean Hydrogen Partnership

Different scales, hydrogen production mainly via electrolysis, end- uses are diverse



Hydrogen Valleys: concept developed in Europe and now global phenomenon...60 Hydrogen Valleys in Europe though about 3/4 are yet to take a final investment decision



An important number of the proposals we receive are not sufficiently mature:

- ❑ Starting point insufficient, implementation plans too generic, sufficient cost breakdown not provided
- ❑ Hydrogen Valley (as a whole) not presented coherently (especially parts supported by other programmes)

Ongoing projects:

- ❑ Permitting process can take long time
- ❑ FID delayed due to different factors (e.g changes in market conditions affect business cases, securing co-funding, commitment of H2 off-takers, volatile supply chain...)
- ❑ Commissioning phase longer than expected, learning by doing...though this is the purpose of R&I support...

At Programme Level

Continuity of type of support and instrument

Some degree of flexibility is needed

Coordination EU/National/Regional levels

Slower progress than expected, specially in earlier projects... very valuable lessons learnt

Bring (committed) stakeholders on-board & streamlined governance for the project delivery, from early stages, is key

Europe has strong players across the H2 supply chain ... increased presence of overseas suppliers

Hydrogen Valleys Facility...

PDA I

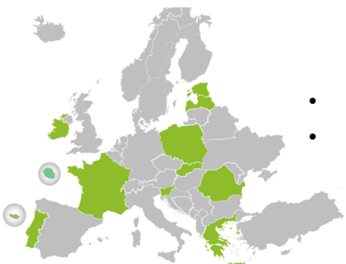
2020 – 2021



- 11 Projects supported;
- Observers' Network;

PDA II

2023 – 2024



- 15 Projects supported;
- Workshops and supporting knowledge;

Lesson learnt from former calls and ongoing projects

Hydrogen Valley facility

Duration: 2024 ...

Budget: € 12.5 m

Project development assistance

Support Hydrogen Valleys at different level of maturity to reach final investment decisions

Horizontal Activities

- Gather knowledge & lessons learnt
- Maintain Mission Innovation Hydrogen Valley Platform;

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HYDROGEN OBSERVATORY](#)



VISIT THE [H2V Platform](#)



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

