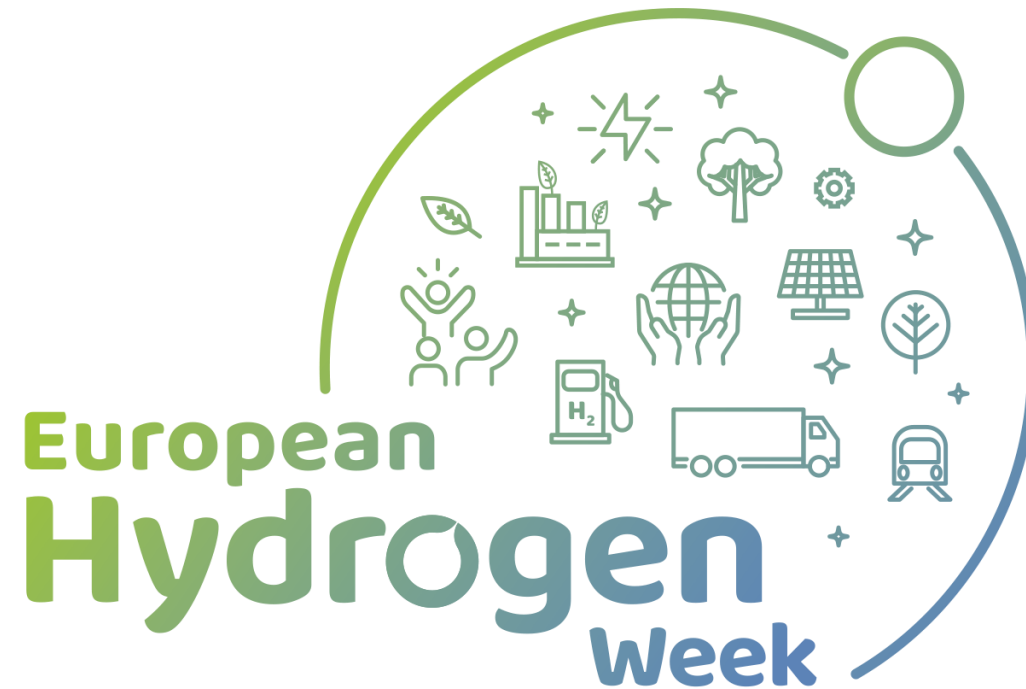


Working with Regions on Hydrogen Solutions - H2Valley and H2Island

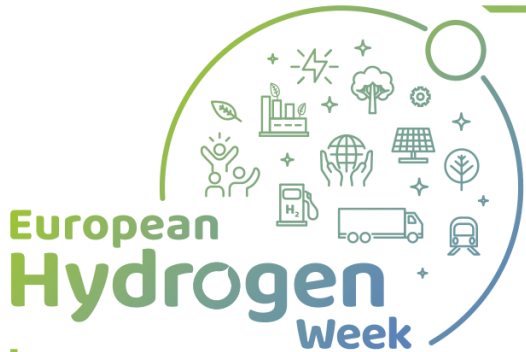


Bart Biebuyck

Executive Director,
Fuel Cells and Hydrogen
Joint Undertaking

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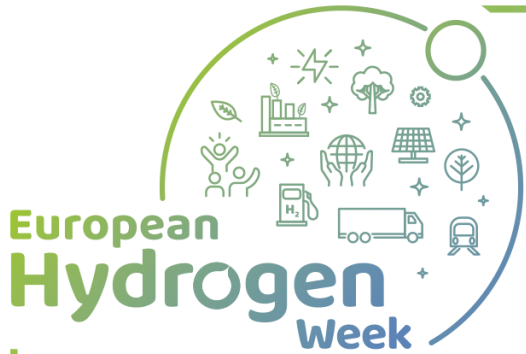
2016 FCH-JU initiative: 92 Regions/Cities from 22 countries (±25% of EU) study to:

- (1) assess FCH applications,
- (2) identifying financing/funding options
- (3) develop roadmaps,
- (4) engage their stakeholders

<p>Belgium</p> <ul style="list-style-type: none"> > Flanders > Pom West-Vlaanderen 	<p>United Kingdom</p> <ul style="list-style-type: none"> > Swindon and Wiltshire > Aberdeen > Birmingham > Cornwall > Dundee > Fife > Leeds 	<p>Norway</p> <ul style="list-style-type: none"> > London (Greater London Authority) > Newcastle > Orkney Islands > Oxfordshire > Perth and Kinross > Manchester > Tees Valley 	<p>Iceland</p> <ul style="list-style-type: none"> > Reykjavik 	<p>Netherlands</p> <ul style="list-style-type: none"> > Assen > Drenthe > Emmen > Groningen > Helmond 	<p>Spain</p> <ul style="list-style-type: none"> > Aragon > Barcelona > Cantabria > Castilla – La Mancha 	<p>Italy</p> <ul style="list-style-type: none"> > Lazio > South Tyrol > Toscana > Favignana 	<p>Austria</p> <ul style="list-style-type: none"> > Tirol 	<p>Portugal</p> <ul style="list-style-type: none"> > Torres Vedras > Médio Tejo 	<p>Sweden</p> <ul style="list-style-type: none"> > Gavleborg > Mariestad 	<p>Finland</p> <ul style="list-style-type: none"> > Kokkola 	<p>Denmark</p> <ul style="list-style-type: none"> > Guldborgsund > Lolland 	<p>Estonia</p> <ul style="list-style-type: none"> > Tallinn 	<p>Latvia</p> <ul style="list-style-type: none"> > Riga 	<p>Czech Republic</p> <ul style="list-style-type: none"> > Trutnov 	<p>Germany</p> <ul style="list-style-type: none"> > Baden-Württemberg > Bremerhaven > Hamburg > HyCologne-Hydrogen Region Rhineland > Kreis Steinfurt > North Rhine-Westphalia > Heide region > HYPOS (East Germany) > Recklinghausen > Saxony-Anhalt 	<p>Slovenia</p> <ul style="list-style-type: none"> > Velenje 	<p>Croatia</p> <ul style="list-style-type: none"> > Split > Split-Dalmatia County 	<p>Romania</p> <ul style="list-style-type: none"> > Constanța 	<p>Bulgaria</p> <ul style="list-style-type: none"> > Bulgarian Ports > Sofia 	<p>Greece</p> <ul style="list-style-type: none"> > Alimos > Agia Paraskevi > Ierapetra > Kozani > Milos > Vrilissia > Kalymnos > Heraklion > Western Macedonia > Papagoou-Halargos > Region of Crete
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Signing ceremony 23 Nov. 2016 with CoR President Markku Markkula + FCH-JU and 40 regions

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The initiative was key to boost H₂ awareness and setup 3 new actions

It led to the Hydrogen Valley Partnership, the PDA and call for Hydrogen Valley proposals

Supporting regions and cities in assessing various FCH applications



European Hydrogen Valleys Partnership launched May '19 at EVS 32 in Lyon



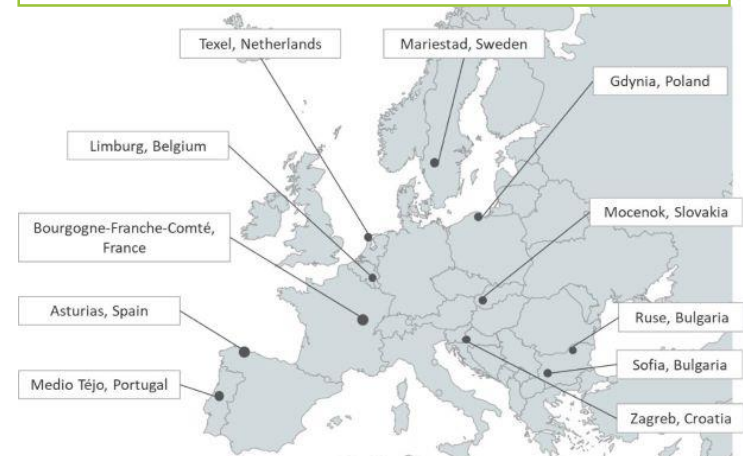
Partnership led by:
North of Netherlands (NL)
Auvergne-Rhône Alpes (FR)
Le Normandy (FR)
Aragon (ES)
±50 regions joined

<http://s3platform.jrc.ec.europa.eu/hydrogen-valleys>



"I want NextGenerationEU to create new European Hydrogen Valleys to modernise our industries, power our vehicles and bring new life to rural areas."

Project Development Assistance (PDA) launched Jan '20 (38 applications / 19 countries)

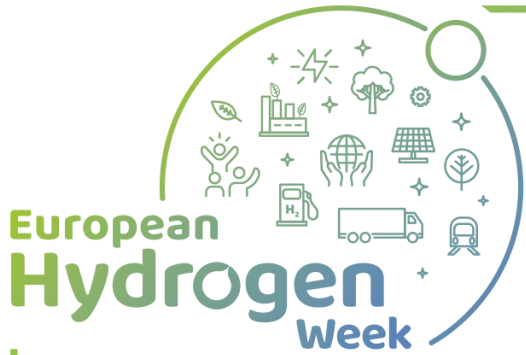


Great opportunity to bring on-board and share learnings with 'less FCH ready' but highly interested EU13 regions

<https://www.fch-regions.eu/>

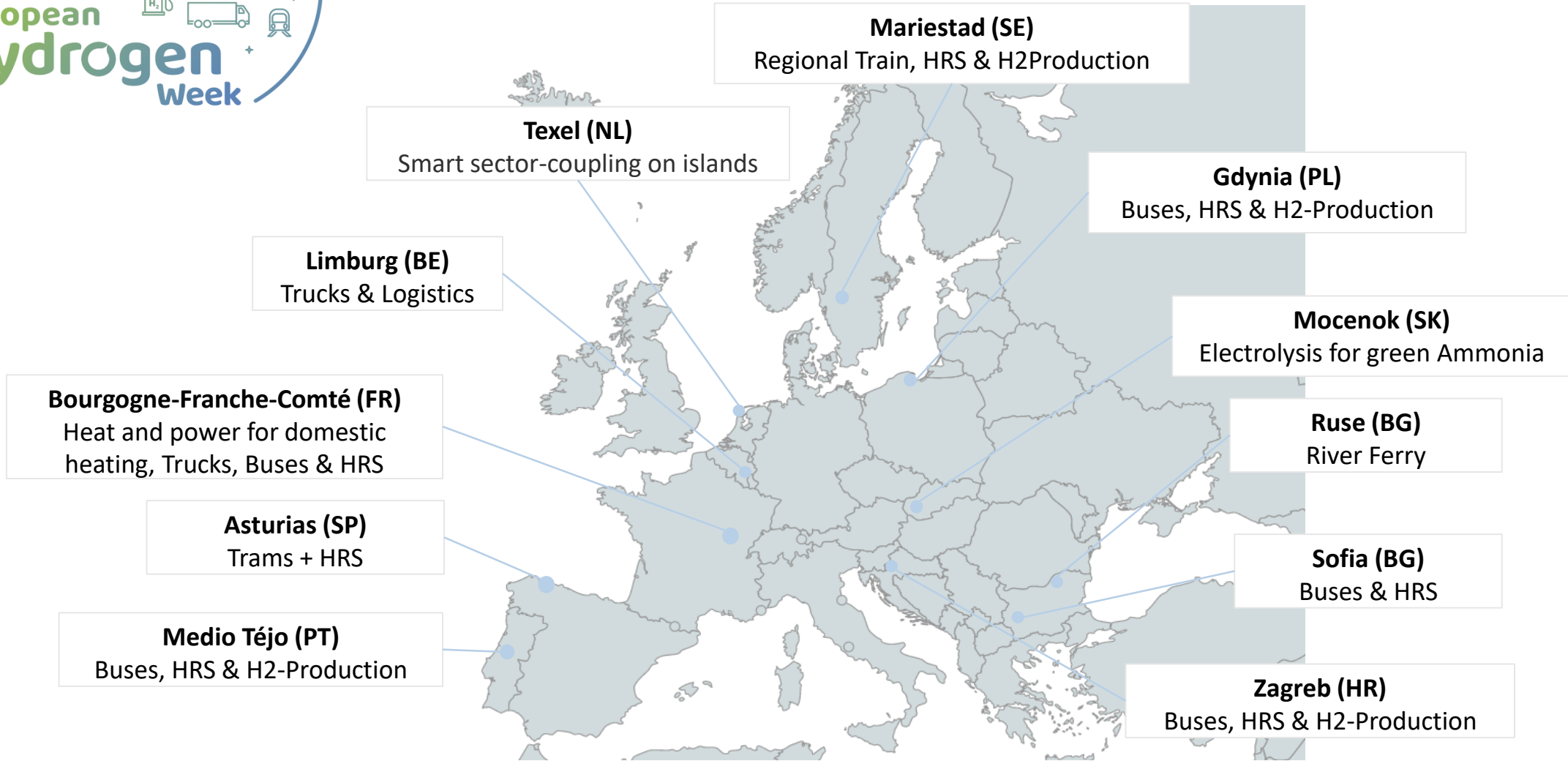
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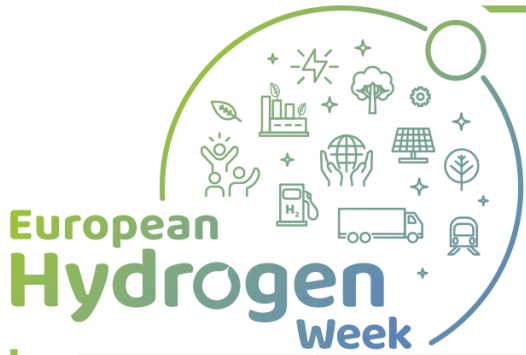




Supported projects locations and planned deployment

Well balanced across Europe and good mix of different end use applications



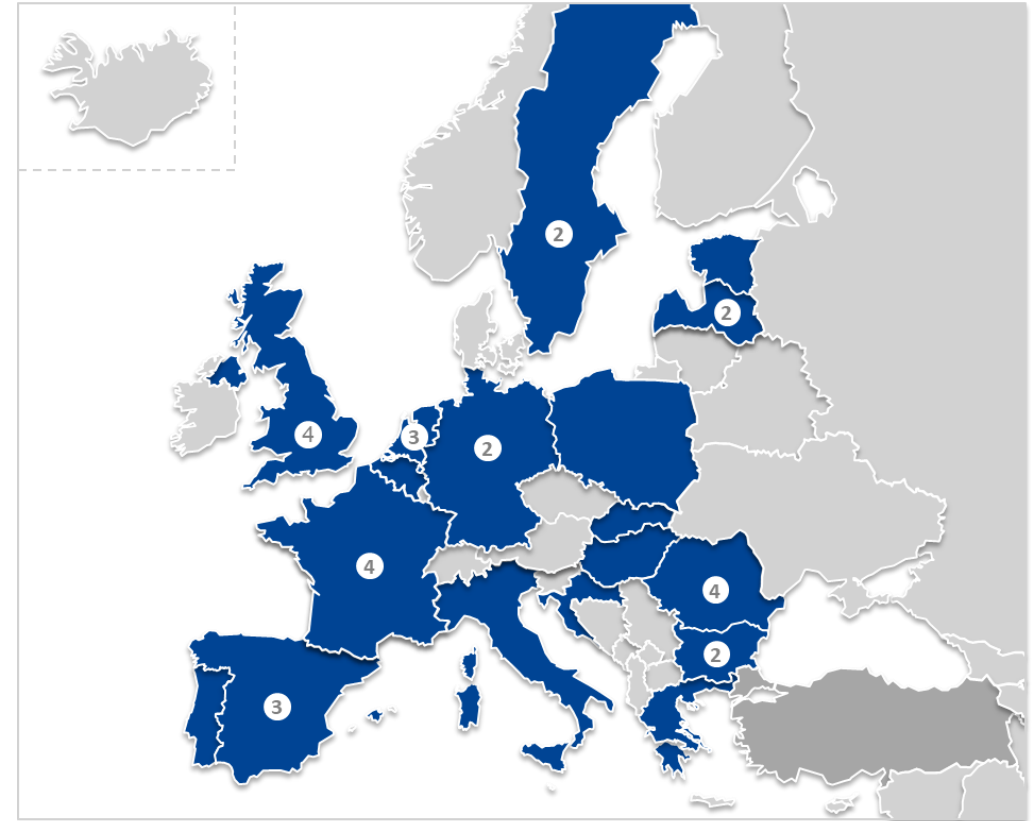


The Observer network

To share lessons learned and solutions from the supported projects

- 35 unique, eligible applications for PDA were received from regions across Europe
- Each of these regions has agreed to participate in the Observer Network

Country	Regions
Belgium	Limburg
Bulgaria	Ruse, Sofia
Croatia	Zagreb
Estonia	Tartu
France	Bourgogne-Franche-Comté, Normandie, Région Grand Est, Région Hauts de France
Germany	Dahme-Spreewald, Stadt Aschaffenburg
Greece	Western Macedonia
Hungary	Szentendre
Italy	Emilia-Romagna
Latvia	Jelgava, Riga
Netherlands	Brainport Eindhoven, Midden Noord-Brabant, Texel
Poland	Gdynia
Portugal	Medio Têjo
Romania	Cluj-Napoca, Giurgiu, Iasi, Ramnicu Valcea
Slovakia	Mocenok
Spain	Aragón, Asturias, Cantabria
Sweden	Gävleborg, Mariestad
UK	England: Coventry, Swindon Scotland: Aberdeen, Orkney Islands



PDA was very successful and another PDA call for proposals is being prepared !

Examples of hydrogen Valleys today supported by FCH

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

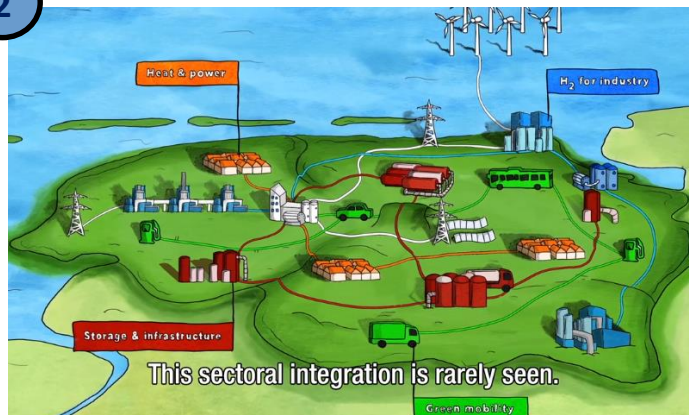
1



Orkney's Island (Scotland):

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

2

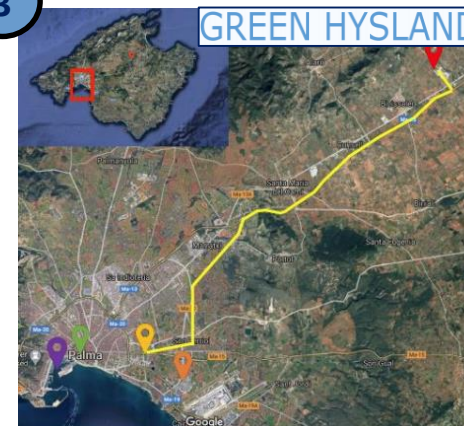


North Netherlands (Groningen):

- 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)



3

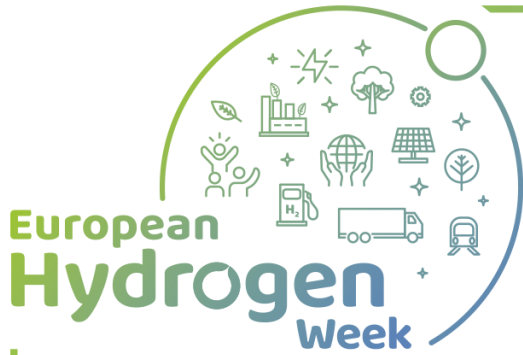


Hydrogen Island (Spain)*

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

(*) Subject of successful signing the grant by Dec 2020

Future Possible H₂ valleys: Ports, Airports, Industrial hubs, Logistical hubs, A H₂ city (or area)



(International) Hydrogen Valley Platform

Renewable and Clean Hydrogen Challenge (IC8) under MI MISSION INNOVATION



Mission Innovation



→ IC8 Launched in May 2018 **CEM9/MI-3**

→ 15 countries + EU

COPENHAGEN MALMÖ

→ Objective:

"To accelerate the development of a global hydrogen market by identifying & overcoming key technology barriers to the production, distribution, storage, and use of hydrogen at GW scale"

→ Scope:

- focused multinational research & large scale demonstration efforts
- from both public & private sectors
- industry-directed breakthroughs within the next 3 years
- renewable & clean hydrogen
- 4 activity streams: making, sharing, using hydrogen & cross-cutting issues

→ Co-lead 'countries': Australia, **EU & Germany**

The Hydrogen Valley Platform



A Global Information Sharing Platform,

- developed by the Fuel Cells and Hydrogen Joint Undertaking at the initiative of the Mission Innovation IC8 Member States
- will provide comprehensive **information** on large-scale **hydrogen flagship projects**, also known as Hydrogen Valleys

The platform can be accessed at: www.h2v.eu. Have a look at it right now!

[SIGN UP HERE FOR UPDATES](#)



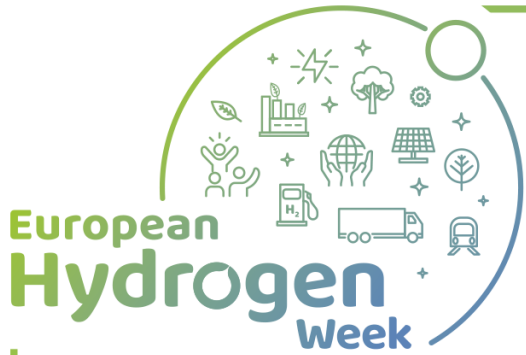
Data will be collected globally from around 40 large-scale hydrogen projects

Our Mission

- is to advance the **clean energy transition**
- is to promote the emergence and the implementation of **hydrogen projects**
- is to **raise awareness** among policy makers

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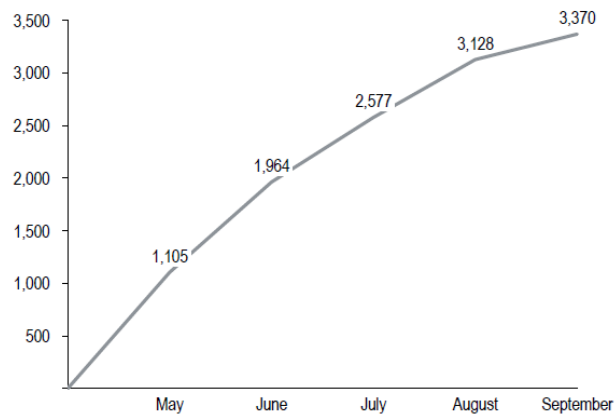
Hydrogen Valleys to accelerate the energy transition

H2 Valleys' concept picked up worldwide to build Regional H2 economies

Goal:

- ✓ Peer-to-peer exchange among H2 valleys
- ✓ Raise awareness among policy makers
- ✓ Advance clean energy transition
- ✓ EU/EC/FCH JU in the lead in terms of gathering and sharing lessons learnt

Overview of the number of platform visits



As of 6 October

Global Hydrogen Valley projects on the platform

- Netherlands**
 - > HEAVENN
 - > Hydrogen Delta
- United Kingdom**
 - > HyNet North West England
 - > BIG HIT Orkney Island
- Canada**
 - > Heartland Hub
- USA**
 - > ACES, Utah
 - > California Fuel Cell Partnership
 - > Shore-to-Store, Port of LA
- Chile**
 - > Hydrogen Valley Atacama
- Spain**
 - > Green Hysland Mallorca
- Denmark**
 - > HyBalance
- Thailand**
 - > Phi Suea House
- Italy**
 - > South Tyrolean hydrogen valley
- Austria**
 - > WIVA P&G
- Australia**
 - > Neoen Crystal Brook Energy Park
 - > Eyre Peninsula Gateway
- Europe [IPCEI]**
 - > Blue Danube
 - > Black Horse
 - > Green Octopus
 - > Green Crane
 - > Green Flamingo
- Germany**
 - > H2Rivers/ H2Rhein-Neckar
 - > HyBayern
 - > Norddeutsches Reallabor
 - > eFarm
 - > Hyways4 future
- China**
 - > Pearl River Delta (Foshan)
 - > Beijing-Zhangjiakou
 - > Rugao
- Japan**
 - > Fukushima Plan for New Energy Society
- France**
 - > Zero emission valley Auvergne-Rhône-Alpes
 - > Normandy Hydrogen Deployment Plan
 - > Hydrogen Territory Bourgogne Franche Comté
 - > CEOG, French Guiana

■ Countries with major project activity



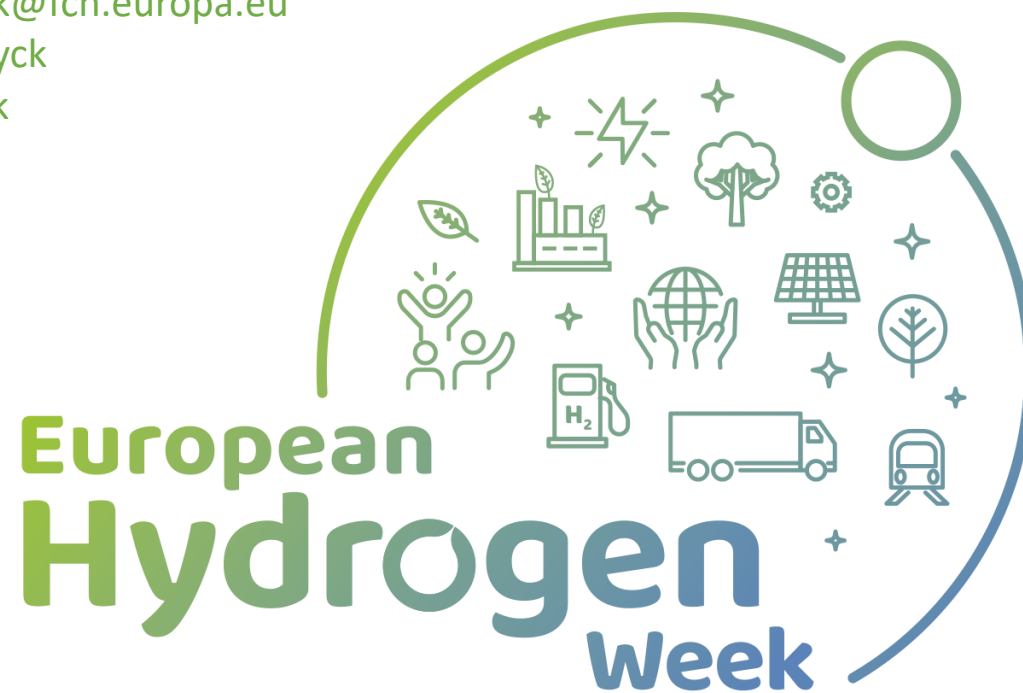
Bart Biebuyck

Executive Director

Bart.Biebuyck@fch.europa.eu

[@bart.biebuyck](https://twitter.com/bart.biebuyck)

Bart Biebuyck



For further information

www.fch.europa.eu

www.hydrogeneurope.eu

www.hydrogeneurope.eu/research

 [@fch_ju](https://twitter.com/fch_ju)

 Fch-ju@fch.europa.eu

 [FCH JU](https://www.linkedin.com/company/fch-ju)

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