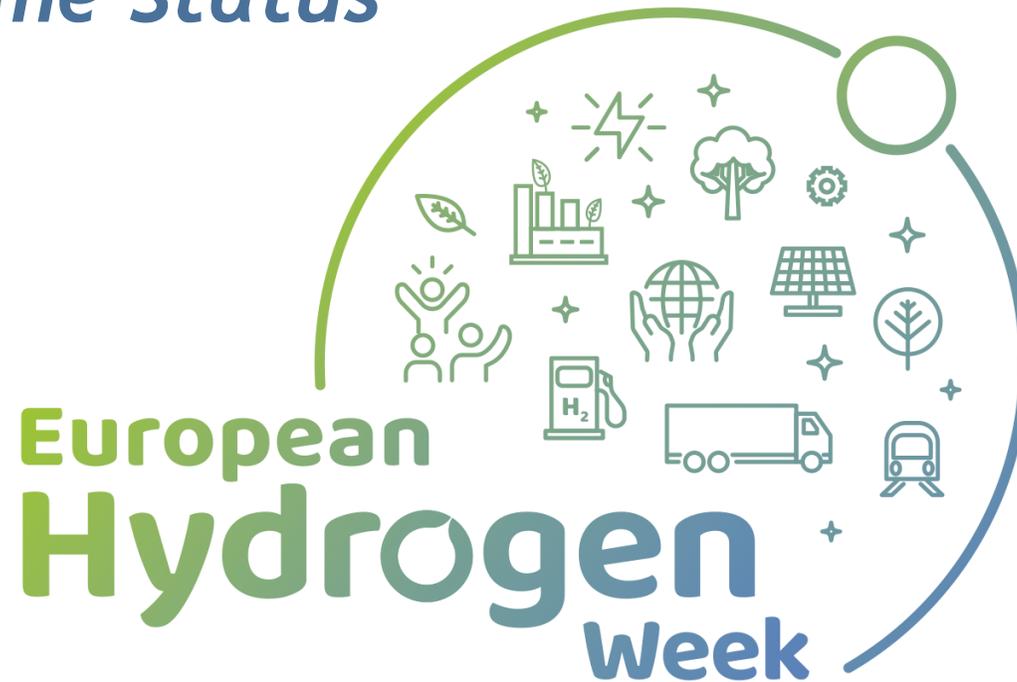


# Programme Review Days 2020

## FCH JU Programme Status

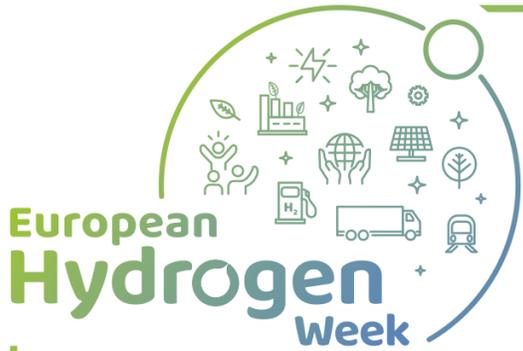


**Mirela Atanasiu**

Head of Unit Operations and Communication

#PRD2020  
#CleanHydrogen





# A hydrogen strategy for a climate-neutral Europe

## A roadmap for the EU



Frans Timmermans, the Commission executive vice-president in charge of the Green Deal

“The new hydrogen economy can be a growth engine to help overcome the economic damage caused by COVID-19”

2020 - 2024



Renewable H<sub>2</sub> technologies  
≥ 6 GW of H<sub>2</sub> electrolysers  
1 million tonnes H<sub>2</sub> in EU

2025 - 2030

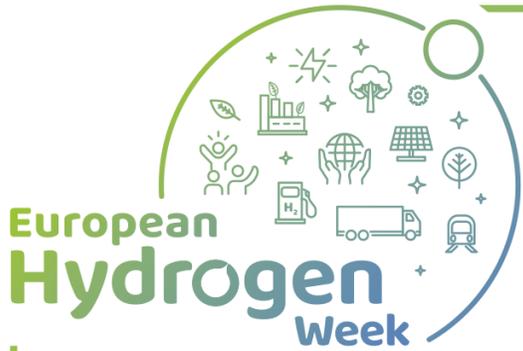


Renewable H<sub>2</sub> technologies  
≥ 40 GW of H<sub>2</sub> electrolysers  
10 million tonnes H<sub>2</sub> in EU  
+ “Hydrogen Valleys”

2030 - 2050

Renewable H<sub>2</sub> technologies

- ✓ Being deployed at large scale
- ✓ reach maturity



# FCH JU: Strong public-private partnership with a focused objective

EU Institutional Public-Private Partnership (IPPP)



**Industry grouping**  
More than 185 members



**Research grouping**  
over 83 members

To implement an *optimal research and innovation programme* to bring FCH technologies to the point of market readiness by 2020

#PRD2020  
#CleanHydrogen



# FCH 2 JU Objectives

Market readiness of a portfolio of clean, efficient and affordable solutions for our energy and transport systems



## Heat & electricity production

Increase fuel cell efficiency and lifetime



## Minimal use of critical raw materials

Reduce platinum loading



## Green hydrogen production

Increase efficiency and reduce costs of hydrogen production, mainly from water electrolysis and renewables



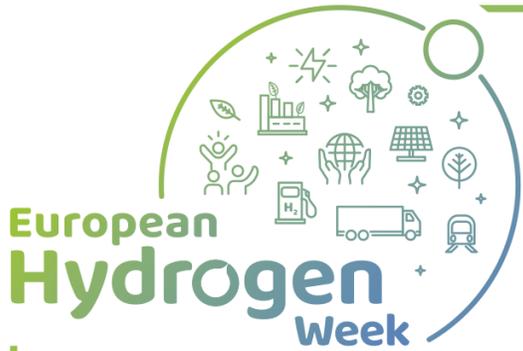
## H<sub>2</sub> storage for grid balancing

Demonstrate on a large-scale hydrogen's capacity to harness power from renewables and support its integration into the energy system



## Clean transport

Reduce fuel cell system costs for transport applications



# FCH JU programme implementation



## Energy

- Hydrogen production and distribution
- Hydrogen storage for renewable energy integration
- Fuel cells for power & combined heat & power generation



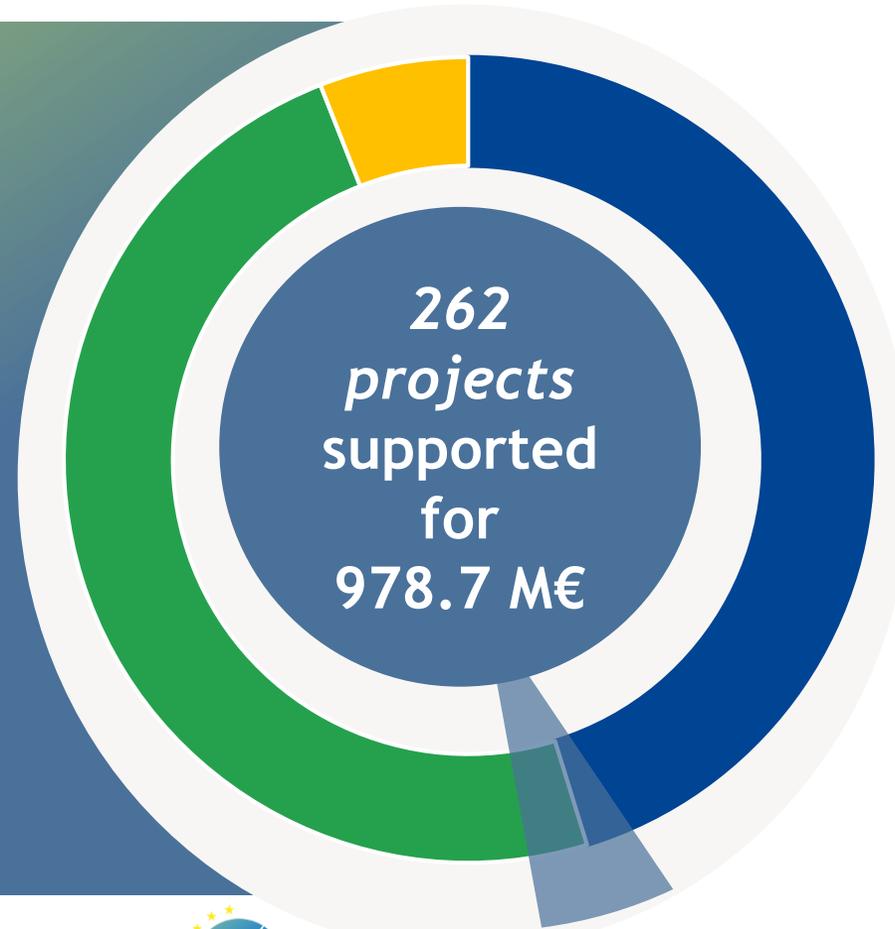
## Transport

- Road vehicles
- Non-road vehicles and machinery
- Refuelling infrastructure
- Maritime rail and aviation applications



## Cross-cutting

- E.g. standards, safety, education, consumer awareness ...



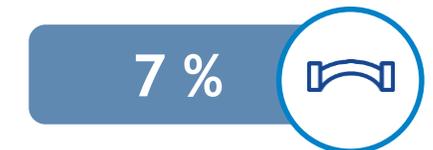
450.6 million euros  
144 projects



404 million euros  
70 projects



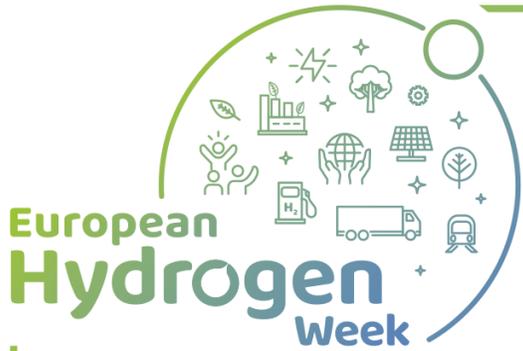
58 million euros  
43 projects



66 million euros  
5 projects

Similar leverage of other sources of funding: 1 B€ #PRD2020 #CleanHydrogen

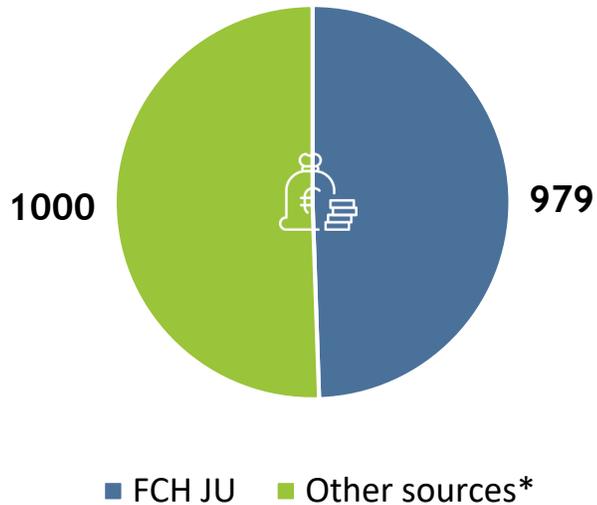




# Attracting investment from industry and research

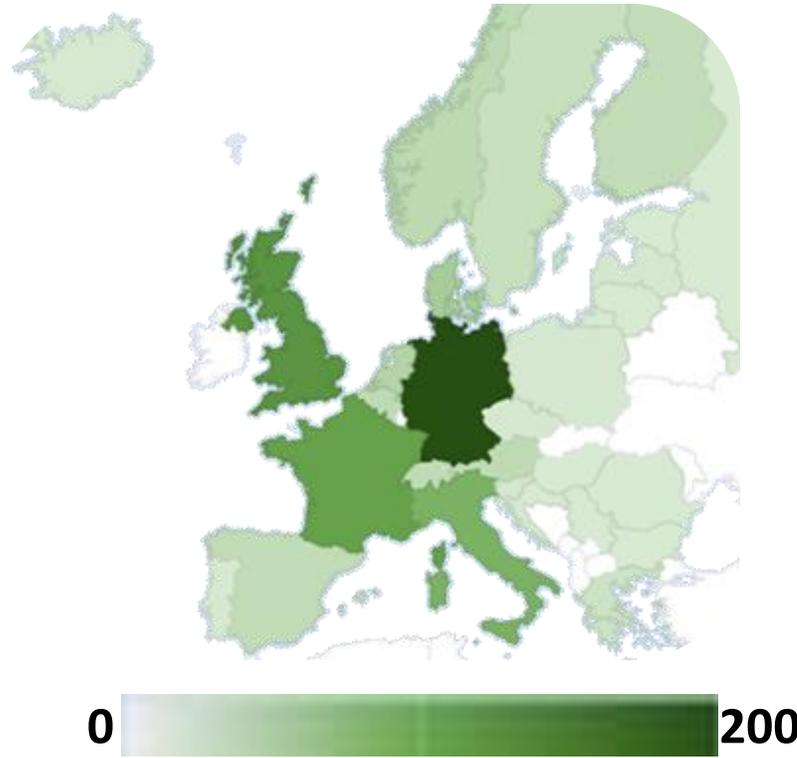
262 projects, 979 M€ public support, both research and innovation activities

FCH JU projects funding in M€

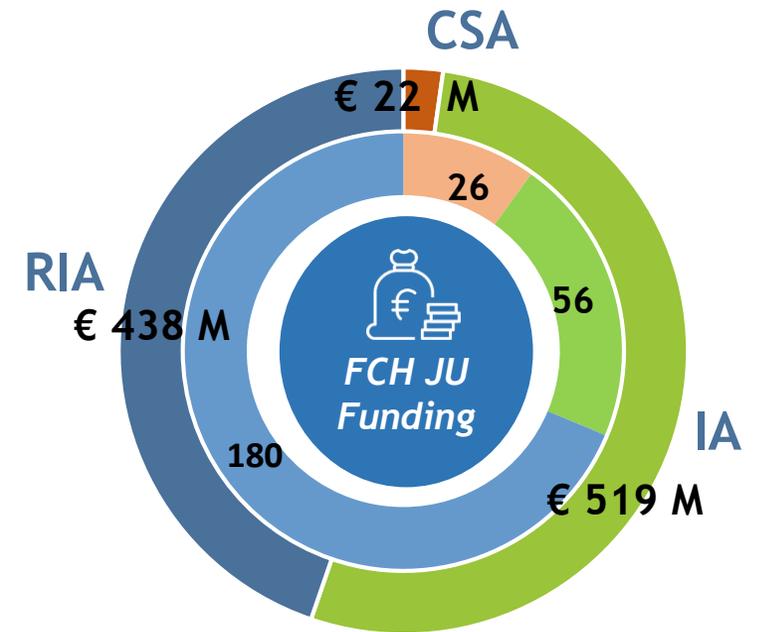


\* Other resources including private and national/regional funding

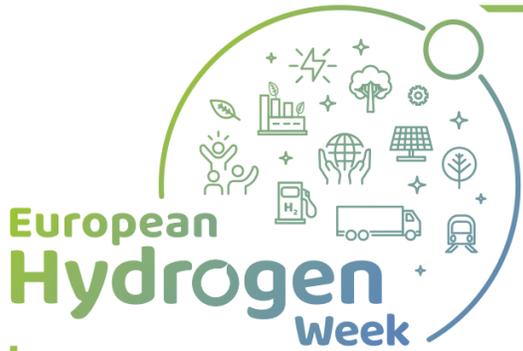
Funding allocation in M€



No. projects, M€



RIA=Research and Innovation action  
IA=Innovation actions  
CSA=Coordination and Support action



# Annual Programme Review 2020

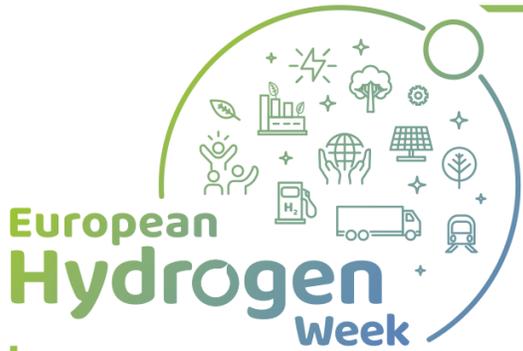
Annual exercise (as of 2011) with the support of Joint Research Centre of the European Commission (independent experts)

Review of 77 projects active in 2019 against SoA, targets and Key Performance Indicators set by the Multi-Annual Work-Plan (MAWP) and Annual Work-Plans (AWPs)

Collection of annual input from projects:

- dedicated EU-Survey Questionnaire
- contractual documents and project reports;
- parallel exercise of annual data collection from projects through TRUST (tech. monitoring) templates
- 77 project posters published on event's webpage





# A collection of continuous Success Stories & Innovations



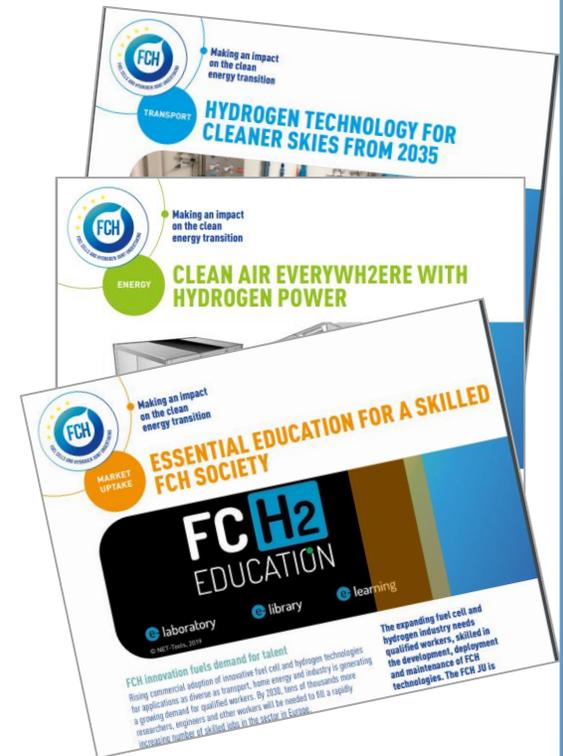
**FCH JU AWARDS 2020**

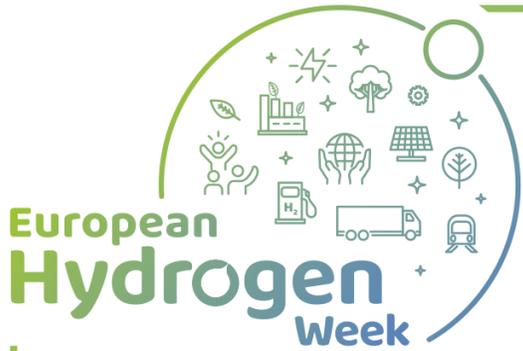
*11 NEW Success Stories*

*10 NEW Project Innovations*

*Thousands of Public Votes for:*

- ✓ Best Success Story
- ✓ Best Project Innovation
- ✓ Best Outreach





# D&E, KERs, Publications & Patents

Exploitation  
53 projects  
88 Activities

EU annual  
SURVEY  
77 Projects

Dissemination  
69 Projects  
402 Activities

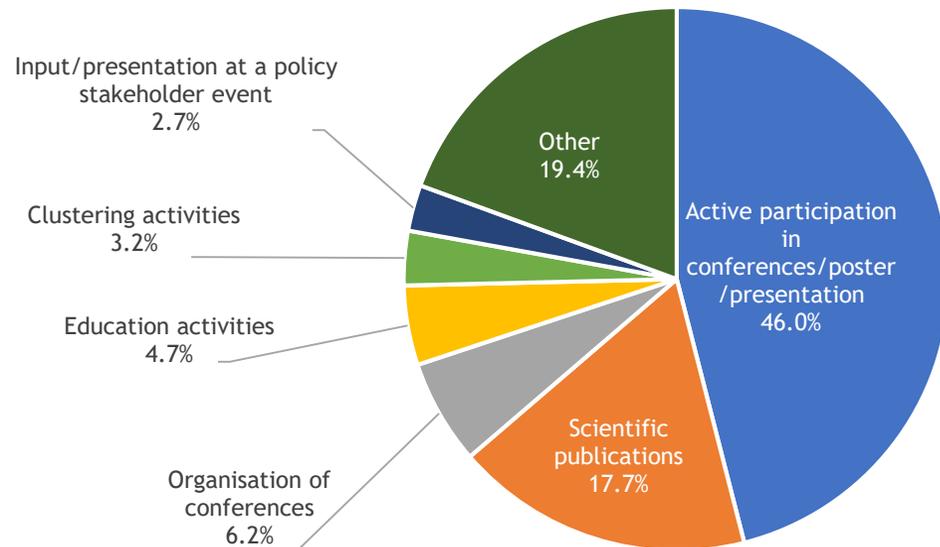
KERs  
35 projects  
61 Results

77  
Publications

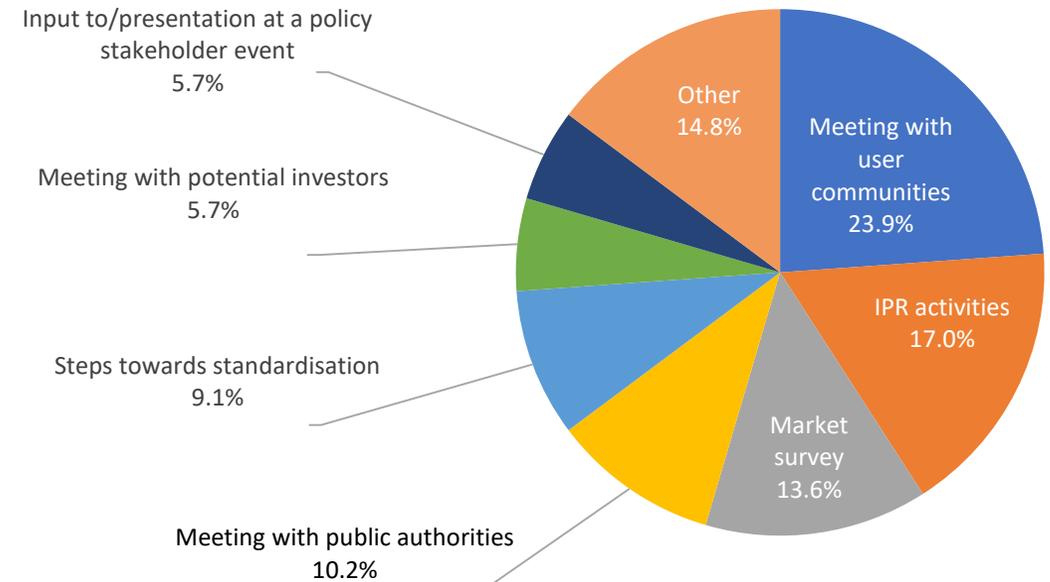
1 Patent  
(2 more under  
examination)

# Dissemination and Exploitation of Projects Results

## Dissemination Activities

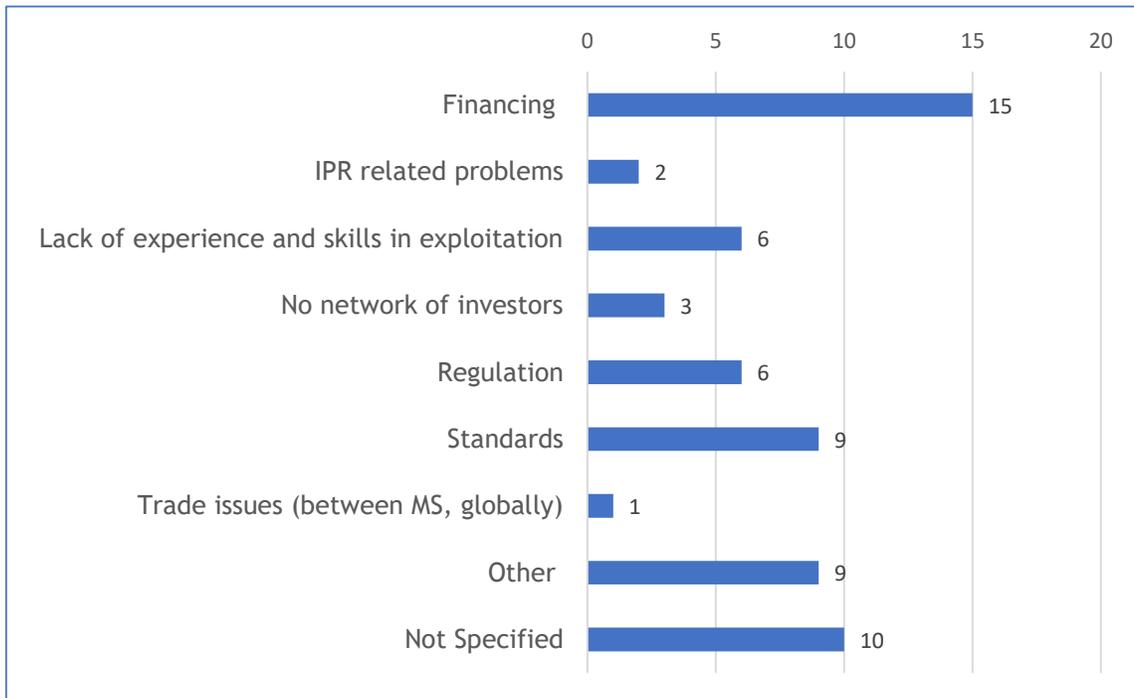


## Exploitation Activities

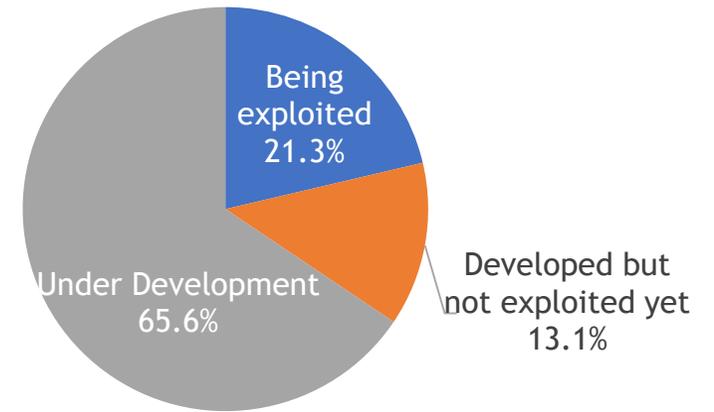


# Key Exploitable Results (KERs)

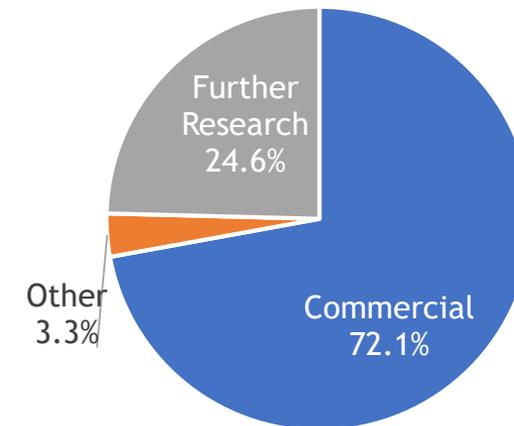
## Bottlenecks/Obstacles during exploitation

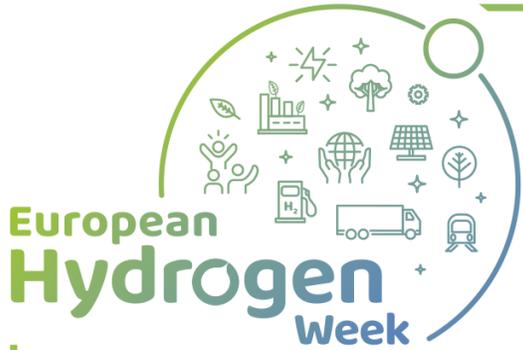


## Status of KERs



## Exploitation Path





# Funding and Financing support services

Dedicated web page and support

Various types of support services and links to information and tools



## Supporting Activities

Combination of funding

Exploitation of results

Advice on complex business models

News concerning funding and financing

Funding and Financing Navigation Tool  
Cockpit



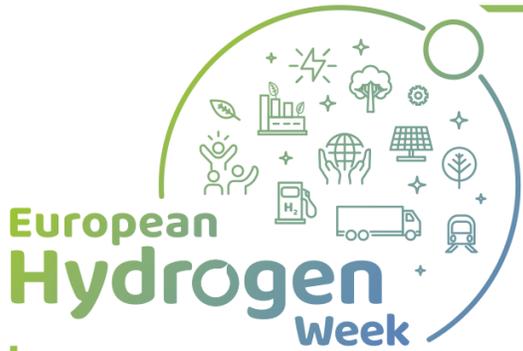
Your Filter	Your Results			
Country* Portugal  Region* Other	Project be <input type="checkbox"/> Comm <input type="checkbox"/> SA <input type="checkbox"/> Public <input type="checkbox"/> NGO <input type="checkbox"/> Acade <input type="checkbox"/> Other  Budget of <input type="checkbox"/> < E <input type="checkbox"/> EUR 50 m <input type="checkbox"/> EUR 1 000 <input type="checkbox"/> > EU Co-fund <input type="checkbox"/> Yes  <input type="button" value="Get"/>  <input type="button" value="Open se"/> <input type="button" value="Get"/>	<b>Funding programme</b> Fact Sheet  <input type="button" value="Return to result list"/>  <b>Name of funding programme</b> Cohesion fund  <b>Responsible entity/institutions</b> National/Regional Managing Authority  <b>First level of contact</b> Please see managing authorities <a href="http://ec.europa.eu/regional_de">http://ec.europa.eu/regional_de</a>  <b>Funding programme description</b> The Cohesion Fund was established for the purpose of strengthening the economic, social and territorial development of the European Union in the interests of...  <b>Regions &amp; Cities with experience</b> Região Autónoma dos Açores, Alg...	<b>Funding instrument offered</b> Grants  <b>Co-financing required</b> Yes  <b>Total financing volume of programme [in EUR m]</b> Policy... 3367 000 (total)  <b>Financing prerequisites</b> Depends on the...	<b>Target applications</b> Thereof low carbon economy applications: 891 m    <b>Beneficiaries</b> Commercial business; Academic institution; SME; Public entity; NGO; Other

**Funding and Financing Navigation Tool Online!**

[www.fch.europa.eu/page/funding-financing](http://www.fch.europa.eu/page/funding-financing)

#PRD2020  
#CleanHydrogen

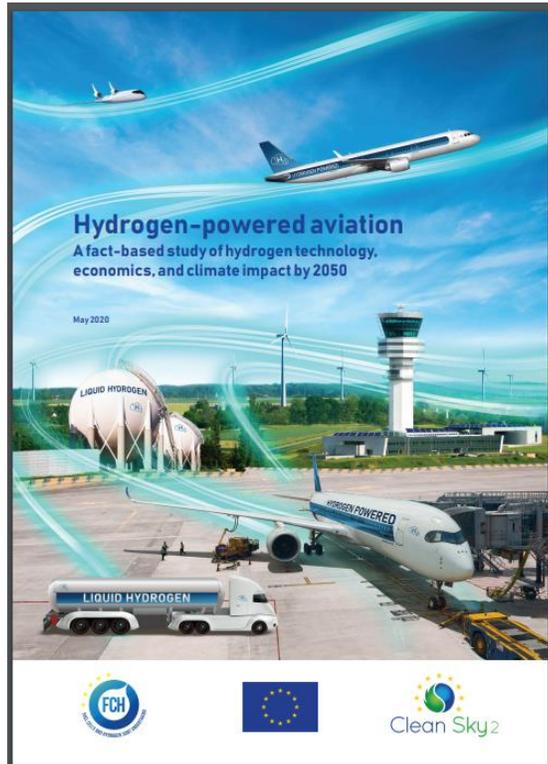




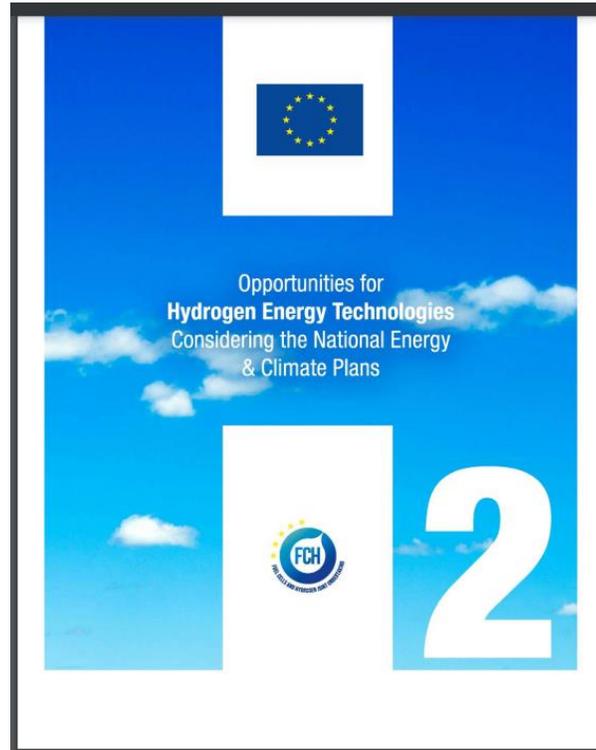
# FCH JU Fact-based Studies/Roadmaps

Providing guidance on key matters

## HYDROGEN-POWERED AVIATION



## OPPORTUNITIES FOR HYDROGEN ENERGY TECHNOLOGIES CONSIDERING THE NATIONAL ENERGY & CLIMATE PLANS



## STUDY ON FUEL CELLS HYDROGEN TRUCKS

**MONDAY, 23 NOVEMBER**

**15:30 - 15:40 Introduction**  
Bart Bleibuyck, Executive Director, Fuel Cells and Hydrogen 2 Joint Undertaking

**15:40 - 16:10 Presentation of the study results**  
Yvonne Ruf, Partner and Member of Supervisory Board, Roland Berger

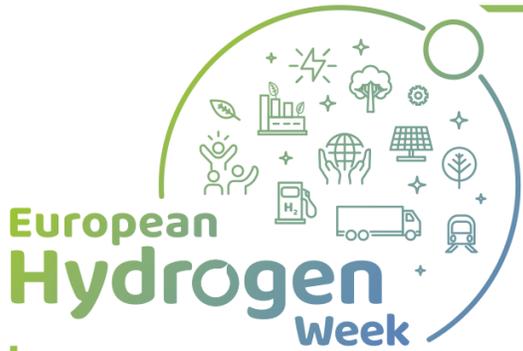
**16:10 - 16:50 Panel discussion with industry representatives**  
Moderated by Valerie Bouillon-Delporte, President of Hydrogen Europe, Chair of the FCH JU Governing Board  
**Panel members**  
Christophe Aufrère, Chief Technical Officer, Faurecia  
Gerrit Marx, President Commercial and Specialty Vehicles, CNH Industrial  
Jon André Lokke, Chief Executive Officer, Nel ASA  
Jean-Christophe Machet, Chief Executive Officer, FM Logistic

**16:50 - 17:00 Keynote speech**  
Adina-Ioana Vălean, European Commissioner for Transport

**17:00 - 17:10 Closing**  
Bart Bleibuyck, Executive Director, Fuel Cells and Hydrogen 2 Joint Undertaking

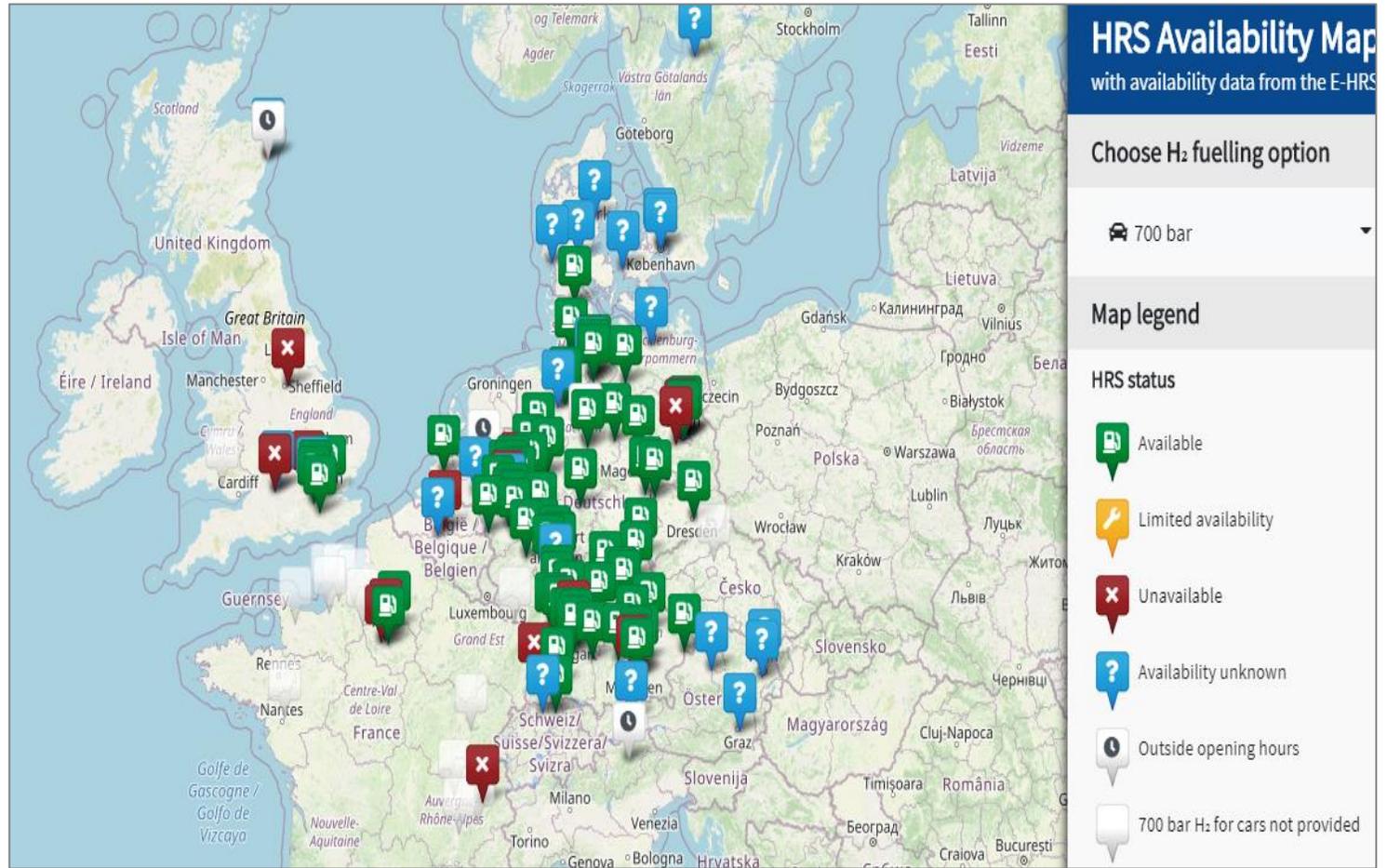
#PRD2020  
#CleanHydrogen





# European Hydrogen Refuelling Station Availability System

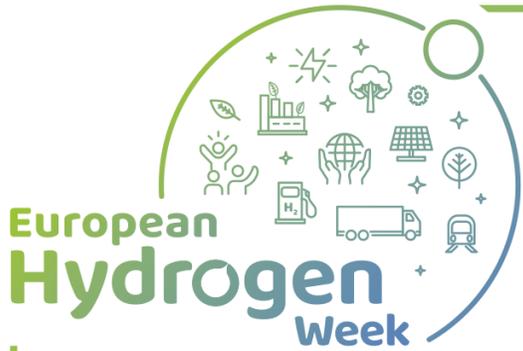
Free access to Real-time information system on the availability of publicly accessible HRS in Europe



<https://h2-map.eu/>

#PRD2020  
#CleanHydrogen





# Developing an EU wide Guarantees of Origin (GO) Scheme for Hydrogen

Green and Low-Carbon Hydrogen - more than 70,000 GOs issued already

Four production plants included in the pilot scheme which have been already audited



Air Liquide, Port Jerome (SMR +CCS)



Colruyt Group, Halle (Electrolysis +RE)



Air Products, Rotterdam (by product H2 from Chlor-alkali process)

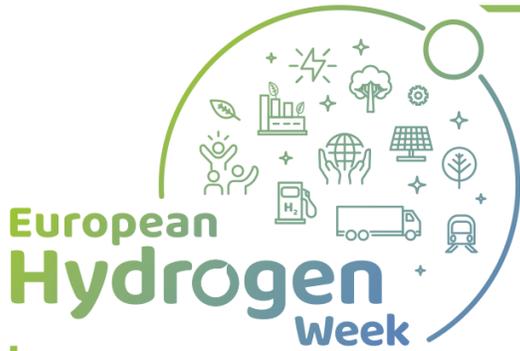


Uniper, Flakenhagen (Electrolysis + RE and methanation)



## On-going actions:

- (1) CertifHy3: Setup of a platform for piloting a GO scheme for hydrogen across Europe. <https://www.certifyhy.eu/>
- (2) IPHE taskforce on Hydrogen Production Analysis methodology



# Fuel Cells and Hydrogen Observatory

One stop shop to understand where the FCH 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 (to follow)

- Global resource

[www.fchobservatory.eu](http://www.fchobservatory.eu)

[info@fchobservatory.eu](mailto:info@fchobservatory.eu)

### Discover the FCH Observatory

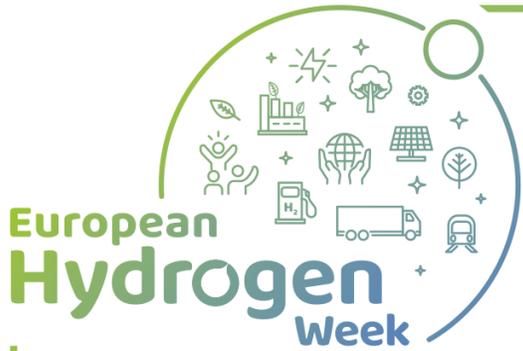
The screenshot displays a grid of six resource categories on the FCH Observatory website:

- Technology & Market:** Access technology, infrastructure and supply statistics relevant to the Fuel cell & Hydrogen sector, including shipment data, hydrogen refuelling and vehicle deployment data as well as supply and demand information related to industrial hydrogen.
- Patents:** Understand the pattern of first patent registrations and monitor the trends in the sector over time.
- Publications:** Review the trends in publications across the sector, including articles, technical and conference papers, reviews and project report.
- Financial Support:** Search for National and European funding and finance opportunities of direct and indirect interest to stakeholders in the Fuel cell & Hydrogen space.
- Policy & Incentives, Regulation, Codes and Standards:** Review regional, national and European information on policies and incentives as well as sector-specific Codes and Standards.
- Education & Training - Coming soon:** Identify Education & Training courses with relevant Fuel cell & Hydrogen content, including location and types of course available. Relevant material available from courses or from projects is referenced.



#PRD2020  
#CleanHydrogen





# FCH JU Regions initiative was key to boost the hydrogen awareness

## Supporting regions and cities in assessing various FCH applications



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



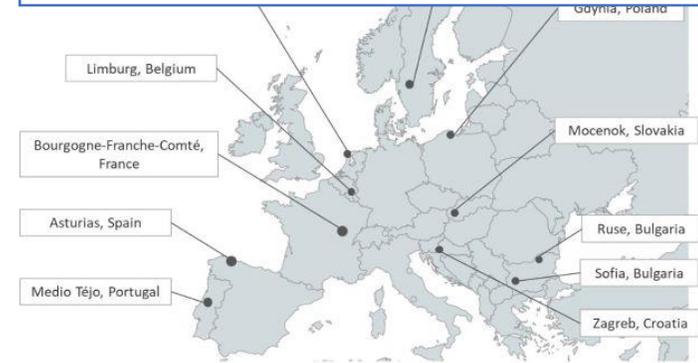
Partnership led by:  
North of Netherlands (NL)  
Auvergne-Rhône Alpes (FR)  
Le Normandy (FR)  
Aragon (ES)  
**32 regions** joined

<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)

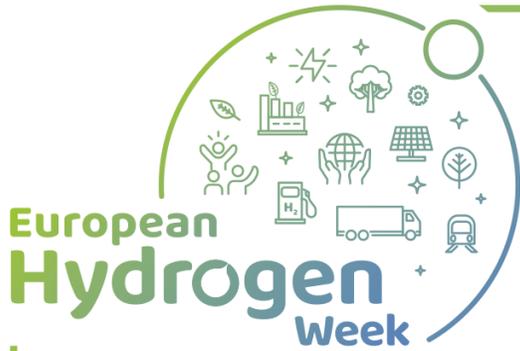


Great opportunity to bring on-board and share learnings with 'less FCH ready' but highly interested EU13 regions

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

#PRD2020  
#CleanHydrogen





# (International) Hydrogen Valley Platform



→ IC8 Launched in May 2018

→ 15 countries + EU

→ 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

January February March April May June July August September October November December

Landing page online | Data request open | Final platform goes live

**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](http://www.h2v.eu). Have a look at it right now!

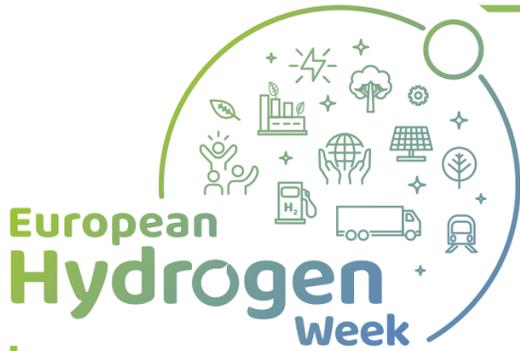
**SIGN UP HERE FOR UPDATES**

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





# FCH Regions' Hub

Supports regional and local authorities to develop and turn their concepts for regional hydrogen and fuel cell projects into detailed work plans



- Home » Initiatives
- STUDIES
- FCH REGIONS' HUB**
  - Background info FCH Regions' initiative
  - Latest News and Publications
  - On-going FCH JU PDA for Regions
  - Alternative funding opportunities for PDA
  - Initiatives to support networking among regions
  - Tools to support the development of business models
  - Reference Studies and Reports
  - Demo Projects Hub
  - H2 Islands
- RCS STRATEGY COORDINATION GROUP

## FCH REGIONS' HUB

### Supporting European Regions and Cities to Launch Investments

The FCH-Regions' Hub supports regional and local authorities and other public bodies across the European Union to develop and turn their concepts for regional hydrogen and fuel cell (FCH) projects into detailed work plans. Raising awareness and providing project development assistance to regional FCH projects will further accelerate the deployment of hydrogen in Europe, contributing to **carbon neutrality** and **zero pollution**.

### How the FCH-Regions' Hub Works

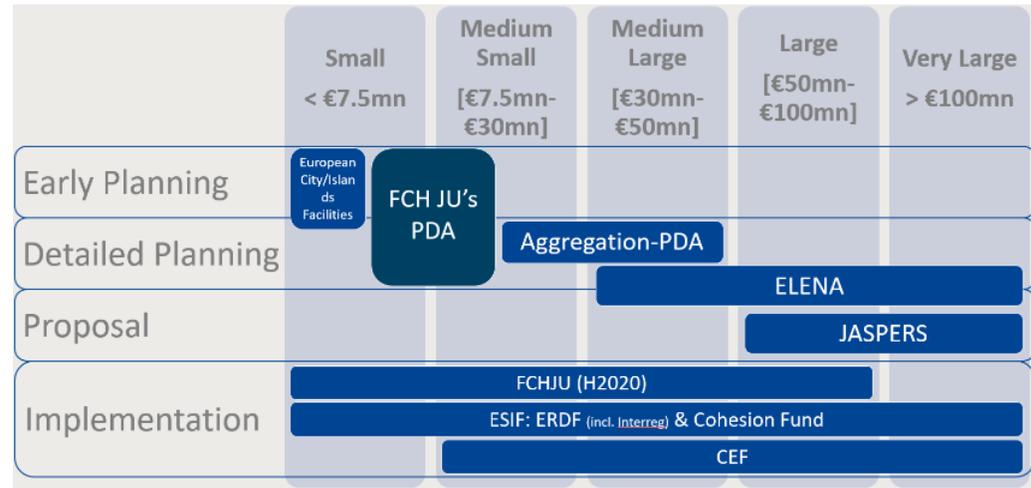
The FCH-Regions' Hub concentrates the relevant information we gather within the FCH JU projects, studies and initiatives. It further links you to specific external sources and complementary initiatives capable of assisting you in the endeavour of deploying your Regional FCH plans.

### Latest News and Publications

#### On-going FCH JU's Project Development Assistance (PDA) for Regions Initiative

### Hubs for Regions

- Opportunities for other PDA support
- [Initiatives to support networking among regions](#) and to learn from frontrunner peers
- [Tools to support business models development](#)
- [Reference Studies and Reports](#)
- Demo Projects to access specific expertise on the deployment of different FCH solutions
- H2 Islands



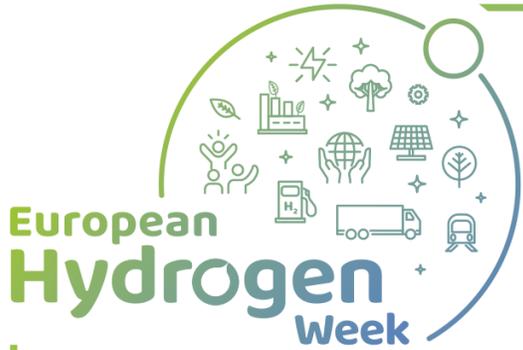
Type	Title
Initiative (S3P)	European Hydrogen Valley Partnership
Initiative	Clean Energy for EU Islands
Platform	Mission Innovation Hydrogen Valley Platform
Initiative	Covenant of Mayors. The world's largest movement for climate and energy actions
Association	CPMR - Conference of Peripheral and Maritime Regions

Type	Title	Source	Link	Last update
Technology introduction & preliminary business cases' dossiers	FCH Technology introduction & preliminary business cases' dossiers	FCH Regions Initiative (FCH JU. 2+26 PDF files)	All - Technology Introduction Dossiers - Preliminary Business Cases Per applications:	
Business cases/models	Business models	Funding and Finance (FCH JU website)	<a href="https://www.fch.europa.eu/page/advice-complex-business-models">https://www.fch.europa.eu/page/advice-complex-business-models</a>	
Business cases/models	Teaser for Coupling wind farms (or any RES) and Electrolysers	Funding and Finance (FCH JU website)	<a href="https://www.h2r.eu/https://www.fch.europa.eu/page/advice-complex-business-models#PH2">https://www.h2r.eu/https://www.fch.europa.eu/page/advice-complex-business-models#PH2</a>	
Modelling tools	Mobility business case tool	FCH Regions Initiative (FCH JU Excel sheet)	Excel file	27/03/2018
Funding tools	FCH Funding and Financing navigation tool	FCH Regions Initiative (FCH JU, Roland Berger, Excel sheet)	Excel file	08/02/2018

<https://www.fch.europa.eu/page/fch-regions-hub>

#PRD2020  
#CleanHydrogen



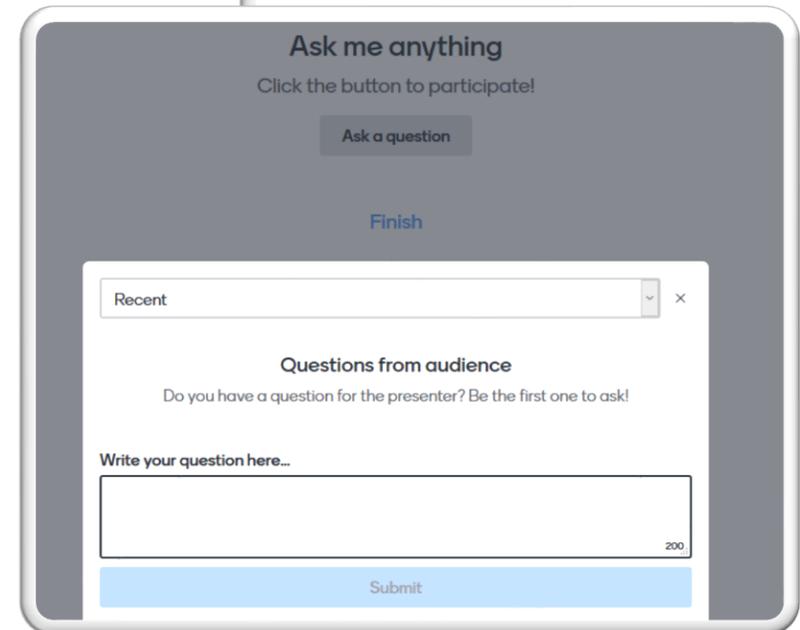
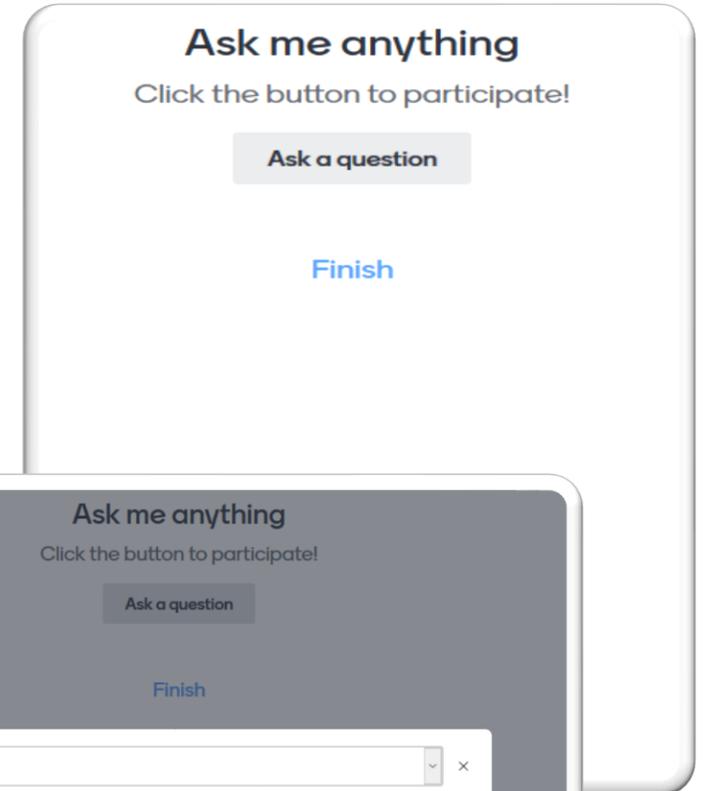


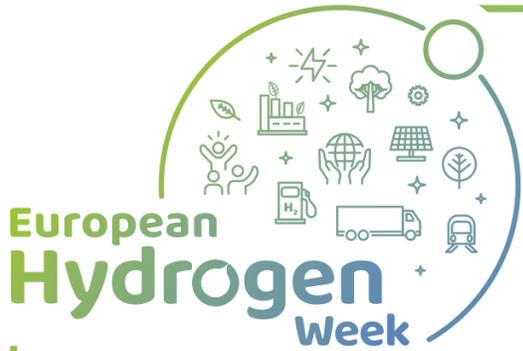
# Live Q & A

On the top right of your screen you have the possibility to pose LIVE your questions

- ✓ Select the button and then submit your question to the presenter pressing the enter
- ✓ Voters can up vote each others questions 
- ✓ **Questions** are asked **anonymously**, creating an open and safe environment.

***Please do not forget to name the project in your question***





# Programme Review Days - Sessions

Electrolysers for Industrial & Storage Application

Next Generation Electrolysers

Alternative Renewable Hydrogen Production

Hydrogen for Sectoral Integration

Education and Training

Hydrogen in the future

Buses, Light Duty Vehicles and Refuelling infrastructure

Heavy Duty Transport Applications

Fuel Cell Technology for Transport Applications

Stationary Applications: Gas to Power and Heat

Fuel Cell Technology for Stationary Applications

Hydrogen Distribution & Carriers