

# Journées Hydrogène

DANS LES  
TERRITOIRES

10<sup>ème</sup> édition

PAU

2023

## Joignons nos énergies au-delà des frontières

Du 13 au 15 juin 2023 à PAU

## Au Palais Beaumont

### Séquence d'ouverture

13 juin 2023 / 10h – 10h45

Organisées par





## Avec la présence de :



**François Bayrou**  
Maire de Pau, Président de la  
Communauté d'Agglomération Pau  
Béarn Pyrénées et Président du Pays de  
Béarn



**Gérard Trémège**  
Maire de Tarbes, Président de la  
Communauté Agglomération Tarbes-  
Lourdes-Pyrénées



**Carole Delga**  
Présidente de la Région Occitanie



**Alain Rousset**  
Président de la Région  
Nouvelle-Aquitaine  
*(intervention en vidéo)*



**Jean-Marie Bergeret-Tercq**  
Conseiller Régional  
Nouvelle-Aquitaine



**Joëlle Colosio**  
Directrice exécutive adjointe des  
Territoires de l'ADEME



**Philippe Boucly**  
Président de France Hydrogène

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### L'hydrogène prend sa place dans une nouvelle géopolitique de l'énergie : les enjeux pour la filière

13 juin 2023 / 10h45 – 12h30

Organisées par





## Avec les interventions de :

**Introduction sur ces nouveaux enjeux énergétiques internationaux et la place de l'hydrogène**, avec **Diana-Paula Gherasim**, Chercheuse, Centre Énergie & Climat de l'Ifri

### **Des stratégies différenciées mais un objectif commun**

- **Adil Gaoui**, Président de l'Association Marocaine pour l'Hydrogène et le Développement Durable (AMHYD)
- **Javier Navarro**, Directeur Général de l'Industrie de l'Énergie et des Entreprises, et représentant des régions Européennes au Comité Hydrogène de la Communauté Européenne
- **Christelle Werquin**, Déléguée Générale de France Hydrogène
- **Stephen Jackson**, Directeur général adjoint d'Hydrogen Europe
- **Dominique Mockly**, Président et Directeur général de Teréga
- **Luc Bodineau**, Coordinateur du Programme H2 de l'ADEME
- **Iñigo Ansola**, Directeur de l'EVE (Ente Vasco de la Energia)
- **Jean-Luc Fugit**, Député du Rhône, Secrétaire de la Commission du développement durable et de l'aménagement du territoire, Président du Conseil supérieur de l'énergie



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# AMHYD – H2 MOROCCO

Journées  
Hydrogène  
DANS LES  
TERRITOIRES  
10ème édition  
PAU 2023

Industrial  
& Users



Logos of industrial and user partners: ENGIE, enagas, swissport, ménara holding, STOR-H, HDF, FAAR Industry, MAGHREB Oxygene, Hidrogena, EMOB, and PEPS.

Universities,  
Schools  
and Associations



Logos of academic and research partners: Institut de Recherche sur l'Hydrogène UQTR, Université du Québec à Trois-Rivières, GEC, and Université Internationale de Rabat.

International  
Partners



Logos of international partners: Hydrogen Europe, Centro Nacional del Hidrógeno, and France Hydrogène.

Spain  
France  
Italy

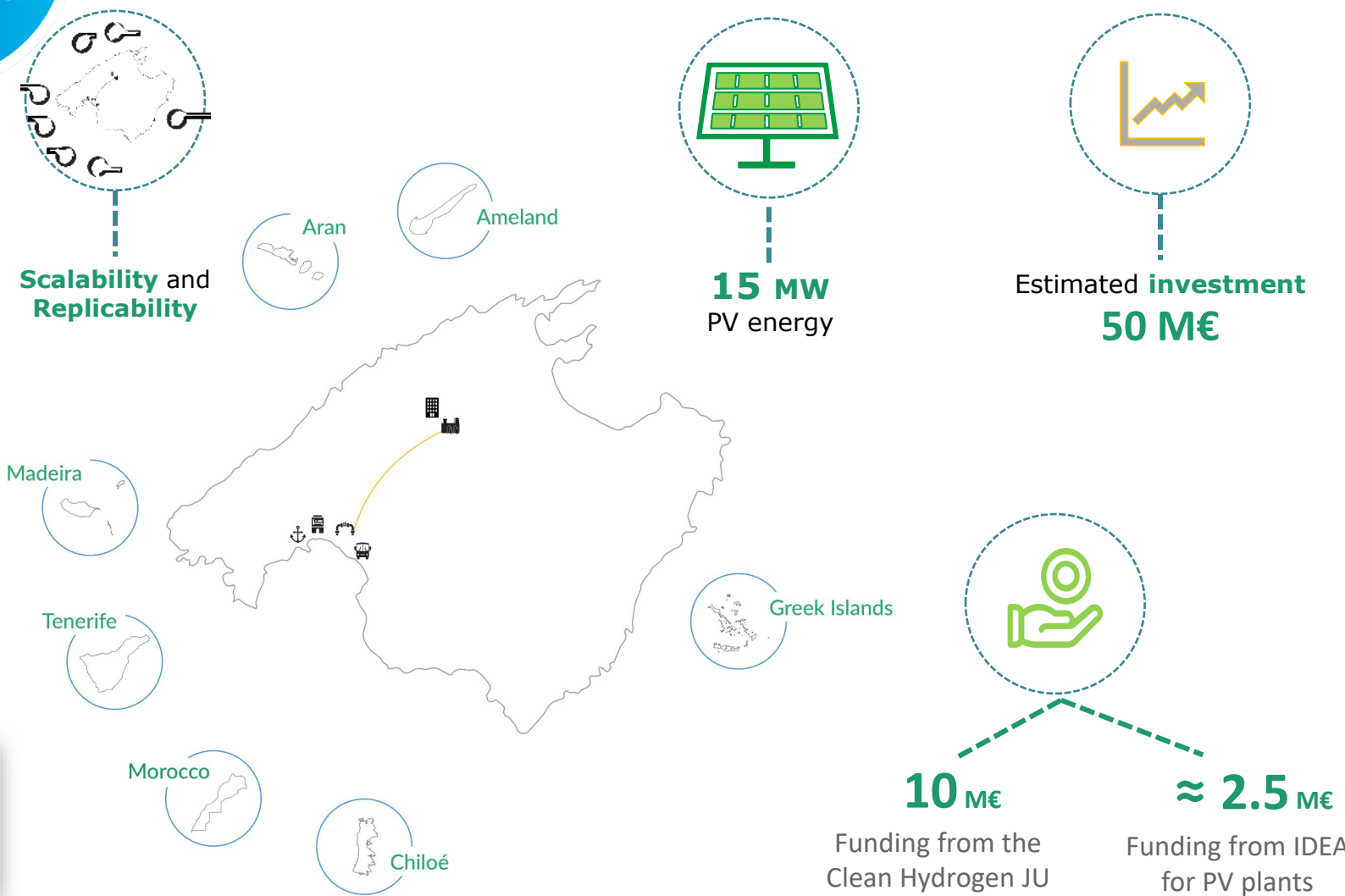
Clean Hydrogen  
Partnership



# H2 : importance des Coalitions

## Green Hysland : Déploiement d'un écosystème H2 sur l'île de Mallorca

**Journées Hydrogène**  
DANS LES TERRITOIRES  
10ème édition  
PAU 2023



**GREEN HYSLAND**  
Deployment of a Hydrogen  
Ecosystem on the Island of Mallorca

[greenhysland.eu](http://greenhysland.eu)  
[info@greenhysland.eu](mailto:info@greenhysland.eu)



# H2 : importance des Coalitions

Journées  
Hydrogène

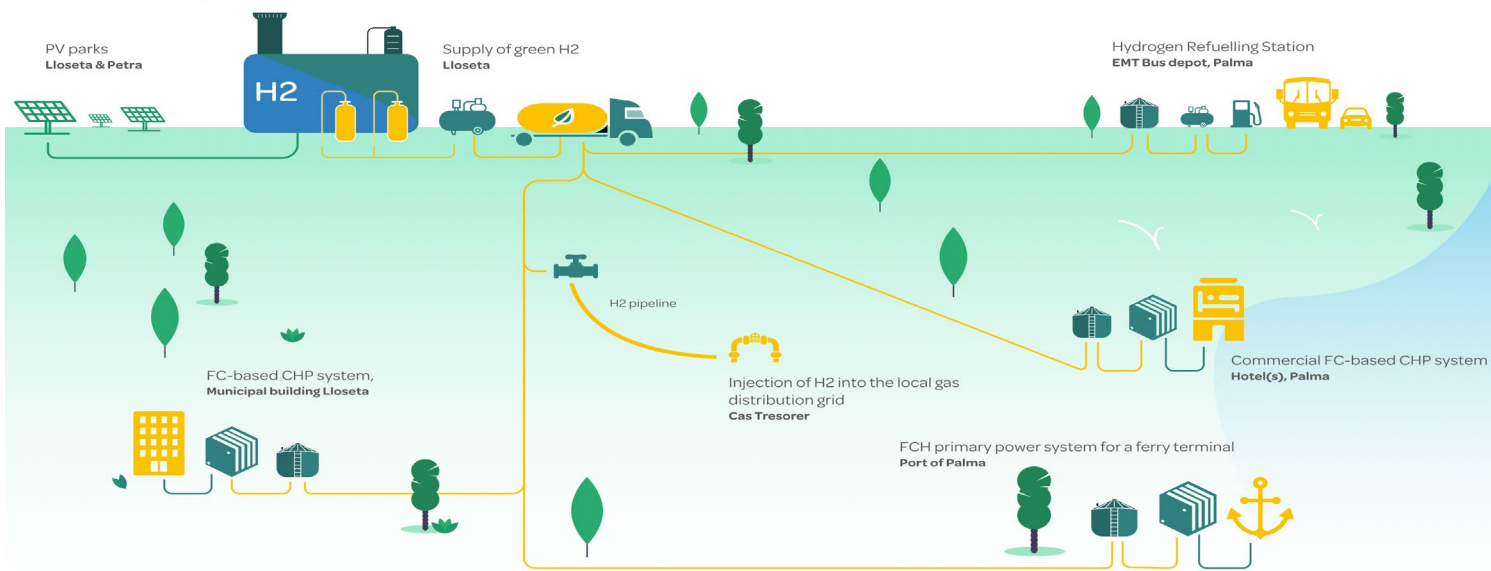
DANS LES  
TERRITOIRES

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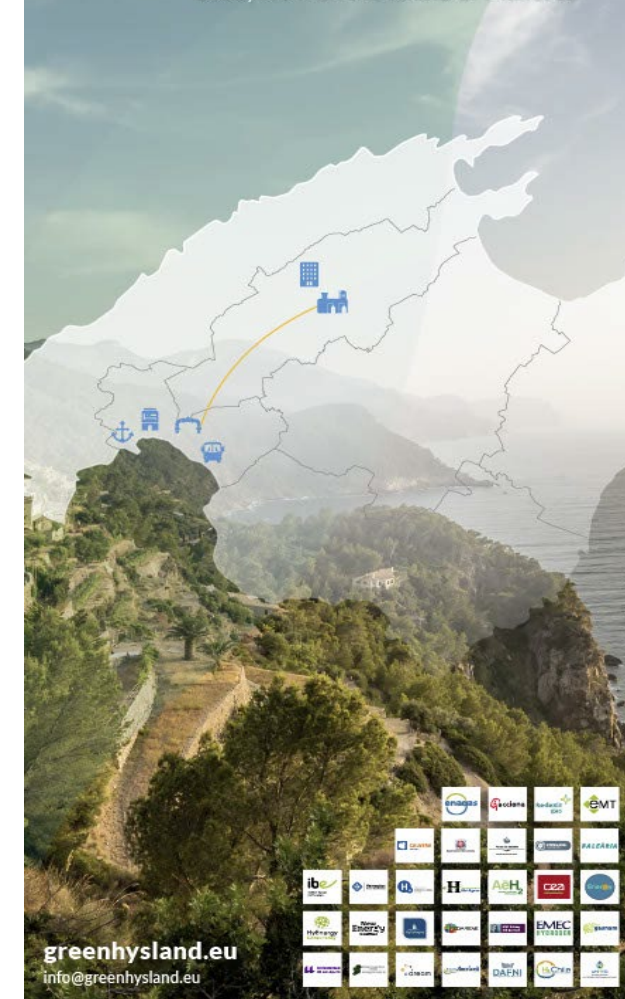
PAU 2023



26 Avril 2023 :  
AG à Mallorca



**GREEN HYSLAND**  
Deployment of a Hydrogen  
Ecosystem on the Island of Mallorca



greenhysland.eu  
info@greenhysland.eu

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grant Agreement No 101007201. This Joint Undertaking receives support from the European Union's Horizon 2020 Research and Innovation programme, Hydrogen Europe and Hydrogen Europe Research.

**Merci pour votre attention !**

**Adil GAOUI**

**[adil.gaoui@ponts.org](mailto:adil.gaoui@ponts.org)**

**00212 661 56 7979**

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**TERRITOIRES**  
10ème édition

**PAU** | **2023**

Organisées par





# Aragon's Commitment to Hydrogen Technologies

Javier Navarro,  
General Director Industry and SMEs – Government of Aragon  
Regions Representative – Board of Hydrogen Europe  
inavarro@aragon.es – dgpymes@aragon.es



# Aragon's Localization



- Border with France to the North.
- Surface: 50,000 km<sup>2</sup> (almost double that of Belgium).
- Low population density: 1.3 M inhabitants, half of them in the capital City Zaragoza
- The center Area of Aragon is the most industrial area of Spain (NE) among MAD, BCN, BIO and VAL
- Zaragoza city is a crossroad between tow main corridors Bilbao-Valencia; Madrid Barcelona.
- Zaragoza is the center of the Ebro Valley
- N-S axis equidistant between the Mediterranean and the Cantabrian Sea, connecting but coasts
- Main sectors: Automotive, Logistics, Machinery, Agribusiness, Energy, Tourism.
- One of the main global logistics clusters, according to the World Economic Forum.
- One of the main Spanish automotive and other industrial sectors clusters.
- High level innovation:
  - Logistics (MIT Logistics Center, National Center of Excellence ...)
  - Materials, Nano
  - Energy, Water and Environment
  - Engineering
  - Agroindustry (main research center in Spain)
  - Competitive labor cost, high fidelity, minimal conflict, high training



# Aragon's Localization



- In 300 km:
  - 80% of the Spanish GDP and 25 million people connected by highways (MAD, BCN, BIO, VAL, TOU (FR))
  - 6 International Ports: 3 Mediterranean ports (BCN, CAS, VAL) + 3 Atlantic ports (Pasajes, Bilbao, Santander)
  - By Rail – Connections between Cantabrian and Mediterranean Seas
  - 5 international airports within 300 km. (Zaragoza as 2<sup>nd</sup> freight airport and with the highest growth in Spain)
  - The largest logistics platform in Southern Europe
- Freight railway line with the highest traffic and growth in Spain (Zaragoza-Barcelona) -Algeciras-Zaragoza railway highway (under development).
- Energy:
  - Powerful energy infrastructures.- Electricity, Gas pipelines, etc. with strategic storage points.
  - Existence of old (depleted) gas field / underground storage and presence of saline domes

# Introduction

## WHY HYDROGEN IN ARAGON?

- First Wind Farm in Spain installed near Zaragoza (+5.000MW Today)
- 2003: Great energy change approaching
- Reasons to support new hydrogen technologies:
  1. To take advantage of the renewable energy potential
  2. To capitalize on the region's strategic situation
  3. A consolidated industry with sectors that could apply and develop new products
  4. Existence of a high level of involvement in research groups
- 2003: Workshop organized by Government of Aragon
  - Objective: To learn and to discuss about hydrogen as energy vector
  - Results:
    - **Strategy to develop Hydrogen technologies in Aragon**
    - **Foundation for the Development of New Hydrogen Technologies in Aragon**



# Hydrogen Master Plans in Aragon

## AIMS OF THE PLAN:

- **GENERALS**

- To have a tool for the identification of opportunities of the new hydrogen technologies
- To identify strategic lines for the region and to establish a time scale and actions plans

- **SPECIFICS**

- To review the state of technology and to define opportunities.
- To identify specific projects for Aragon's SMEs.
- To set across-the-board and general support actions
- To carry out a survey with longer temporary horizons 2020-2050, defining the continuity of the strategic line



(2007 – 2010)



(2011 – 2015)



(2016 – 2020)



(2021 – 2025)



# Aragon Hydrogen Foundation (FHa)

FHa is a private, not-for-profit entity, created to promote the use of H2 as an energy vector in those fields related to the renewable technologies and the decarbonization of the mobility and the energy sector, including the H2 production, transport and its use in fuel cells, in transport applications, distributed energy generation, production of synthetic or alternative fuels



**ADMINISTRACIONES PÚBLICAS / ADMINISTRATIONS**

Ayuntamiento de Huesca, Gobierno de Aragón, Ayuntamiento de Sabiñánigo

**CORPORACIONES Y ASOCIACIONES / CORPORATIONS AND ASSOCIATIONS**

Cámaras Aragón, CEEA Aragón, CEOE Aragón, Ingenieros Industriales

**ENERGÍA / ENERGY**

acciona energía, aipa, Atlas Copco, bonarea AGRIPIA, capital energy, Chemik, Class management, Compañía Eólica Aragonesa, S.A., DH2 energy, enagas, enhol, exolum, endesa, Fundación Redexis, Geollica, Iberdrola, IGNIS, IMS, RWE, SAI, SAMCA, SIEMENS Gamesa, SSG GLOBAL, Soltec, Syder, Talmweser, TCI, TERVALIS, Vestas, ZOILORIOS

**INMOBILIARIA Y OBRA CIVIL / REAL STATE & CIVIL WORK**

Brial, HORCONA, MIN, VIDAL OBRAS Y SERVICIOS

**INDUSTRIA QUÍMICA / CHEMICAL INDUSTRY**

Air Liquide, CARBUROS METÁLICOS, Ercros, Linde, Q-CINCA

**AUTOMOCIÓN / AUTOMOTIVE**

AIRTEX, TATA, Valeo

**METAL MECÁNICO / METAL-MECHANIC**

ARPA, CALVERA, EQU/MCQAL, gala cur, Instalaza, Janga, lapesa

**INVESTIGACIÓN, ENSEÑANZA E INNOVACIÓN / RESEARCH, TRAINING AND INNOVATION**

circe, CSIC, ITAINNOVA, SANVALERO, Universidad Zaragoza, Escuela Universitaria Politécnica - La Alfranca, Universidad Zaragoza, walqa

**INGENIERÍA Y CONSULTORÍA / ENGINEERING AND CONSULTANCY**

IDOM, invecsa, maetel, satel, tafyesa, VeGlobal

**SEGURIDAD Y HOMOLOGACIÓN / SAFETY AND RCS**

ITEVELESA, SGS, GMR

**OCIO Y TURISMO / TOURISME AND LEISURE**

aramon

**AGENCIAS PÚBLICAS / PUBLIC AGENCIES**

IAF INSTITUTO ARAGONES DE FOMENTO

**MIEMBROS ASOCIADOS / ASSOCIATED MEMBERS**

CHEMPARC, H2 Chile, WATER-2-SW

**TRANSPORTE / TRANSPORT**

CAF, CALTRANS, LedTrailer, tradime, urbanos de zaragoza

**FINANZAS / INVESTMENTS**

CAJA RURAL DE ARAGON, CAJA RURAL DE TERUEL, Going

**PATRONO A TÍTULO NOMINATIVO / INDIVIDUAL MEMBER**

Carlos Javier Navarro Espada

**PATRONOS DE HONOR / HONORARY MEMBERS**

Emilio Domingo Arquillué, Jeremy Rifkin, Victor Manuel Orea Clemente

# Aragon Hydrogen Foundation

## Colaboration / Association



Government of Aragon:



REGION'S REPRESENTATIVE IN HYDROGEN EUROPE BOARD

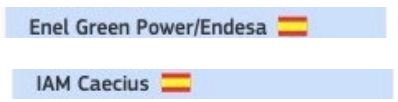
## Experience in Projects



Most successful Spanish entity in the Clean Hydrogen JU:

**27** projects, coordinated **10** of them

IPCEI: **2** projects (Hy2USE)



Hydrogen applications in Industry

PERTE ERHA : **3** projects (1 Pioneros + 2 Cadena de Valor)

# Additional Strengths

## R+D+i

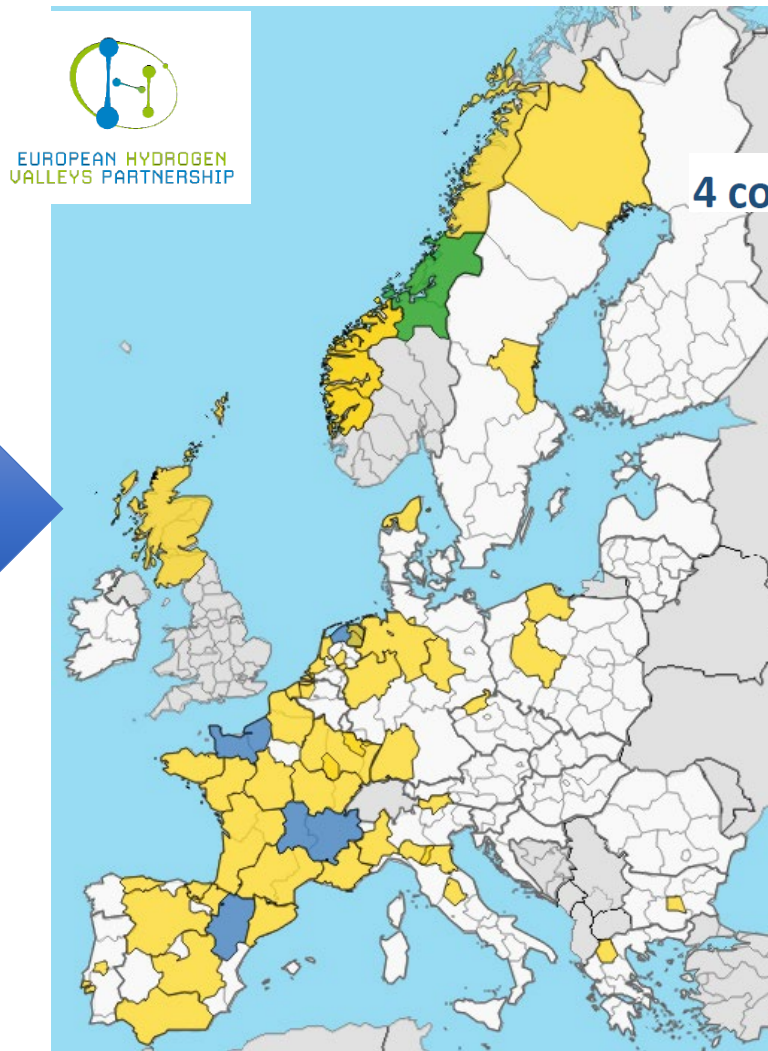
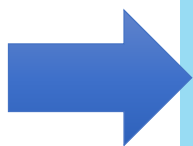


## Energy & Industry





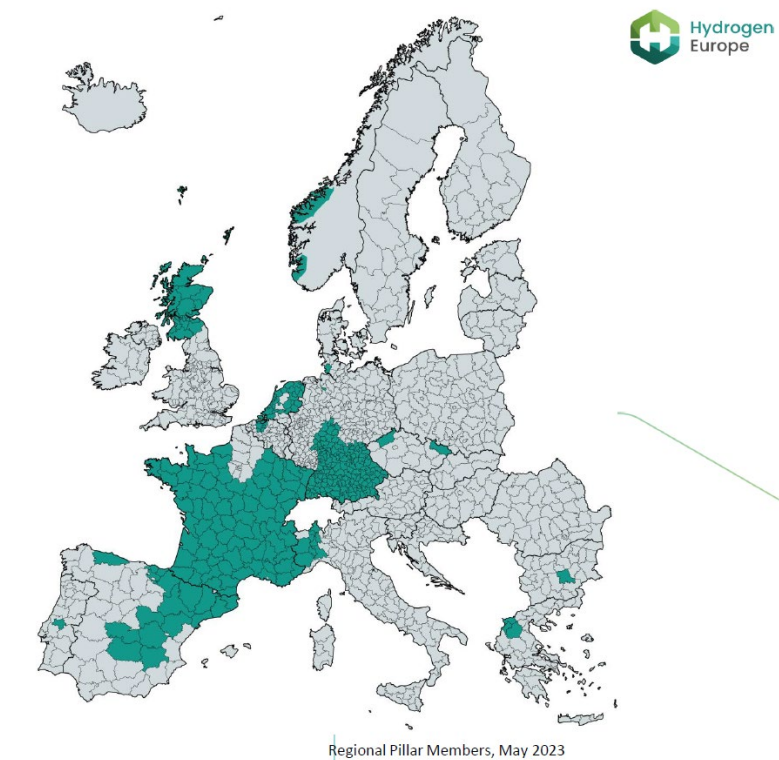
# Regional Collaboration



36 Regional Pillar members

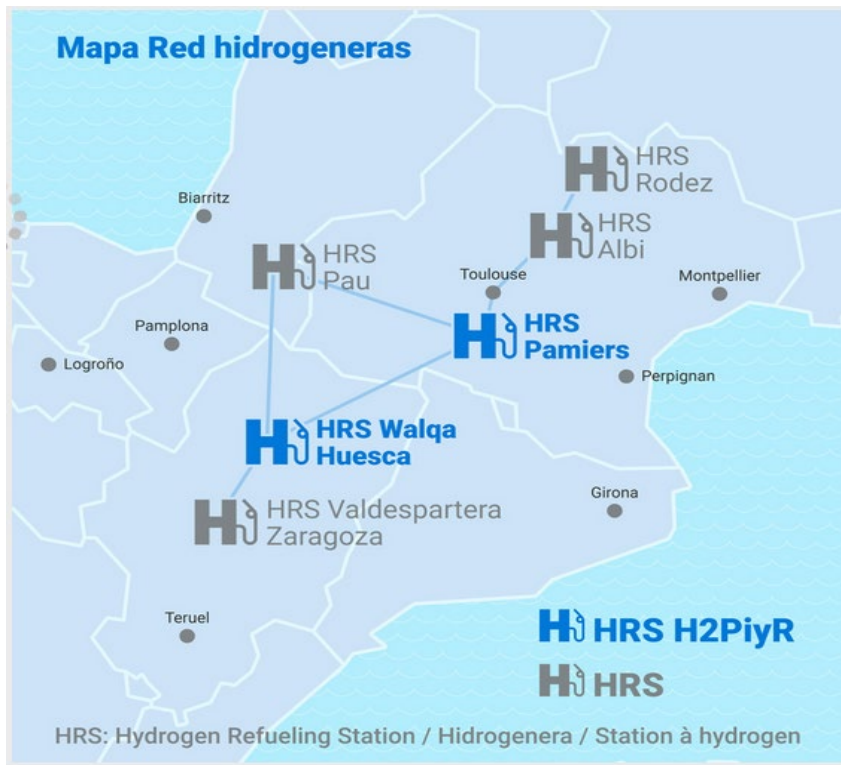
- Link with H2 Valley Partnership

4 coordinating Regions:



# Regional Collaboration

## H2PiyR



## Initiatives:



<http://h2piyr.eu/>

## Canfranc:



## CTP Working Groups





# Adding value for Valleys

2016 - 2022



Building Innovative Green Hydrogen systems in an Isolated Territory: a pilot for Europe  
The start. FHa coordinated the pioneer project which planted the seed of what is now considered a hydrogen valley.

The Hydrogen Territories Platform (logo) is devised as an interregional platform that will help participants understand how regions can successfully replicate the BIG HIT project concept of hydrogen-based integrated local energy systems, in their respective territories

[h2territory.eu](http://h2territory.eu)

2020 - 2025



Hydrogen Energy Applications for Valley Environments in Northern Netherlands

[heavenn.org](http://heavenn.org)

2021 - 2025



Deployment of a H2 Ecosystem on the Island of Mallorca

[greenhysland.eu](http://greenhysland.eu)

2021



APRIL\_The Basque Hydrogen Corridor Association is born

[www.bh2c.org](http://www.bh2c.org)

**GetHyGA**

JUNE\_ together with the Department of Industry of the Government of Aragon  
+ 80 projects identified & +2.300M € mobilized in Aragon up to 2035

2022



APRIL\_presentation and signing of a public manifesto of cooperation and endorsement

[ebroh2corridor.com](http://ebroh2corridor.com)

2023



North-Adriatic hydrogen valley

**SH<sub>2</sub>AMR<sup>CK</sup>**

Sourcing Hydrogen for Alternative Mobility, Realising Opportunities and Creating KnowHow in Ireland

[www.gh2.ie](http://www.gh2.ie)

# Ebro Hydrogen Corridor



*The Ebro Hydrogen Corridor is the most suitable area to lead the deployment of hydrogen in Southern Europe*

## COMMON OBJECTIVE

*Sustainable development of the territories*

## COMMON VISION

*Willingness to collaborate Interregional and Multisectoral to undertake the coordinated development of renewable hydrogen with actions throughout the value chain*

Supported by the **Synergies and Complementarities** of these Regional initiatives and the SHYNE Project

- ✓ Renewable Resource Availability
- ✓ Industrial Capabilities
- ✓ Technological Capabilities

## COMMON GOAL

*Lead the deployment of hydrogen in southern Europe, achieve sustainable results that produce social, economic and environmental benefits, favoring the technological and industrial positioning of Spain and the European Union in this future sector.*



Thank you very much for your  
attention

Javier Navarro,  
General Director Industry and SMEs – Government of Aragon  
Regions Representative – Board of Hydrogen Europe  
inavarro@aragon.es – dgpymes@aragon.es







**Christelle Werquin**  
Déléguée Générale de France Hydrogène



**Stephen Jackson**

Directeur général adjoint Hydrogen Europe

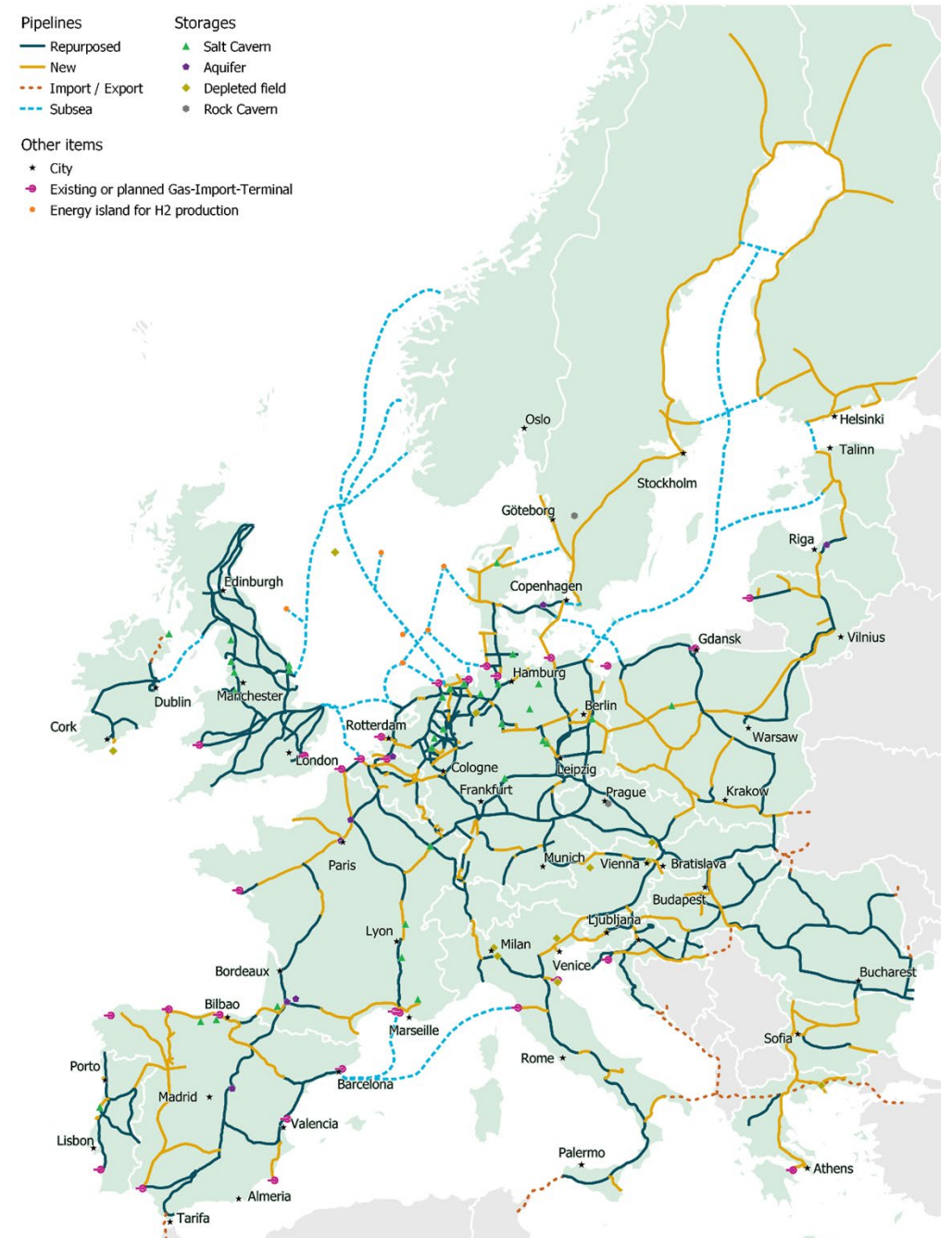




**Vers la Dorsale européenne  
de l'hydrogène en 2040**

# Vers la Dorsale européenne de l'hydrogène en 2040

- En 2030, un réseau de **28 000 km**
- En 2040, plus de **53 000 km** de canalisations de H2 dans 28 pays :
  - 60 % de canalisations gazières converties** à l'H2 et 40 % de nouvelles canalisations dédiées
- **Teréga au cœur de grands projets BarMar et HySoW**
- Coût de transport sur 1000 km moyen de **0,11 à 0,21 € par kg d'hydrogène**



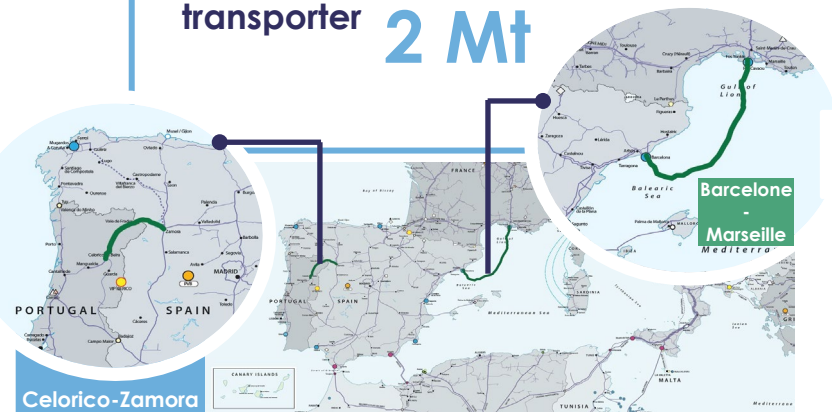
# 3 projets stratégiques pour construire le mix énergétique décarboné



## H<sub>2</sub>MED : Pilier de REPowerEU

Transporter **10%** de la consommation d'Hydrogène prévue en Europe d'ici 2030

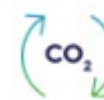
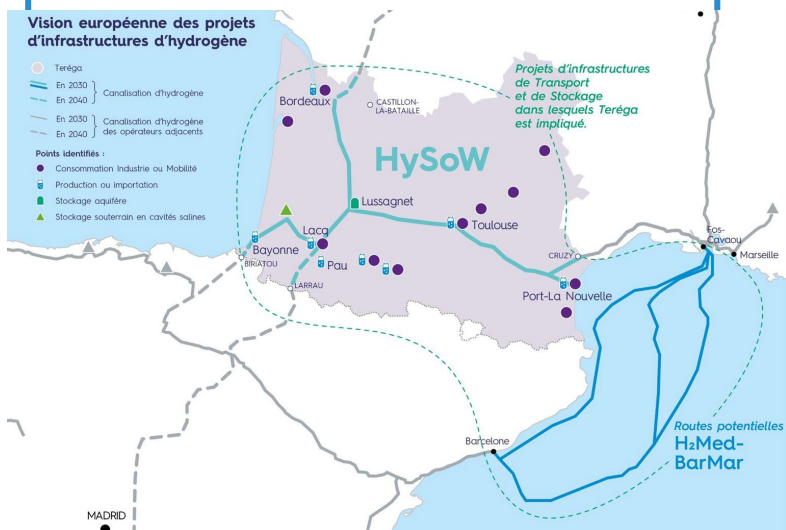
Sur les 20 Mt de consommation d'hydrogène attendues en Europe en 2030, ce corridor pourra en transporter **2 Mt**



## Développer l'hydrogène bas carbone et renouvelable

Stockage d'hydrogène d'une capacité de **500 GWh** en 2030 avec un potentiel d'1 TWh à terme.

**600 km** de canalisations



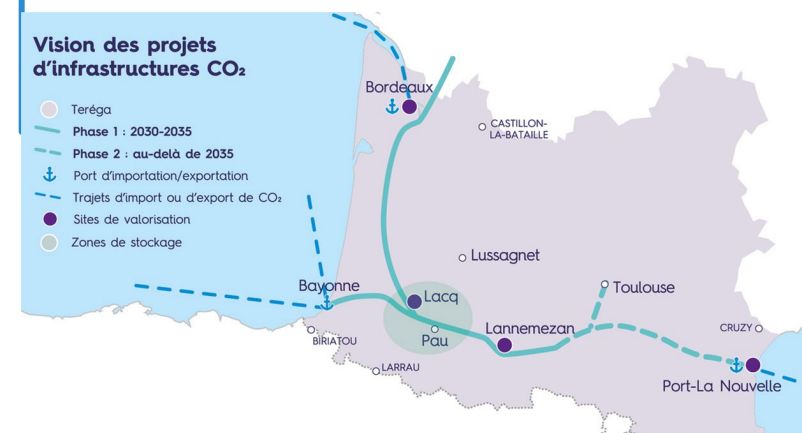
## Pycasso : Captage, Transport et Stockage ou Valorisation de CO<sub>2</sub>

**20** clients industriels ciblés

**2 Mton CO<sub>2</sub>** captées chaque année en 2030

**5 Mton CO<sub>2</sub>** captées chaque année en 2035

**600 km** de canalisations CO<sub>2</sub>







Merci pour votre participation



**Luc Bodineau**

Coordinateur du Programme Hydrogène,  
ADEME

# THE BASQUE HYDROGEN CORRIDOR

General Presentation 2023

2023 APRIL 27



European H2 Valley  
of the Year 2022





# BH2C

A leading initiative for  
hydrogen development in  
Spain



European H2 Valley of the Year 2022



1. Context
2. BH2C
3. Hydrogen Valley Partnerships

# BH2C

A leading initiative for  
hydrogen development in  
Spain



European H2 Valley of the Year 2022

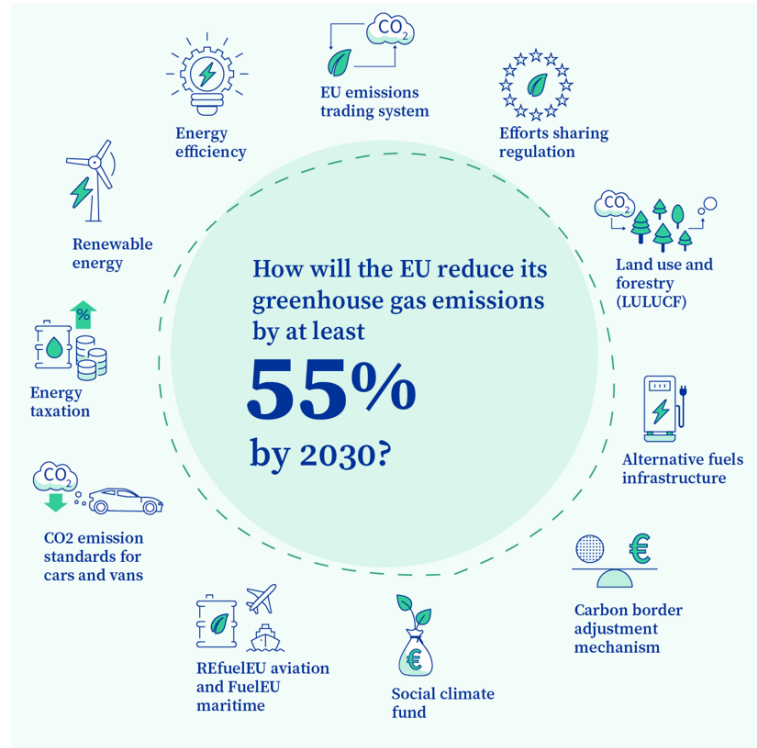


1. Context

2. BH2C

3. Hydrogen Valley Partnerships

# ENERGY TRANSITION AND ENERGY SECURITY



**Fit for 55** European Climate Legislation now makes achieving the EU climate target of reducing EU emissions by at least 55% by 2030 legally binding. EU countries are working on new legislation to achieve this target and to make the EU climate neutral by 2050.

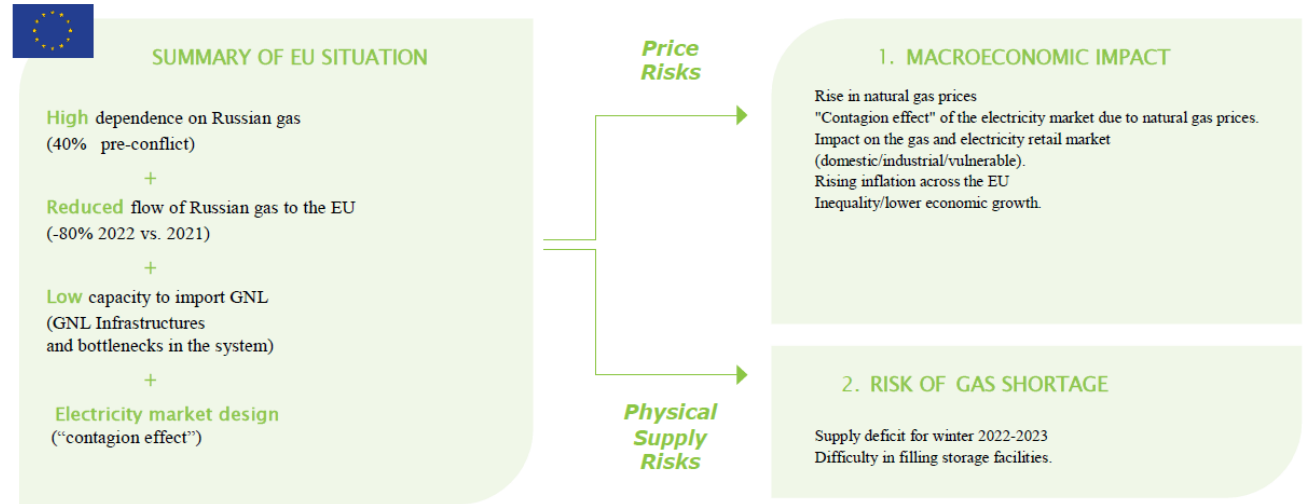


Illustration 2. Impact of the energy crisis in the EU. Source: MITECO 2022.

Key measures of the PLAN +SE: More support for the energy transition value chain.

- The implementation of the **PERTE for Renewable Energies, Renewable Hydrogen and Storage (PERTE ERHA)** will be accelerated, and its current financial endowment of more than EUR 3.5 billion will be increased by the Ministry for Ecological Transition and the Demographic Challenge, with an additional EUR 1 billion to **develop new industrial and technological capacities** that reinforce the country's strategic autonomy.
- A new **PERTE for the decarbonisation of industry** will improve competitiveness and reduce energy costs in the manufacturing sector, which is responsible for 11.3% of GDP and 20% of CO<sub>2</sub> emissions.



# EUROPEAN GREEN DEAL: THE WORLD'S FIRST CLIMATE-NEUTRAL CONTINENT



European H2 Valley of the Year 2022



Funded by the European Union

Basque Hydrogen Corridor.



# WHY THE BASQUE COUNTRY?



## VALUE CHAIN

Industrial hub with **capabilities in the engineering and manufacturing of equipment for the value chain**



Important SME network



Strong capital goods industry



Basque Science and Technology Network

## STRATEGIC LOCATION

On an international transport hub



TEN-E (strategic electricity and gas infrastructure)



TEN-T (on the Atlantic Energy and Transport routes).



## INDUSTRIAL PORT AND REFINERY

Industrial port with **LNG (regasification) expertise** and connected to an extensive pipeline network.



The **Petronor refinery** is both a producer and consumer of hydrogen.



## INDUSTRIAL FABRIC

*Industrial fabric to decarbonise*

- Refining
- Cement
- Steel
- Foundry
- Pulp and paper



Industrial Emissions 2019  
Basque Hydrogen Corridor | 35

# BASQUE HYDROGEN STRATEGY

## Ambition: Strategic Positioning

The Basque Hydrogen Strategy has been drawn up to drive the **creation of a hydrogen production, distribution and consumption ecosystem in the Basque Country, based on the region's industrial, logistical and technological capabilities** and in accordance with the following guidelines:

## Action Plan

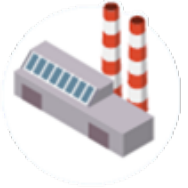
THE ACTION PLAN OUTLINING THE MEASURES DEFINED TO ROLL OUT THIS STRATEGY IS STRUCTURED INTO THE FOLLOWING SIX KEY AREAS:

1 PRODUCTION	2 STORAGE, TRANSPORT & DISTRIBUTION	3 END USES
4 INDUSTRIAL & TECHNOLOGICAL DEVELOPMENT	5 MARKET	6 REGULATORY FRAMEWORK & CROSS-CUTTING ASPECTS

## Basque Country Strategic Positioning



To create a **robust and sustainable local market**, boosting renewable and low-carbon hydrogen production and stimulating domestic demand.



To make hydrogen a **viable decarbonisation tool for Basque industry** and other hard-to-decarbonise energy consumption sectors, such as transport.



To deploy a **storage, transportation and distribution infrastructure** to support the development of the local market, and to provide the basis to establish the future logistics centre for international hydrogen trade.



To stimulate **training, R&D and industrial development** to position the country as a **technology exporter** in a market that is expected to grow at a constant rate.



# BH2C

A leading initiative for  
hydrogen development in  
Spain



European H2 Valley of the Year 2022



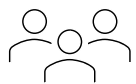
1. Context
2. BH2C
3. Hydrogen Valley Partnerships

## BH2C MISSION AND KEY DATA

## MISSION

“ To create a *hydrogen ecosystem* in the Basque Country which, based on specific *projects* and actions and underpinned by a strategy of *public-private collaboration*, will enable progress to be made in the decarbonisation of the *energy, mobility* and various other *industrial sectors*. ”

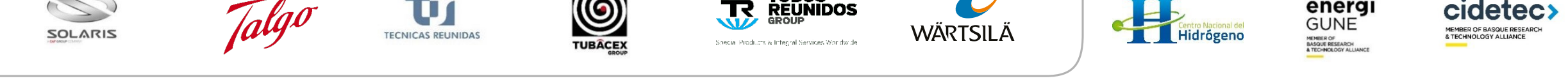
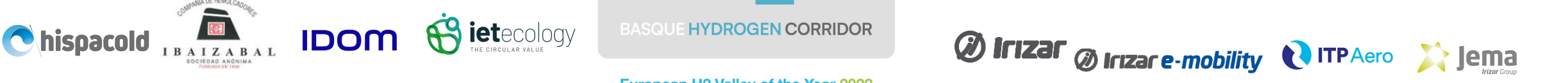
BH2C is a major project to develop a renewable hydrogen economy in the Basque Country.



*Association of  
77 members*



*46 initiatives  
ongoing*



Basque Hydrogen Corridor.



European H2 Valley of the Year 2022



# PHASES OF DEVELOPMENT

**Phase 1:** 2021-2026 **Focus on the development of renewable hydrogen production**

Renewable H2 production

Technological and industrial development for H2 consumption and to drive digitisation

Research projects related to H2 applications for mobility and industry

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**Phase 2:** 2026-2030 **Focus on infrastructure development, new industrial consumers and deployment of mobility applications.**





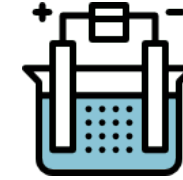
# GLOBAL INDICATORS



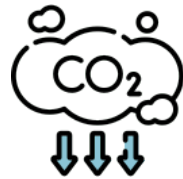
*Production of*  
**~20,000 tonnes**  
*per year of H<sub>2</sub>*



*Production of*  
**~1,670 tonnes**  
*per year of syngas*



**~132.5 MW**  
*of electrolysis*



*Reduction of*  
**~230,000 tonnes**  
*per year in CO<sub>2</sub> emissions via H<sub>2</sub>*




*Investment of*  
**EUR 1.383 billion**  
*over the period 2021-26*

# INFRASTRUCTURE INDICATORS

Basque Hydrogen Corridor.

**5**  
Hydrogen Refuelling Stations (HRS)  

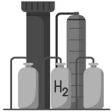

**5**  
electrolysers  


**1**  
logistics plant for truck loading  


**1**  
electrolyser factory  


**1**  
e-fuels plant  



**3**  
green H2 plants  


**1**  
H2 vehicle filling test bench  


**9**  
buses  


**8**  
trucks  


**2**  
trains  


**1**  
river boat  


# MAJOR ACTIVITY AREAS: A COMPREHENSIVE STRATEGY



European H2 Valley of the Year 2022

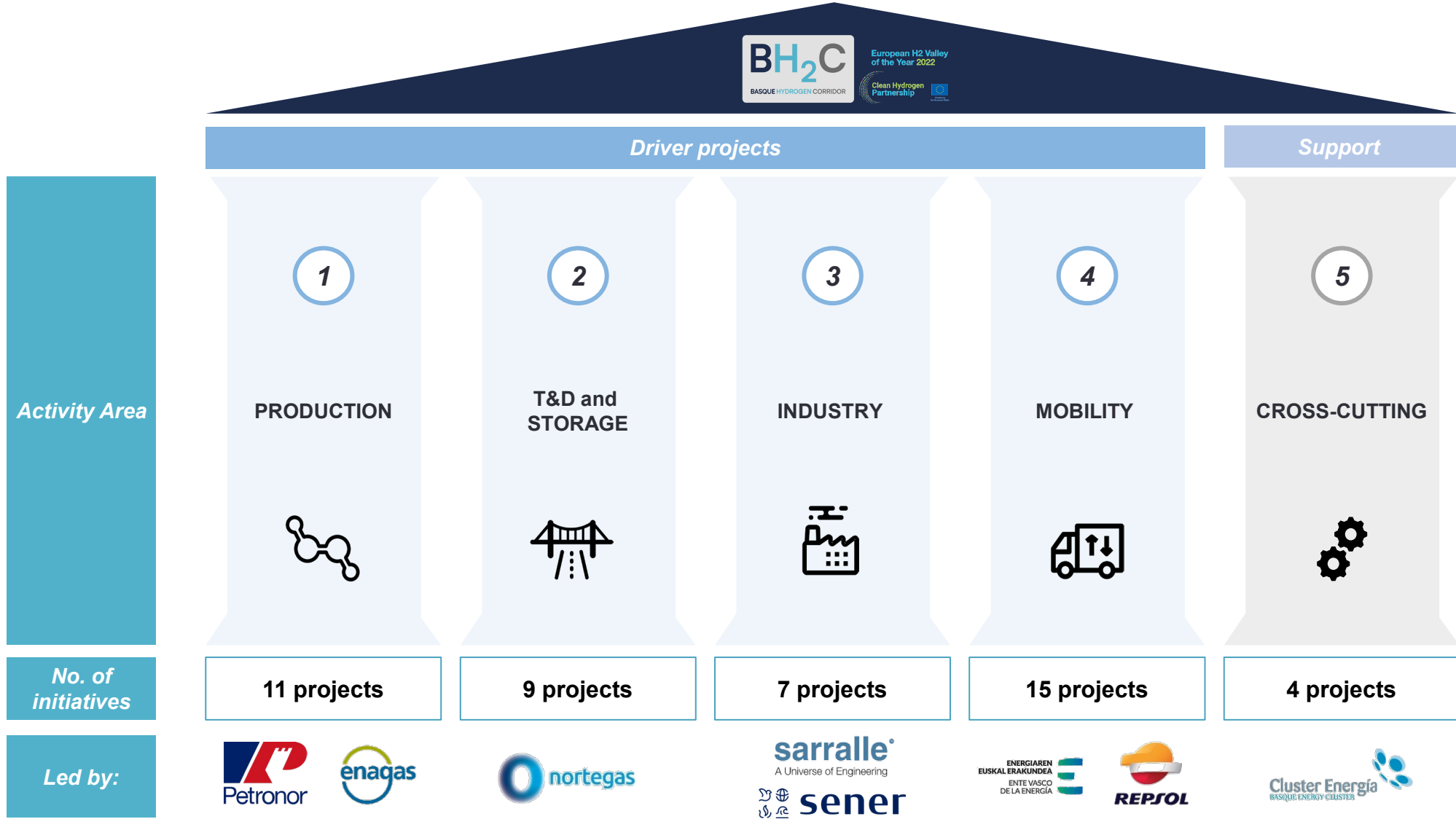


Funded by the European Union

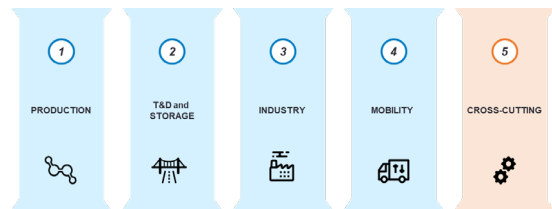


European H2 Valley of the Year 2022  
Clean Hydrogen Partnership

Basque Hydrogen Corridor.



# PROJECT BREAKDOWN BY MAJOR ACTIVITY AREA



European H2 Valley of the Year 2022



## 1: PRODUCTION (11)

- Petronor**: 2.5MW electrolyser for mobility
- Petronor**: 10 MW electrolyser
- Petronor**: DEMO synthetic fuels plant - e-fuels
- Petronor**: Renewable H2 production by electrolysis (100MW)
- Hy five**: Green H2 plant in Bizkaia (BenortH2)
- H2 SITE**: Project for the production of on-site generation systems
- HyValue**: High quality hydrogen production through urban waste valorisation (HyValue)
- GHK**: Green H2 from biogas from municipal solid waste
- sener**: Technological development and manufacturing of state-of-the-art electrolysers
- REPJOL**: Development and scale-up of state-of-the-art electrolyser with solid oxide technology
- tecnalca**: Technologies to boost the H2 economy (H2Basque)



## 2: T&D and STORAGE (9)

- nortegas**: H2 pipeline
- AMPO**: Design and industrialisation of valves for renewable gases
- enagas**: Demonstration of H2 leak detection and monitoring systems (Optychs)
- CALVERA Hydrogen**: Design and development of compressed H2 transport and supply equipment for heavy duty vehicles.
- REPJOL**: H2 storage in salt cavities
- nortegas**: Study of the behaviour of H2 in distribution networks
- tecnalca**: Key technologies for liquid hydrogen carriers (EkarriH2)
- Mondragon Unibertsitatea**: Multi-layer hybrid metal structures for use in contact with hydrogen (H2Mat)
- CALVERA Hydrogen**: Growing virtual pipeline engineering and production capabilities



## 3: INDUSTRY (7)

- CELSA GROUP** | **NERVACERO**: Project FeXI: use of H2 to decarbonise the industrial sector
- AJUSA**: Development of H2 fuel cell microCHP
- GIROA** | **VEOLIA**: Renewable energy-powered H2 production plant
- sarralle**: H2 as an alternative to natural gas in the Iron and Steel Industry
- ghi**: H2 as an alternative fuel in melting and heat treatment furnaces
- Nemak**: Aluminium industry based on new H2-intensive technologies and processes (GHemak)
- ikerlan**: Advanced solutions for the integration and optimal operation of H2-based devices (ErabilH2)



## 4: MOBILITY (15)

- REPJOL**: H2 mobility distribution logistics
- CALVERA Hydrogen**: H2 vehicle filling test bench and calibration laboratory
- BillogisNK, S.A.**: Use of H2 in transporting coke
- Bizkaia**: Bizkaia bus fleet
- MUBIL**: Gipuzkoa bus fleet
- enargi**: Araba bus fleet
- aena**: Use of H2 at Bilbao airport
- Bilbao PORT**: Bilbao Port Project. H2 Port (Hidrovan)
- CAF**: H2 bus project
- Irizar**: H2 bus development project
- Talgo**: H2 regional suburban train development project
- CAF**: H2 train in passenger service
- sener**: Biofuel Reformer (Methanol) Project
- ITP Aero**: Use of synthetic fuel (PtL) in gas turbines
- FORO**: H2-powered river boat project (H2Ocean)



## 5: CROSS-CUTTING (4)

- Bizkaia garbiker**: Living LAB - Abanto Technology Park
- Universidad del País Vasco**: H2 Knowledge Centre
- Cluster Energia**: H2 Industry Platform - ACE
- ENERGIEN EUSKAL ERAGUNTIA**: Decarbonisation analysis with H2 Industrial, Services and Residential sectors

Basque Hydrogen Corridor.



# TWO IMPORTANT PROJECTS OF COMMON EUROPEAN INTEREST (IPCEI) AWARDS



Two initiatives of the BH2C project have been recognised as IPCEI by the European Commission: the **Sener** project for an electrolyser factory in Bizkaia, within the Hy2Tech wave, and the **Petronor** project for a large-scale electrolyser (100MW), within the Hy2Use wave.

Commission approves up to €5.4 billion support by 15 Member States for an Important Project of Common European Interest (IPCEI) in the **Hydrogen Technology value chain** "IPCEI Hy2Tech"

Hydrogen Generation Technology	Fuel Cells Technology	Storage, Transportation and Distribution Technology	End User Technology
<ul style="list-style-type: none"> <li>1s1 Energy*</li> <li>Advent*</li> <li>Ansaldo</li> <li>AVL</li> <li>Christof Industries</li> <li>De Nora</li> <li>Elcogen*</li> <li>Elogen</li> <li>Enel</li> <li>Genvia</li> <li>H2B2*</li> <li>Cummins</li> <li>John Cockerill</li> <li>John Cockerill</li> <li>McPhy*</li> <li>Nordex</li> <li>Ørsted</li> <li><b>Sener</b></li> <li>Stargate</li> <li>Sunfire*</li> <li>Synthos</li> </ul>	<ul style="list-style-type: none"> <li>1s1 Energy*</li> <li>Advent*</li> <li>Alstom</li> <li>Ansaldo</li> <li>Arkema</li> <li>Bosch DE</li> <li>Daimler Truck</li> <li>De Nora</li> <li>EKPO</li> <li>Elcogen*</li> <li>Fincantieri</li> <li>Genvia</li> <li>HYVIA</li> <li>Iveco</li> <li>Nedstack*</li> <li>Plastic Omnium AT</li> <li>Symbio</li> </ul>	<ul style="list-style-type: none"> <li>Arkema</li> <li>B&amp;T Composites*</li> <li>Daimler Truck</li> <li>Enel</li> <li>Faurecia</li> <li>NAFTA</li> <li>Neste</li> <li>Ørsted</li> <li>Plastic Omnium FR</li> </ul>	<ul style="list-style-type: none"> <li>Alstom FR</li> <li>Alstom IT</li> <li>Bosch AT</li> <li>Daimler Truck</li> <li>Fincantieri</li> <li>HYVIA</li> <li>Iveco CZ</li> <li>Iveco ES</li> <li>Iveco IT</li> <li>Neste</li> <li>Ørsted</li> <li>Plastic Omnium AT</li> <li>Plastic Omnium FR</li> </ul>

\*SME

Commission approves up to €5.2 billion support by 13 Member States for an Important Project of Common European Interest (IPCEI) in the **Hydrogen value chain** "IPCEI Hy2Use"

Hydrogen Infrastructure	Hydrogen applications in Industry
<ul style="list-style-type: none"> <li>Air Liquide France</li> <li>Air Liquide Netherlands - Curthyl</li> <li>Air Liquide Netherlands - Flygator</li> <li><b>Bay of Biscay Hydrogen (Petronor/Repsol)</b></li> <li>Bondalti</li> <li>Cartagena Hydrogen Network (Repsol)</li> <li>ENGIE Belgium</li> <li>ENGIE Netherlands</li> <li>Fluxys</li> <li>H2 Aboño (EDP)</li> <li>H2-Fifty</li> <li>H2 Los Barrios (EDP)</li> <li>HyCC</li> <li>Iberdrola</li> <li>MassHyllia (TotalEnergies and ENGIE France)</li> <li>Ørsted</li> <li>P2X Solutions*</li> <li>PKN Orlen</li> <li>Shell</li> <li>Uniper</li> </ul>	<ul style="list-style-type: none"> <li>Borealis</li> <li>Enel Green Power/Endesa</li> <li>ENGIE Belgium</li> <li>Everfuel*</li> <li>Hybrit Development</li> <li>IAM Caecius</li> <li>NextChem</li> <li>RINA-CSM</li> <li>RONA</li> <li>SardHy Green Hydrogen</li> <li>Solar Foods*</li> <li>South Italy Green Hydrogen</li> <li>TECforLime</li> <li>TITAN Cement</li> <li>VERBUND</li> </ul>

Competition

\*SMEs

# BH2C: EUROPEAN H2 VALLEY OF THE YEAR AWARDED BY THE CLEAN HYDROGEN PARTNERSHIP (CHP)

"Six criteria were used to identify the winning valleys: the **extent of value chain coverage**, **hydrogen production volume**, the **variety of hydrogen end uses**, project **finalisation**, the **stakeholder landscape**, and project **innovativeness**".



## E: Global Hydrogen Valley activities and example projects from the Mission Innovation Hydrogen Valley Platform

<p><b>United Kingdom</b></p> <ul style="list-style-type: none"> <li>→ HyNet North West</li> <li>→ BIG HIT Orkney Islands</li> </ul> <p><b>Netherlands</b></p> <ul style="list-style-type: none"> <li>→ HEAVENN</li> <li>→ Hydrogen Delta</li> <li>→ Europe's Hydrogen Hub: H<sub>2</sub> Proposition Zuid-Holland/Rotterdam</li> </ul> <p><b>Belgium</b></p> <ul style="list-style-type: none"> <li>→ Flemish Hydrogen Ports Valley</li> </ul>	<p><b>Germany</b></p> <ul style="list-style-type: none"> <li>→ H2Rivers</li> <li>→ HyBayern</li> <li>→ eFarm</li> <li>→ Northern German Living Lab</li> <li>→ Hyways for Future</li> </ul> <p><b>Italy</b></p> <ul style="list-style-type: none"> <li>→ Hydrogen Valley South Tyrol</li> <li>→ H2iseO Hydrogen Valley</li> </ul>	<p><b>Denmark</b></p> <ul style="list-style-type: none"> <li>→ HyBalance</li> </ul> <p><b>Austria</b></p> <ul style="list-style-type: none"> <li>→ WIVA P&amp;G: Hydrogen Flagship Region</li> </ul>	<p><b>Portugal</b></p> <ul style="list-style-type: none"> <li>→ Sines Industrial Hub</li> </ul> <p><b>Spain</b></p> <ul style="list-style-type: none"> <li>→ Green Hysland</li> <li>→ Basque Hydrogen Corridor</li> </ul>	<p><b>Japan</b></p> <ul style="list-style-type: none"> <li>→ FH2R Fukushima</li> </ul> <p><b>China</b></p> <ul style="list-style-type: none"> <li>→ Foshan Nanhai Xianhu Lake Hydrogen Valley Town</li> <li>→ Zhangjiakou Demonstration Project</li> <li>→ Rugao Hydrogen Energy Town</li> </ul> <p><b>Thailand</b></p> <ul style="list-style-type: none"> <li>→ Phi Suea House</li> </ul>
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<p><b>USA</b></p> <ul style="list-style-type: none"> <li>→ Advanced Clean Energy Storage Project</li> <li>→ Port of LA, Shore to Shore Demonstration Project</li> <li>→ Wyoming Clean Power Center</li> </ul> <p><b>Chile</b></p> <ul style="list-style-type: none"> <li>→ Hydrogen Facility Initiative</li> </ul>	<p><b>France</b></p> <ul style="list-style-type: none"> <li>→ Zero Emission Valley</li> <li>→ Normandy Hydrogen</li> <li>→ Hydrogen Territory Bourgogne Franche Comté</li> <li>→ Centrale Electrique de l'Ouest Guyanais</li> </ul>	<p><b>Oman</b></p> <ul style="list-style-type: none"> <li>→ Green Hydrogen and Chemicals Oman</li> </ul>	<p><b>Australia</b></p> <ul style="list-style-type: none"> <li>→ Crystal Brook Hydrogen Superhub</li> <li>→ Eyre Peninsula Gateway</li> </ul>
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■ Countries with ongoing Hydrogen Valley activities

Source: Clean Hydrogen JU, Roland Berger



# BH2C

A leading initiative for  
hydrogen development in  
Spain



European H2 Valley of the Year 2022



1. Context
2. BH2C
3. Hydrogen Valley Partnerships

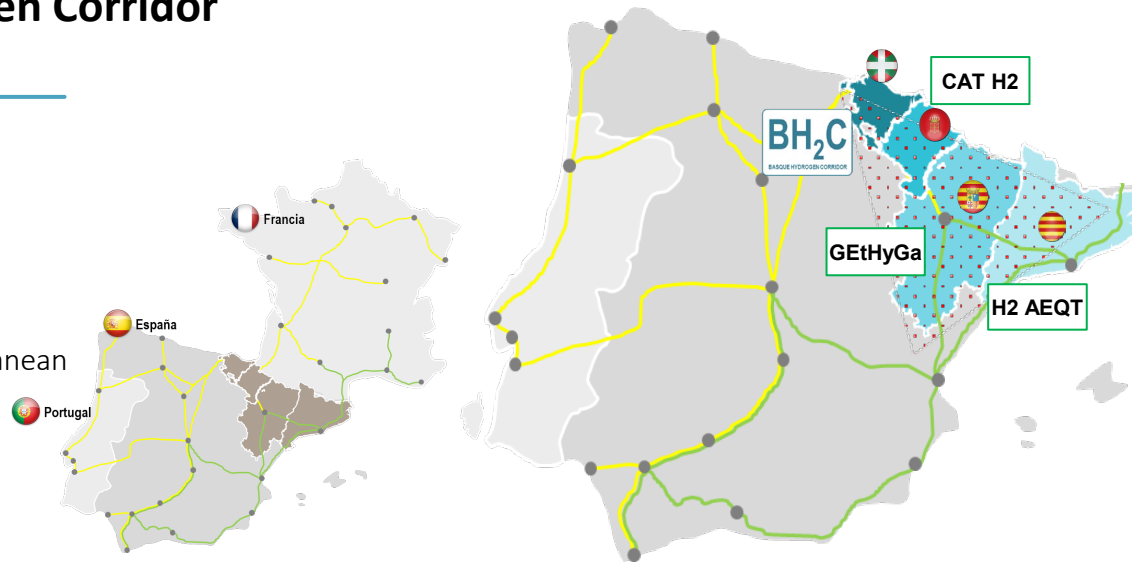
# HYDROGEN VALLEY PARTNERSHIPS FOR DEVELOPMENT



## Ebro Hydrogen Corridor

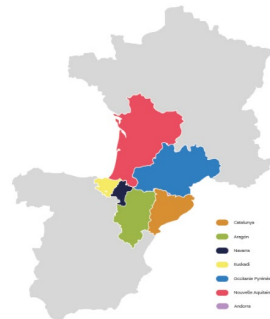
### HY-EBRO

- BH<sub>2</sub>C
- CAT H2
- GEtHyGa
- H2 AEQT
- Ebro Corridor
- RTE-T Mediterranean
- RTE-T Atlantic



*A project designed to promote inter-regional connections and to serve as a link between the major regional renewable hydrogen initiatives already underway in the north-east of Spain.*

## The Working Community of the Pyrenees (CTP)



*The CTP is made up of the French regions of Nouvelle-Aquitaine and Occitanie; the Principality of Andorra; and the Spanish Autonomous Regions of Catalonia, Aragon, Navarre and the Basque Country.*



MANY THANKS

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BASQUE HYDROGEN CORRIDOR



## Jean-Luc Fugit

Député du Rhône, Secrétaire de la  
Commission du développement durable et de  
l'aménagement du territoire, Président du  
Conseil supérieur de l'énergie

**Merci pour votre  
attention !**

**Journées  
Hydrogène**  
DANS LES  
**TERRITOIRES**  
10ème édition  
**PAU | 2023**

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