



GREEN HYSLAND

Deployment of a H2 ecosystem on the Island of Mallorca

Power to Green Hydrogen Mallorca



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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.





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Al acuerdo firmado a finales de 2018 por Enagás, Acciona y Cemex, para el desarrollo de una planta de generación de hidrógeno verde, se ha unido también Redexis

El Govern de las Islas Baleares, **Francina Armengol** y el concejal de Treball, Comerç i Indústria, **Iago Negueruela**, junto con Enagás, Acciona, Cemex y Redexis presentaron el martes 7 de mayo el proyecto 'Power to Green Hydrogen Mallorca'. La iniciativa cuenta con la implicación directa del Instituto para la Diversificación y el Ahorro Energético (IDAE).



Grupo de asistentes a la presentación pública del proyecto en Mallorca.

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Hub Baleares: "Power to Green Hydrogen Mallorca" - Context

This initiative is part of an agreement between the Ministry of Industry, Trade and Tourism and the Balearic Government with Enagás, Acciona, CEMEX and Redexis to **reindustrialise** Lloseta (Mallorca).

The project includes the development of a **green hydrogen** production plant from renewable photovoltaic energy. Green hydrogen will have **multiple applications** on the island, including the **fuel supply** to a fleet of **fuel cell buses** and **fuel cell vehicles**, the generation of **heat and power** for commercial and public buildings, the supply of **auxiliary power for ferries** and **port operations** and the creation of a **HRS**.

The project includes **green hydrogen injection** into the island's gas pipeline network, through a **Guarantee of Origin System**, to decarbonise the gas supply.

On 24/05/2019 the Balearic Government approved the declaration of the Power to Green Hydrogen Mallorca Project as a **Strategic Industrial Project**.



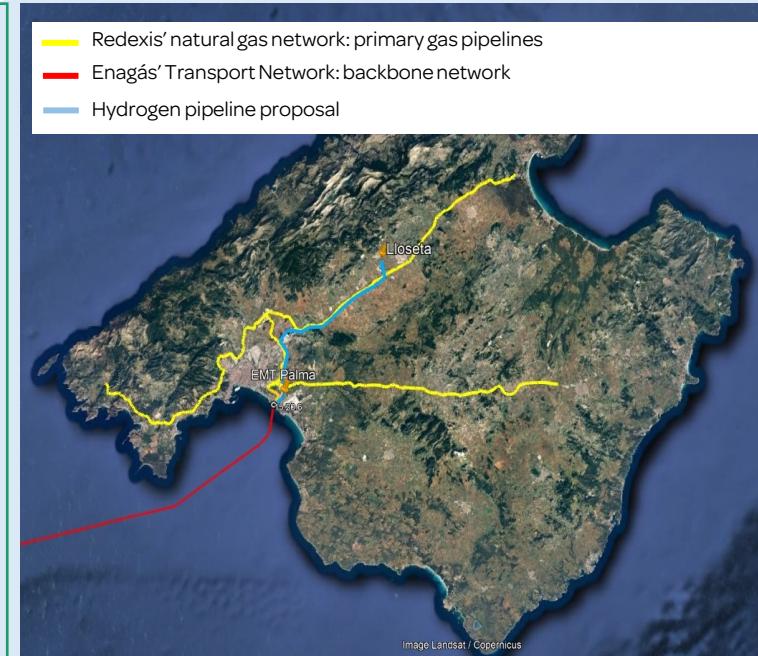
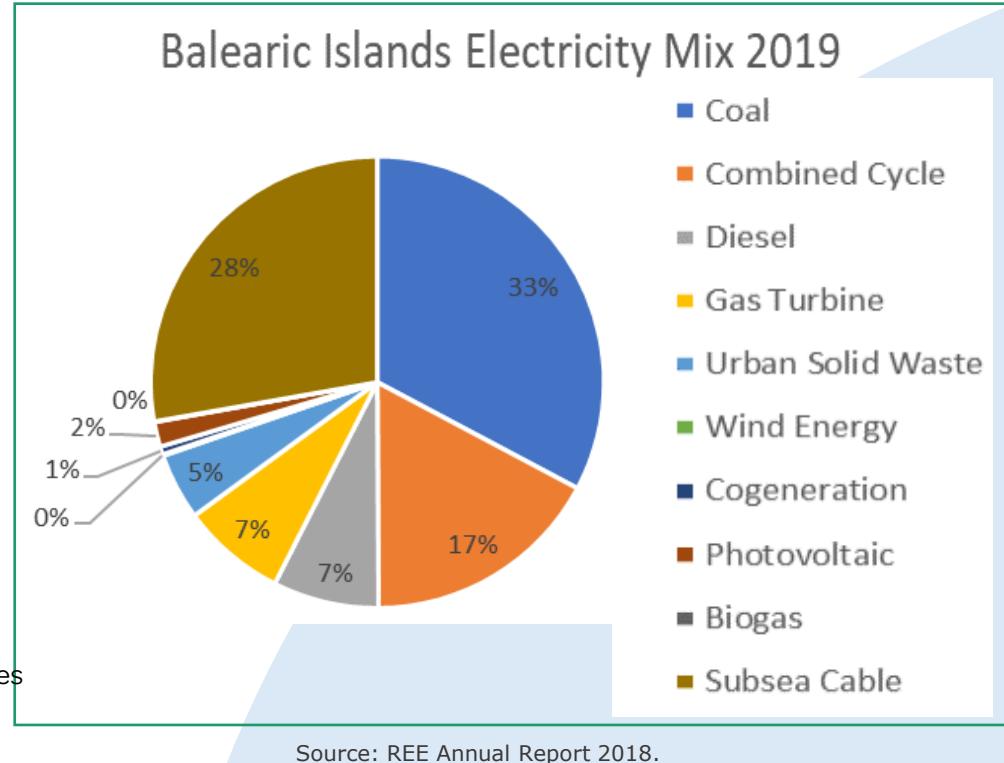
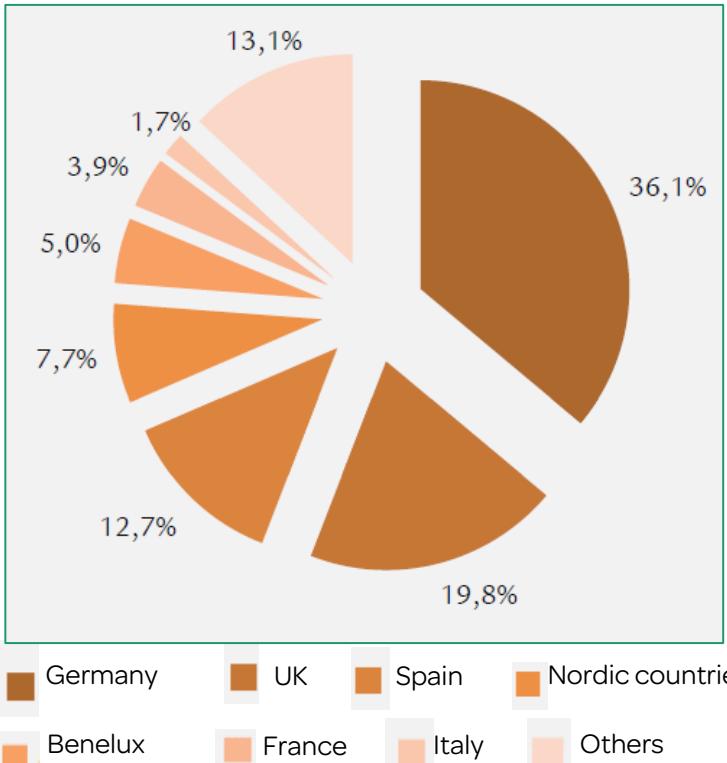
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Hub Baleares: “Power to Green Hydrogen Mallorca” - Context

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11,947,382 tourists visited Mallorca in 2018



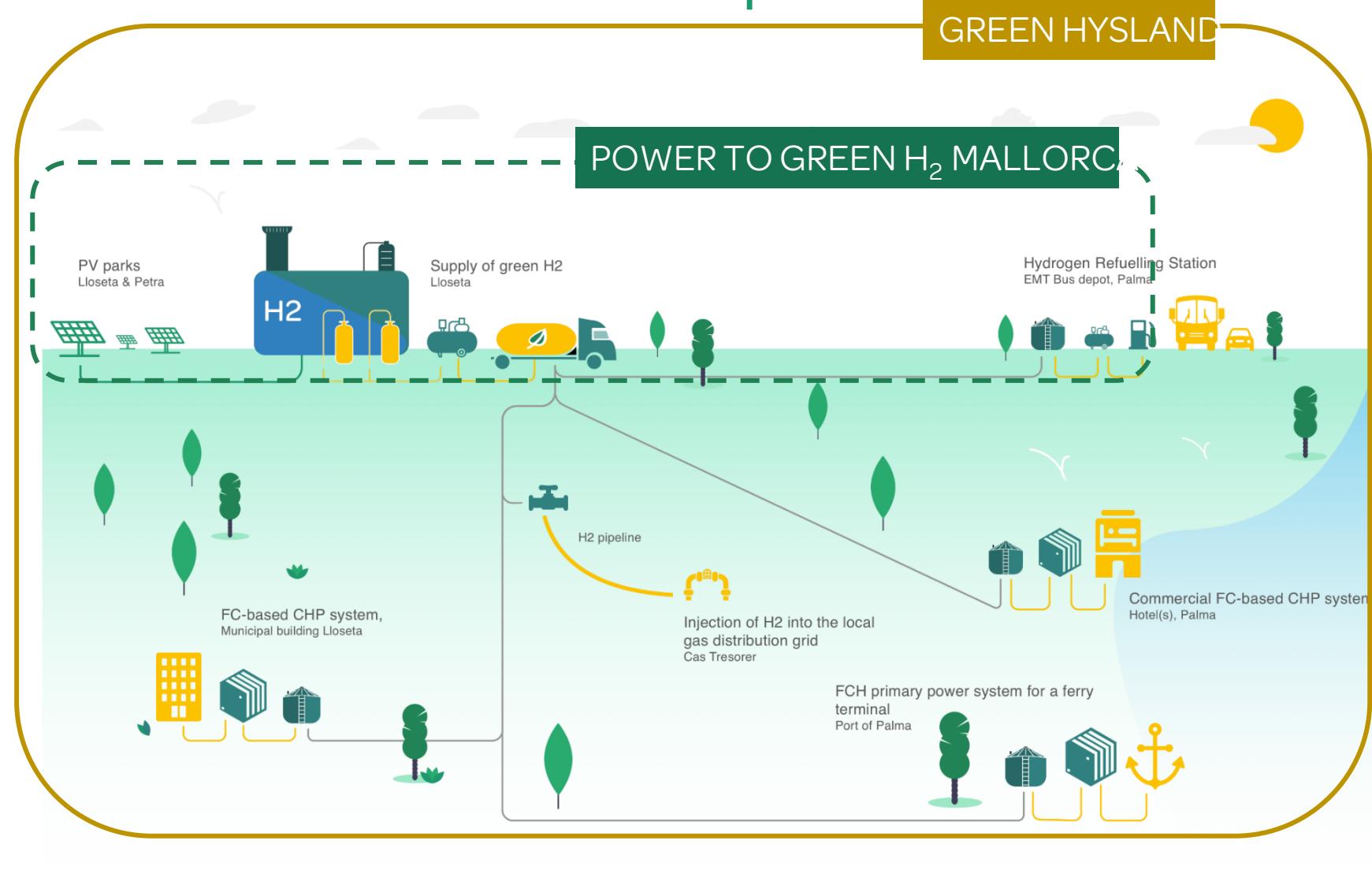
Development of a “**H₂ ecosystem**” which can be replicated across other islands and remote territories in the and beyond



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GREEN HYSLAND Concept

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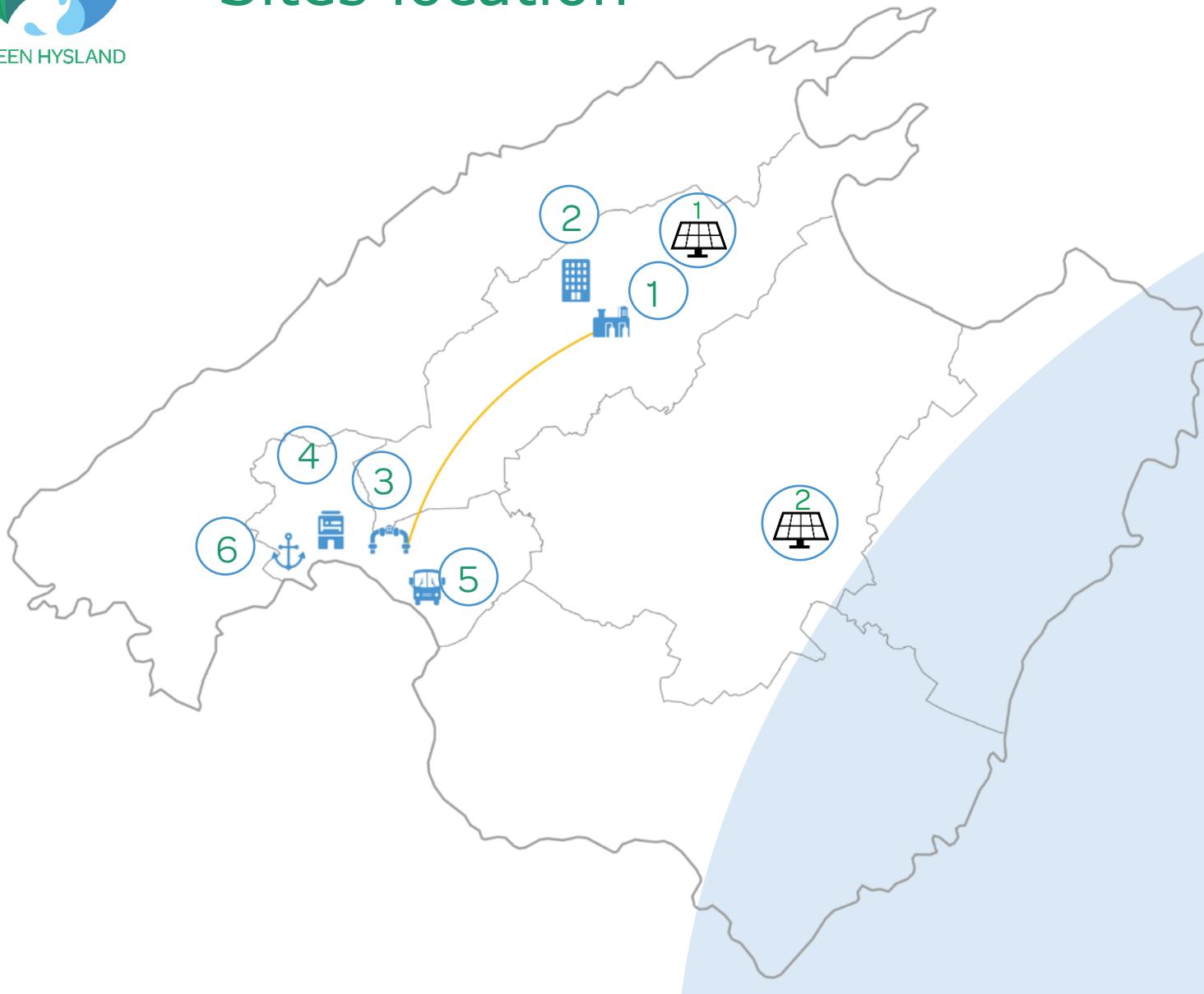
Co-funded by
the European Union

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Sites location



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PV plant in Lloseta



PV plant in Petra



Green hydrogen production plant at Lloseta



Fuel cell in a public building in Lloseta



H₂/GN blending station at Cas Tresorer & injection point to NG grid



Fuel cell at hotel in Palma



HRS at EMT de Mallorca

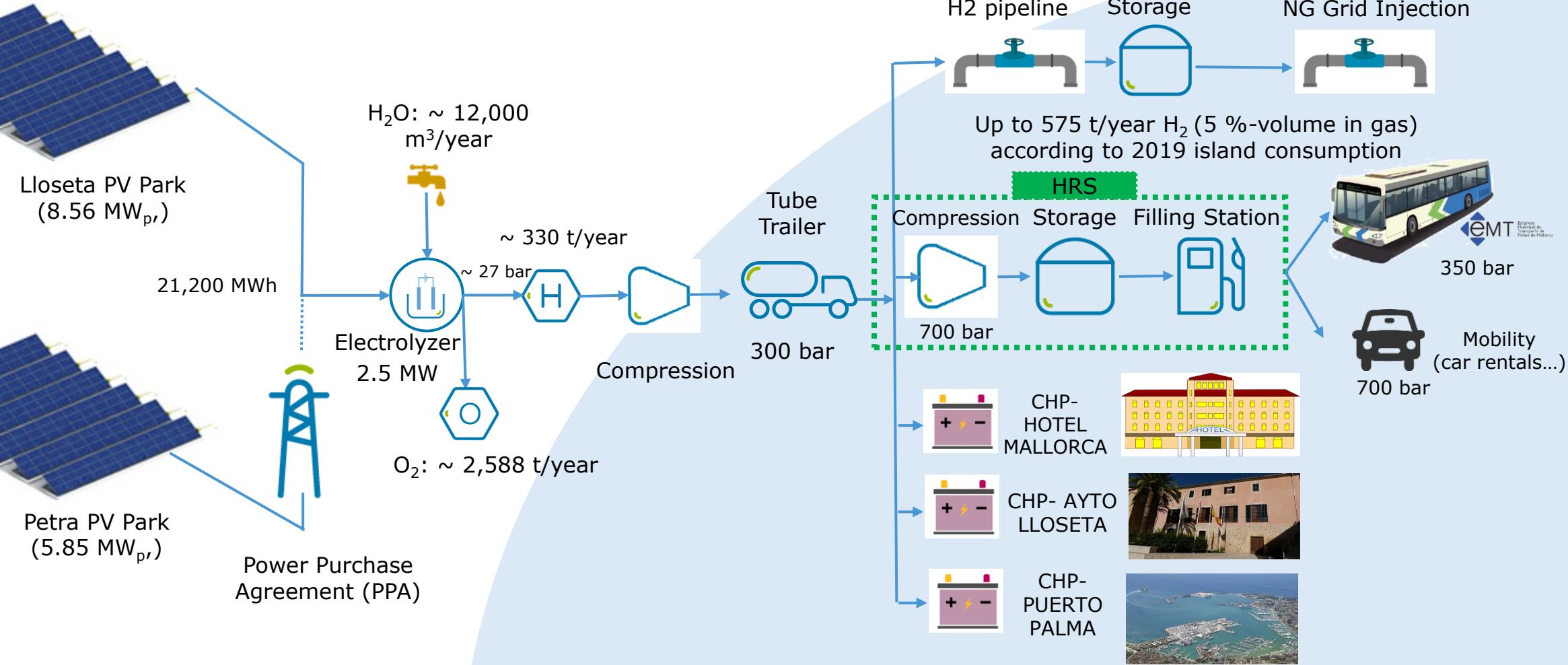


Fuel Cell at the maritime station in Palma Port



Hydrogen pipeline

Main scheme and data





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PV plants

PV Plant in Lloseta

8.56 MWP

Land owned by CEMEX, provided to the Project
Start of operation: June 2022



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Proyecto acogido a la línea de ayudas a proyectos de Economía Baja en Carbono, en instalaciones de producción de energía eléctrica con tecnologías eólica y fotovoltaica, situadas en territorios no peninsulares, cofinanciadas por el fondo Europeo de Desarrollo Regional (FERDER) y gestionada por el IDAE, con el objetivo de conseguir una economía más limpia y sostenible. "Una manera de hacer Europa".



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PV plants

PV Plant in Petra

5.85 MWp

Land acquired from the Balearic Government
Start of operation: June 2022



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Proyecto acogido a la línea de ayudas a proyectos de Economía Baja en Carbono en instalaciones de producción de energía eléctrica con tecnologías eólica y fotovoltaica, situadas en terrenos no peninsulares, cofinanciadas por el fondo Europeo de Desarrollo Regional (FERDER) y gestionada por el IDAE, con el objetivo de conseguir una economía más limpia y sostenible. "Una manera de hacer Europa".

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Green H₂ Production Plant

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Inauguration of the H₂ production plant on 14 March 2022.



Compressor provided by HIPERBARIC

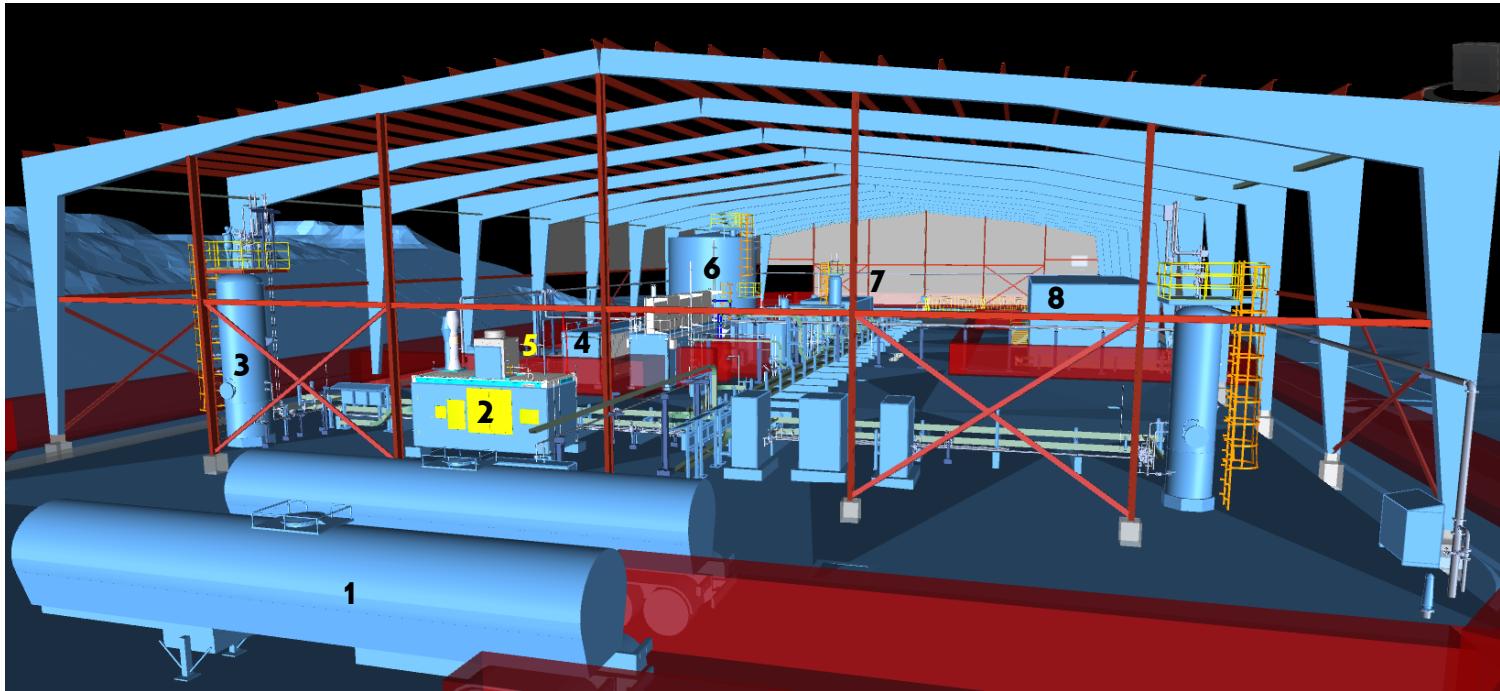


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Green H₂ Production Plant



- 1. H₂ Tube trailers
- 2. Compressors
- 3. H₂ Buffer-vessel
- 4. Electrolyser

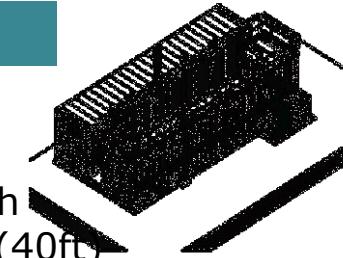
- 5. Rainwater pit
- 6. Water Storage
- 7. E-House
- 8. Administration and control building

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4 Electrolyser

PEM
2.5MW
440 Nm³ H₂/h
2 containers (40ft)



2 Compressors

30 bar (suction)
330 bar (discharge)



1 Tube-Trailers

2-3 trailers
500kg H₂ each @300bar

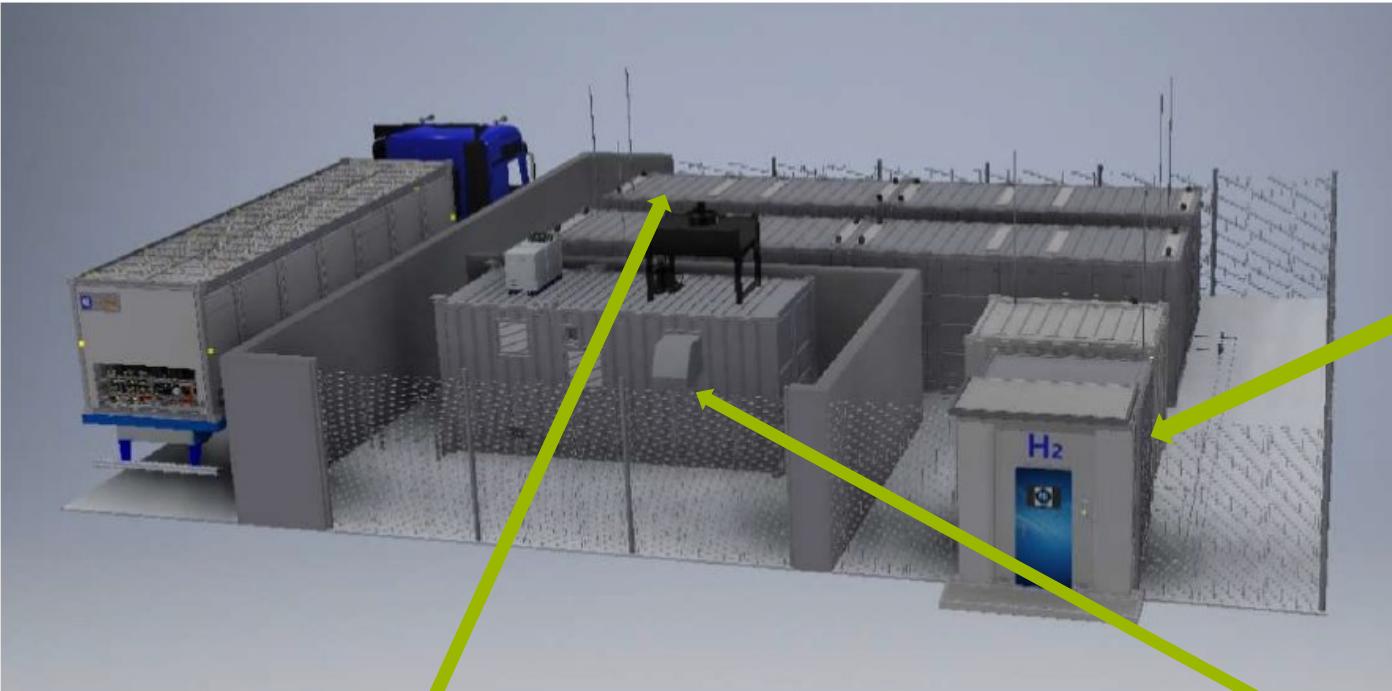




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Provisional Hydrogen Refuelling Station

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Stationary Storage of H₂



Dispensers (@350 barg and 700 barg)



Compressor 300 bar for buses



Compresor 700 bar for light vehicles



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End users – other applications

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Mobility applications

H₂ bus fleet
at EMT Palma

H₂ FCEV (vans,
rental cars...)

H₂ injection in the NG distribution network



FC at the Hotel Bahía Iberostar in
Palma de Mallorca

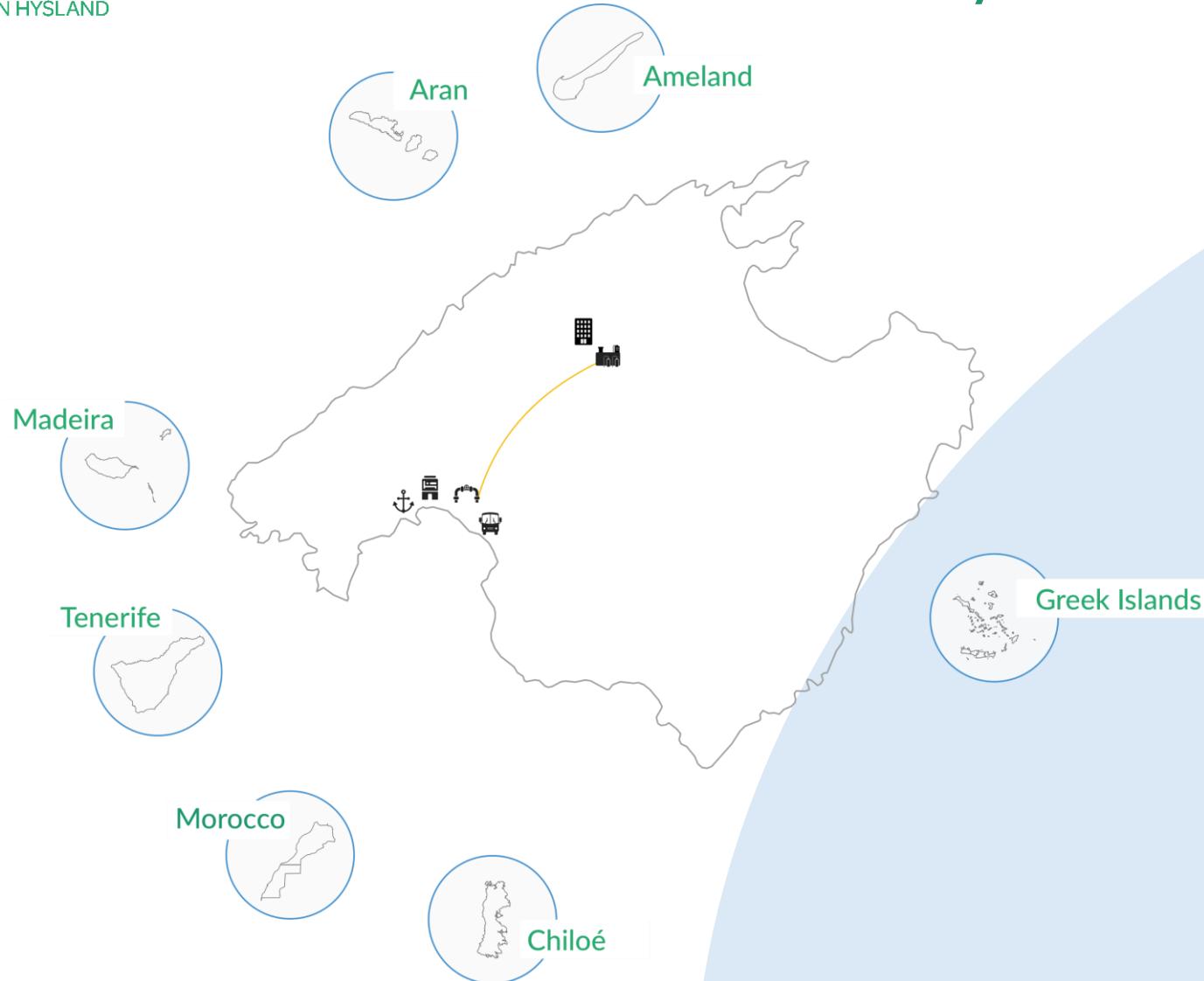


FC at the Municipal Sports
Center in Lloseta



FC at the Ferry Station in the
Port of Palma

Replication of H₂ ecosystems to other EU island territories and beyond



Observers:

- Orkney Islands Council
- Valencia Port Foundation
- Scottish H2 & Fuel Cell Association
- Aran Islands Energy
- Port of Melilla
- Corsica Chamber of Commerce
- RINA Services
- Wärtsilä
- CEMEX
- 19 Letters of Support



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Key figures

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Development of a **sustainable large-scale island-based H₂ hub** in Mallorca



15 MW
PV energy

Avoided carbon footprint:
more than **21,000 tpy**



New **direct and indirect employment ecosystem** associated to **hydrogen**

Development **a long-term roadmap** to lay the path for a local & regional based economy towards 2050



Scalability and Replicability



Estimated **investment**
50 M€

Funding from the
Clean Hydrogen JU

10 M€

Funding from IDAE for
PV plants





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Partners

— H₂ infrastructure developers

— Studies for H₂ uses in maritime sector

— H₂ RoadMap towards 2050

— Creation and Analysis of Impact and Development of Business Models

— Scaling Up & Replication

— Communication & Dissemination

— Replication experiences

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Acciona

Redexis

EMT
Enagás
Transportes de
Palma de Mallorca

CALVERA
Hydrogen

Ajuntament de Lloseta



Ports de Balears
Autoritat Portuària de Balears

COTENAVAL
INGENIERÍA NAVAL

BALEARIA

ibe
institut balear
de l'energia

uib
Universitat
de les Illes Balears

cea

Centro Nacional del
Hidrógeno

NUI Galway
OÉ Gaillimh

H₂
Instituto Andaluz
de la Energía

Energy

HyEnergy

New
Energy
Coalition

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FEDARENE

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SPANISH HYDROGEN
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Gemeente Ameland

DAFNI
Institut d'Estudis sobre el Gas Natural i el Biogàs

H₂Chile
ASOCIACIÓN CHILENA DE HIDRÓGENO

AMHYD
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Thank you and follow us on:



<https://greenhysland.eu>



[Green Hysland EU Coalition for H2 deployment in Islands](#)



<https://youtu.be/-u7RLspVuw4>



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