GREEN HYSLAND

Hydrogen Valleys: Deployment of a H2 Ecosystem on the Island of Mallorca

This project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking (now Clean Hydrogen Partnership) under Grand 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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Coordinator of GREEN HYSLAND project

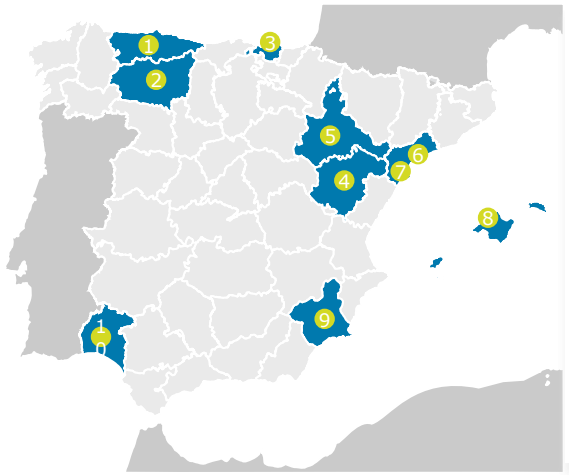
enagas renovable

+| Enagas Renovable: Who we are?

Enagás Renovable is a leading **Energy Independent Producer** with a portfolio of more than **20 specific projects** in Spain in the field of renewable gases, and with a focus on:

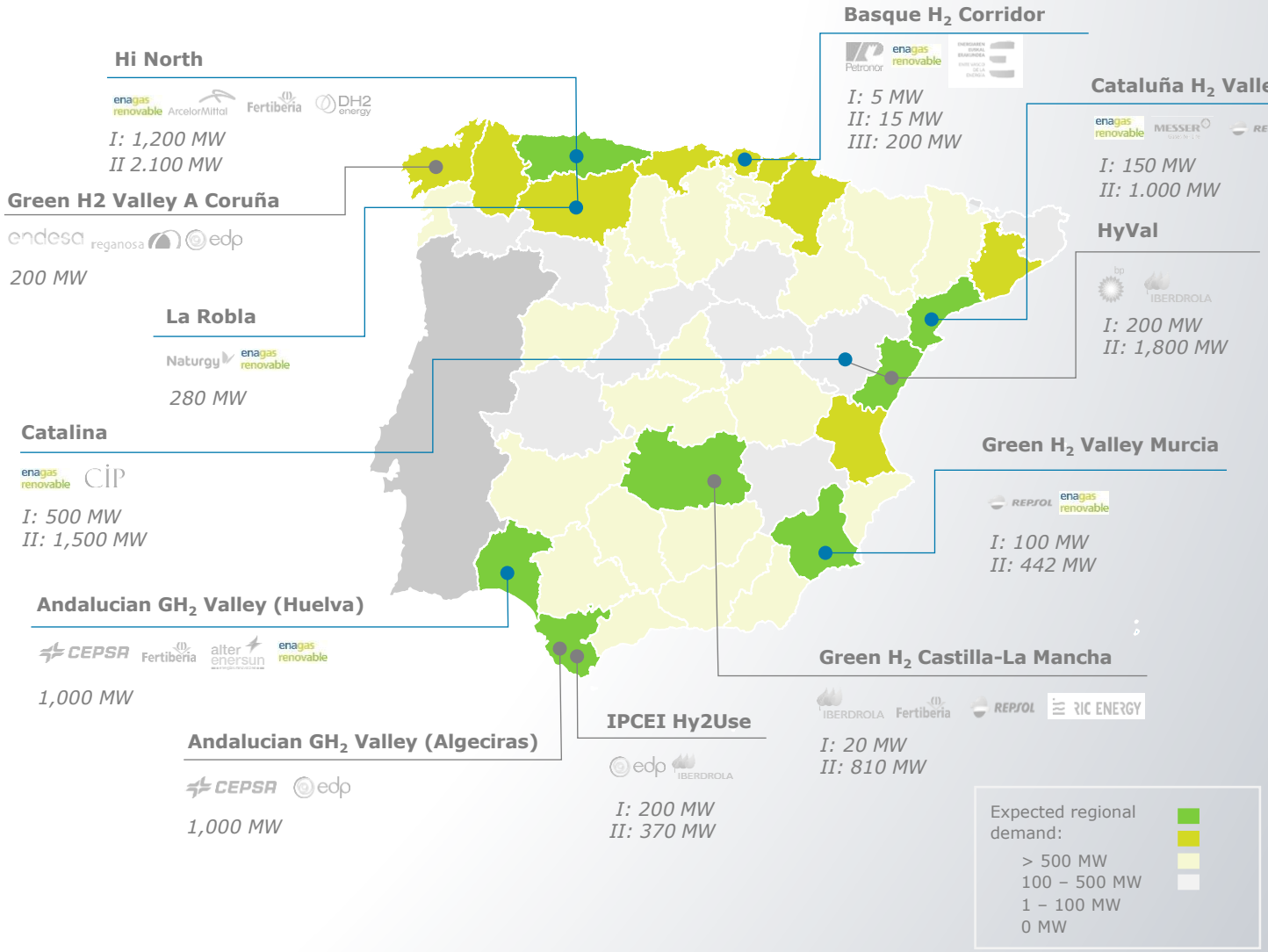
Green hydrogen projects: different types of projects depending on their main end applications (industrial, mobility and blending).

Biomethane projects: upgrading of existing biogas plants and development of integrated solutions.



- ✓ **More than 10 projects and 25 partners in Spain**, covering all the uses and sectors considered in the Spanish Renewable Hydrogen Roadmap.
- ✓ **Participation in the main associations** and direct collaboration with relevant bodies and municipalities.

Location of the main H_2 Green Valleys [ELY capacity in MW]



GREEN HYSLAND

Green Hysland Project

The first industrial Green H2 production plant in Spain

GREEN HYSLAND Consortium

Power to Green H_2 Mallorca:

enagas renovable

acciona energía

CEMEX

MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO

IDAE Instituto para la Diversificación y Ahorro de la Energía

Multidisciplinary team

Covering the entire value chain

Petra
(5.8 MWp)

Lloseta
(8.5 MWp)

Pilot Plant in industrial operation since March 2025

H2 plant "Guarantees of Origin" platform (August 2024)

300
tH_2/year

Challenges

Off taker delays: affect the commercial viability of the H2 production facility

Commercial contracts to accomplish 300Tn /year

PV Plants + H2 Production Pilot Plant

An Ongoing Reality

Injection of green H2

Into the Natural Gas distribution grid

- ✓ 2 Tube trailers are currently in operation
- ✓ Capacity of 500kg H2 /300 bar

Tube Trailers

for the transport of green H2

GREEN HYSLAND

Fuel Cell at the Hotel Bahía Iberostar en Palma de Mallorca

STATUS:
✓ Commissioning authorization was received by Palma City Council.
✓ Last week of June its expected finalize the pending works, tests & commissioning.

LIMITATIONS:
H2 demand is compromised due to the temporary closure of the hotel in low season

Fuel Cell at Palma Port

STATUS:
✓ FC tender awarded.
✓ Civil works started.
✓ FC components. purchasing progressing as planned.

LIMITATIONS:
Civil works hitting summer high season

Fleet of H2 Buses

STATUS: In Operation
✓ HRS installed.
✓ Final dispenser installed and regular refueling operations launched.
✓ Buses checked and tuned up.
✓ Ongoing additional training.

Different End Users

H_2 Fuel Cells + Fleet of H2 buses

+| As a pioneering project in Spain:

10 M€
~50% of the eligible cost

≈ 3.5 M€ allocated to H_2 production

≈1 M€ allocated to H_2 injection into NG grid

+2.5 M€ allocated to H_2 end uses

+ 2.5 M€ Solar PV

+

+ 1.1 M€ H_2 buses

Engineering, Procurement & Construction

How to improve the "Green Gap" of green H_2?

How to carry out the EPC in the absence of companies with previous experience?

How to process the authorization of a completely new industrial activity?

Incentivising the entire value chain of the H2 economy

+|Context: EU & Spanish Market Potential

Green H_2

- REPowerEU aims for **20 Mt/year** of H_2 consumed in the EU by 2030.
- Of which, **10 Mt produced domestically,** and **10 Mt imported.**
- **H2Med Corridor co**nsists of a connection between Portugal and Zamora in Spain (CelZa) and a maritime connection between Barcelona and Marseille (BarMar).

✓ **REPowerEU's objectives lead to an expected 20 Mt of green H_2 consumption in Europe by 2030.**

✓ **PNIEC[1] review of 2024 aims for 74% substitution of grey H_2 by green H_2 by 2030, what means that about half of 2030 expected production will be dedicated to other uses (e.g. steelmaking, high-temp. industrial processes, heavy-duty transport…)**

✓ **Net exports in Spain could potentially reach a volume of 1.7 Mt by 2030 if H2Med is operative (which is expected to reach ~1.2 Mt of net exports)**

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Thank you very much for your attention!

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