The key role of pipeline networks in supporting the emergence of the Spanish & European H2 market

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Spain's Hydrogen Vision and Its Role in the Emerging European Hydrogen Economy, RIFS Potsdam & the Elcano Royal Institute, 26/04/2023

enagas

A clear purpose…

To contribute to guaranteeing the **security of energy supply** in Spain and Europe and to speed up the **decarbonization** process.

2022-2030 Strategic Plan

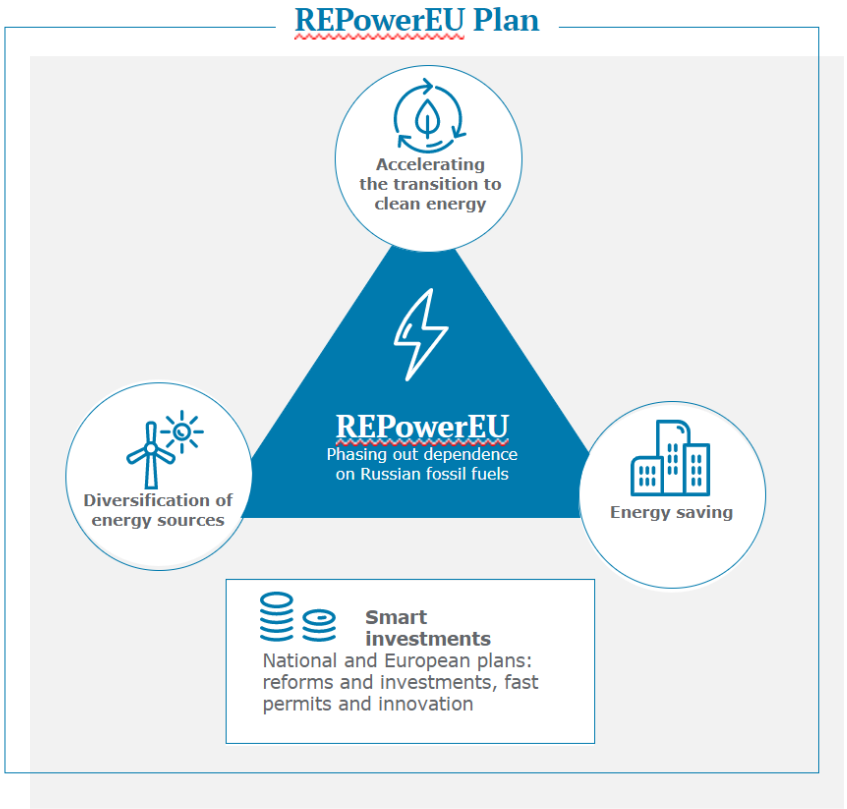
Looking ahead to 2030, we are working towards…

The **integration of a European energy system** through infrastructure

The promotion of a **future hydrogen network** in Europe

The creation of a **market for renewable gases** through our Enagás Renovable subsidiary

…within a new paradigm in energy markets



Source: REPowerEU.

Catalyst for H2 market development

Leaders in the development of renewable gases as new energy solutions for decarbonisation

Enagás Hydrogen Infrastructures

Ready to be an **operator of the future hydrogen network**

enagas renovable

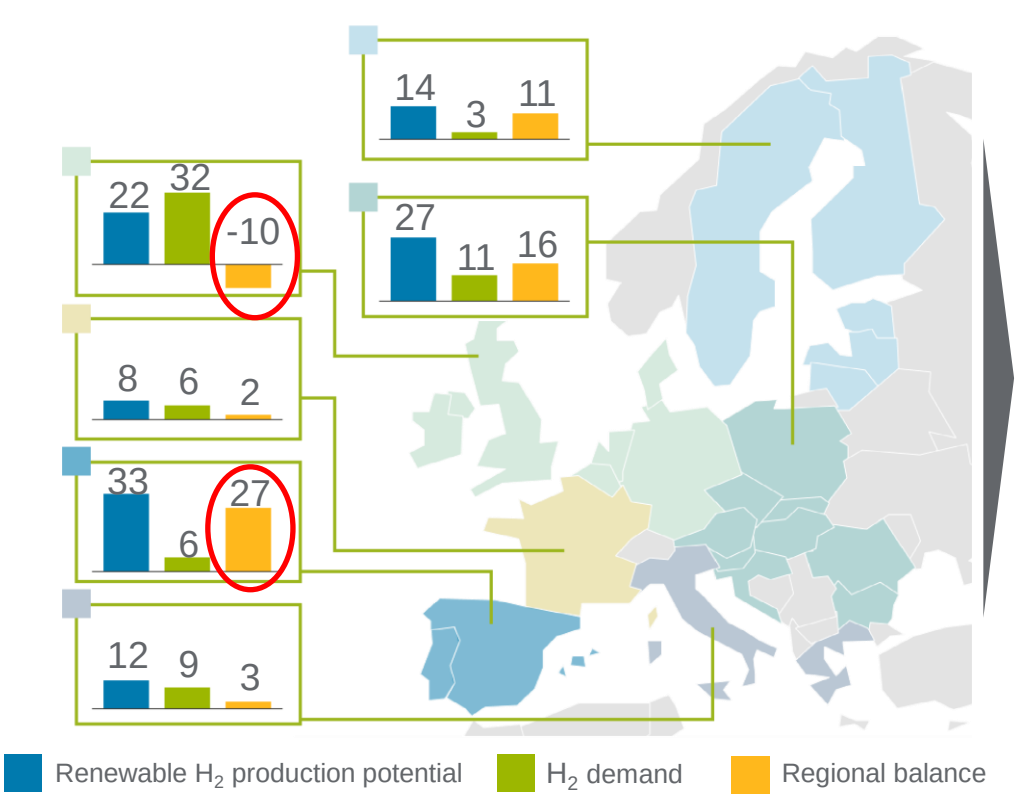
We hold a 60% stake in Enagás Renovable **to contribute to the creation of the renewable gas market in Europe**

Enagás GTS

Implementation of the **Guarantees of Origin System** for renewable gases in Spain

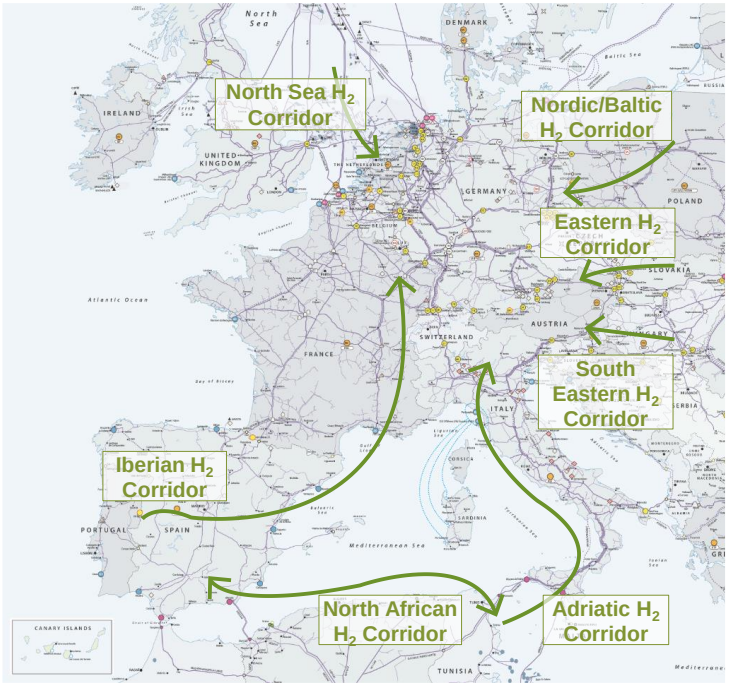
H2 supply & demand imbalances likely to develop in Europe

Potential H_2 production, demand & balance by region (Mt) 2050



Renewable H_2 production potential | H_2 demand | Regional balance

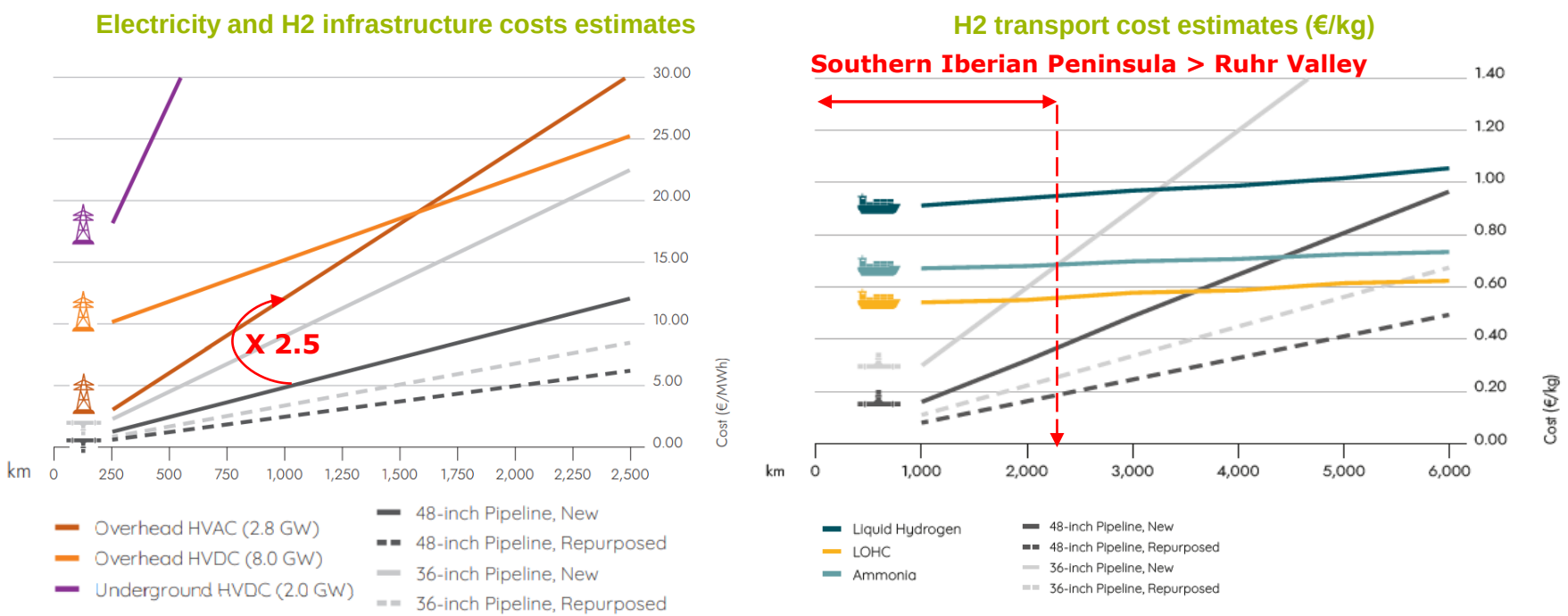
European Hydrogen Corridors



Geographic variations in H2 supply and demand drive the need to develop pan-European pipeline corridors

Source: Left: European Hydrogen Backbone (2022), *Five hydrogen supply corridors for Europe in 2030*; Right: produced from Euroepan Comission (2022) REPowerEU communications.

Pipelines the most economic means of intra-EU H2 transport



Source: European Hydrogen Backbone (2021), *Analysing future demand, supply, and transport of hydrogen.* Note: Costs on left hand side graph assume hydrogen as the end use for transported energy.

H2 transport by pipeline costs 2 to 4 times less than electricity transmission via high-voltage lines with H2 production at destination. For H2 transport routes within Europe, a pipeline is generally more cost-effective than any shipping method.

Spain´s national H2 network can emerge by 2030

Spanish H_2 Backbone by 2030*

Transmission and storage projects submitted to PCI call for proposals

High H_2 production potential connection with unmet local demand

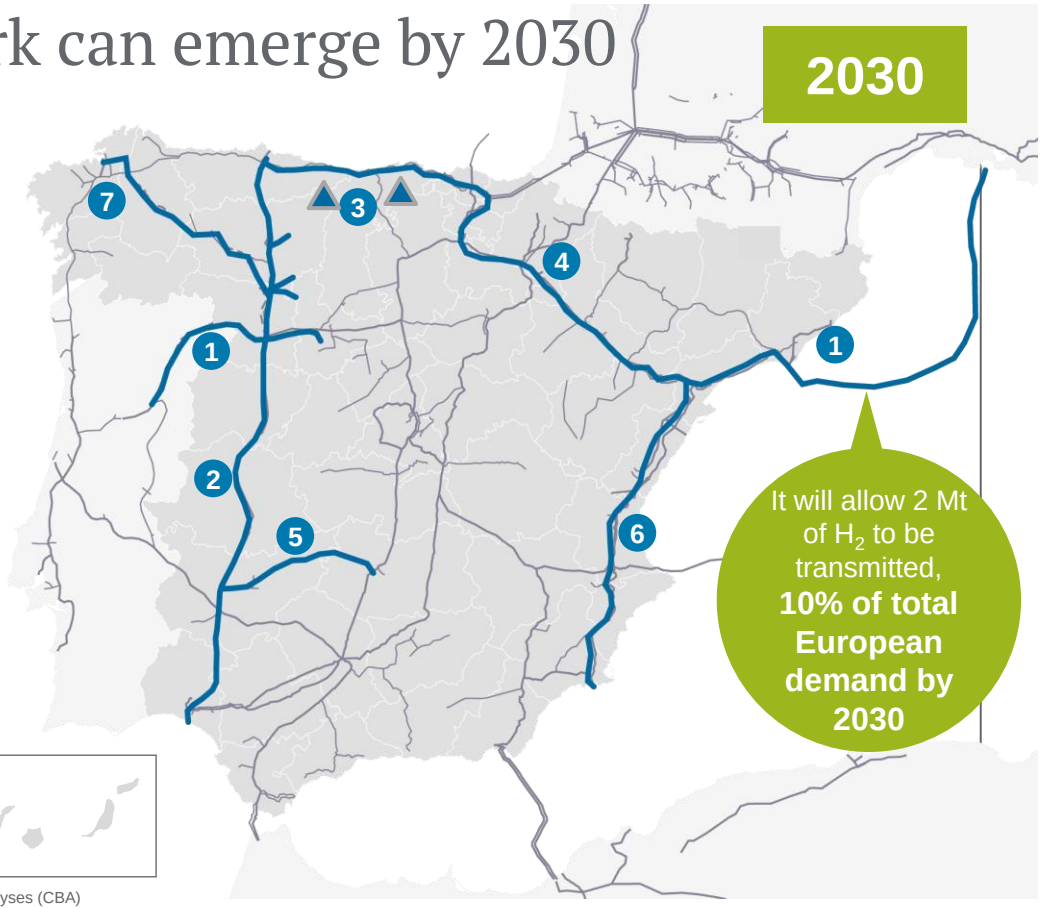
1. H2Med (Barmar-CelZa)
2. Vía de la Plata Axis
3. Cantabrian Coast Axis
4. Valle del Ebro Axis

Connection "H_2 valleys" for supply guarantee

5. Puertollano Connection
6. Levante Axis
7. Coruña - Zamora Connection

   Project submitted by Reganosa to the PCIs

▲ Underground storage facilities



*This network is subject to what is defined in the Government's Binding Planning and prior cost-benefit analyses (CBA)

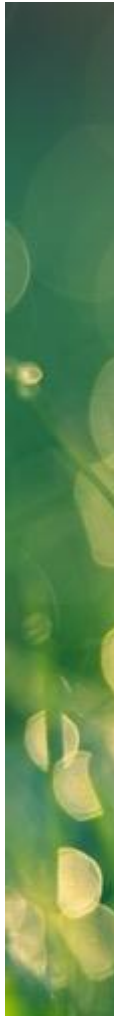
Conclusions

- The REPowerEU Plan reviews the ambition of the energy policy and decarbonisation objectives as well as the pace of their achievement for the EU, recognizing that H2 infrastructures will be a lever for integrating European markets.

- The rationale for a pan-EU H2 pipeline network is clear:

  1. Bridging the imbalances in supply and demand across Europe.
  2. Pipelines are the most cost effective solution for intra-EU H2 transport.

- Enagás´s vision of Spain´s H2 network for 2030 and the H2Med initiative, a core component of the Iberian H2 corridor, support the delivery of REPowerEU and contribute to security of supply and decarbonization.



Thank you