H2med

REPÚBLICA PORTUGUESA
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EUROPE'S FIRST MAJOR GREEN HYDROGEN CORRIDOR

European context

Decarbonisation goals in the EU → **Carbon neutrality by 2050**

Green Deal	Fit for 55	REPowerEU
Roadmap to a climate-neutral EU by 2050.	Package of measures to reduce emissions by at least 55% by 2030.	European plan to reduce dependence on Russia and accelerate the energy transition.

The focus of H2 demand is on sectors that are difficult to decarbonise, such as industry and transport

2030 target: 20MT (10 domestic + 10 import) of hydrogen consumption in EU

H2MED potential and benefits for Europe

Socio-economic
- Industrial development
- Innovation development
- Investment attraction

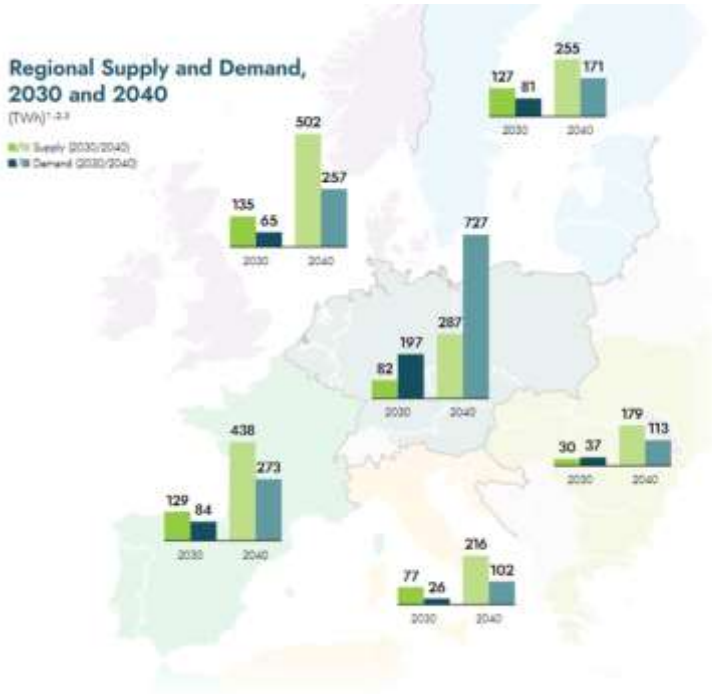
Energy and environmental
- Emissions reductions
- Air quality improvement
- Renewables promotion
- Contribution to national objectives

Social indicators
- Just transition
- Employment
- Contribution to local economies
- Sustainable development goals

REPowerEU Corridors

The cost of H2 transmission by pipeline over long distances is 2 to 4 times lower than transmitting electricity over high-voltage lines

- **Decarbonisation**
- **European solidarity**
- **Europe's energy sovereignty, independence and autonomy**



Where we come from, where we're going

1 October 20th agreement between France, Portugal and Spain

2 Project delimitation

- Cross-border projects
- Celorico-Zamora, Barcelona-Marseille

3 Identification of other key actors

- Joint initiative by TSOs from Spain, France and Portugal

4 Technical

- Conceptual study to confirm the technical feasibility of the project
- Analysis of the alternative routes identifying the optimal route
- Main data for the project
- Cost estimation

5 Financing

- Definition of coordinated actions to obtain funds, with a focus on European Union funds

6 Schedule and others regulatory issues

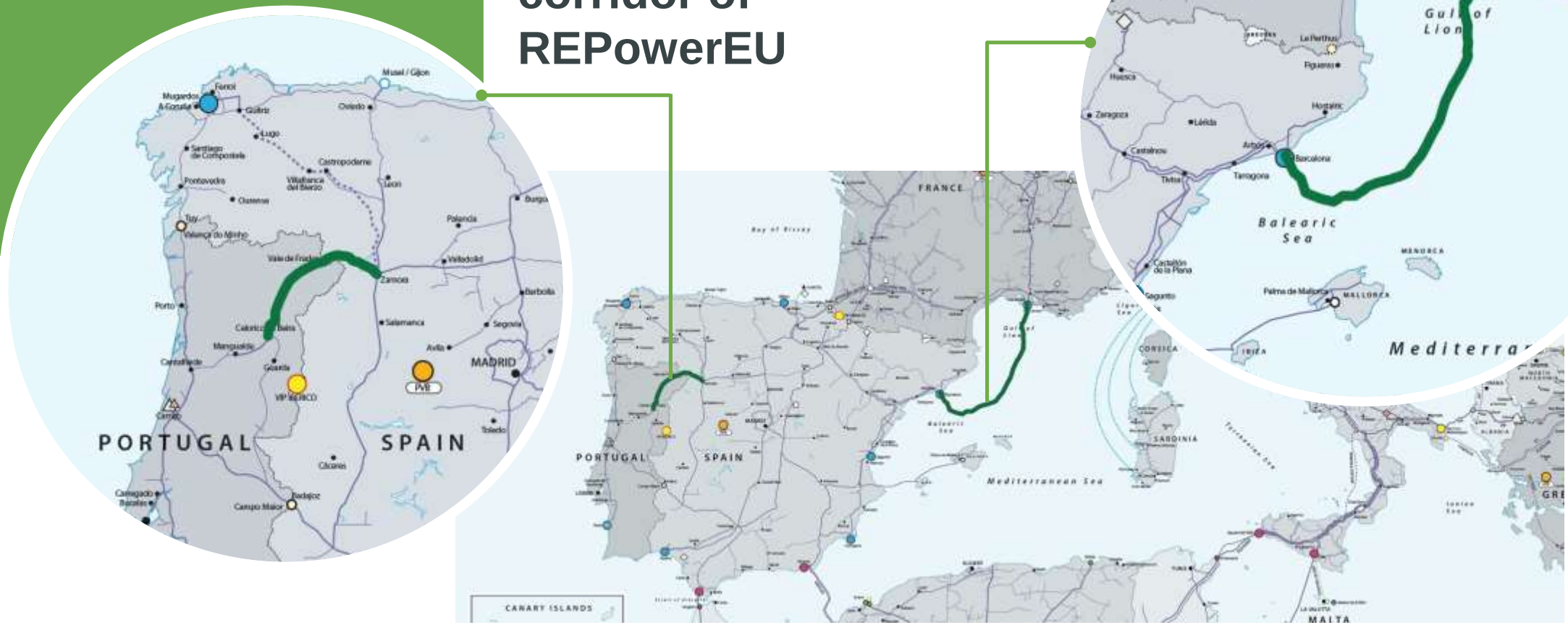
- Roadmap until 2030
- Focus on domestic H2 production
- Analysis of the adequacy of the applicable national and European regulatory frameworks

The route

Celorico-Zamora

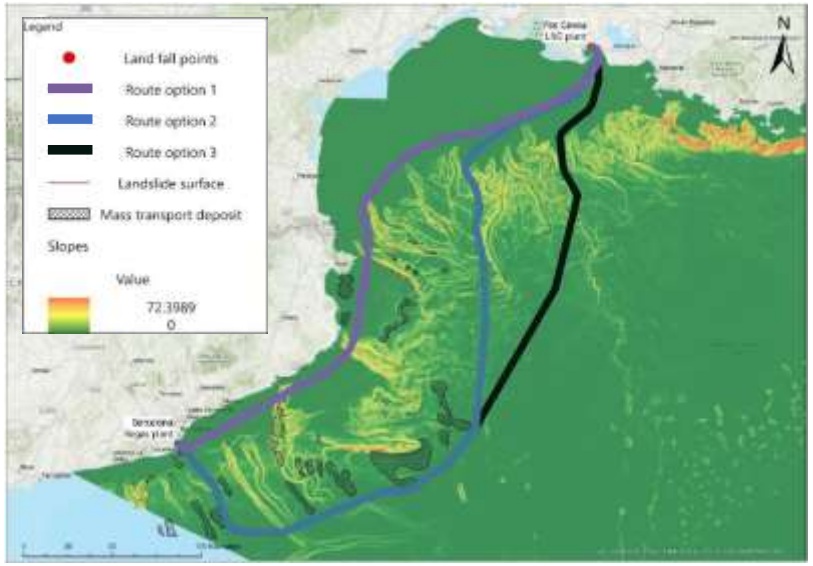
Barcelona-Marseille

First major H2 corridor of REPowerEU



The route: Barcelona-Marseille

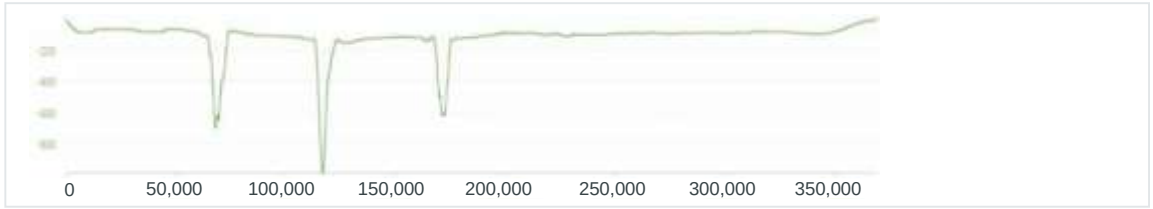
Alternative route analysis



Route option 1
Submarine canyons

985 m
Max. water depth

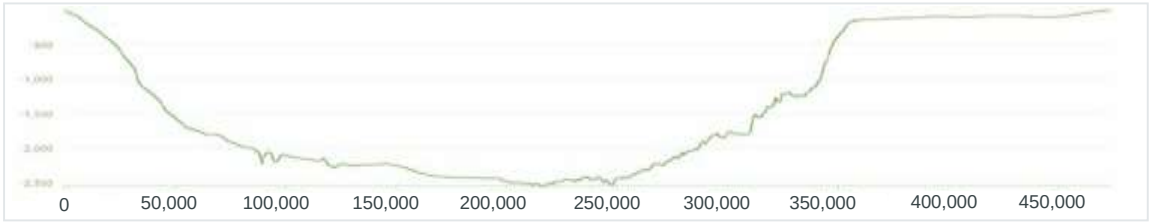
369 km
Length



Route option 2

2,556 m
Max. water depth

473.6 km
Length



Route option 3

2,557 m
Max. water depth

455 km
Length

Optimal route
Shorter than route 2 and more gentle slope up

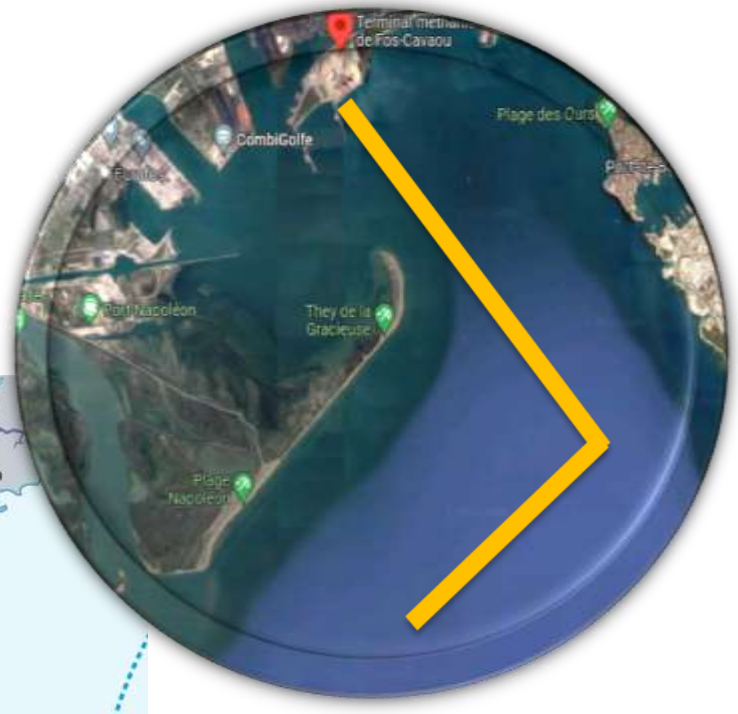
Depth (m)

Length (m)

The route: Barcelona-Marseille

Connection point

Barcelona



Marseille

H2MED will be able to transport

10%

of expected H2 consumption in Europe by 2030. Of the 20 MT of H2 consumption expected in Europe in 2030, this corridor will be able to transport 2 MT

Technical specifications

	Celorico-Zamora	Barcelona-Marseille
Pipeline	• Length: 248 km (POR: 162, SP: 86) • Diameter: 28” • Operating pressure: 84 bar	• Length: 455 km • Diameter: 28” • Maximum depth: 2,600 m • Operating pressure: 210 bar
Compressor station	Zamora (ensures Hydeal pressure of 100 bar): • Power: 12.6 MW • Configuration: 1+1	Barcelona: • Power: 140 MW • Configuration: 3+1
Maximum transmission capacity	0.75 MTPA H2	2 MTPA H2
Budget	≈ 350 million euros	≈ 2.5 billion euros
Execution period	48 months (including permitting estimated at 26 months)	56 months (including permitting estimated at 26 months)

Corporate governance

During development phase

Celorico-Zamora

Separate Ownership. Each TSO responsible for the construction and operation of the infrastructure in their own country

Barcelona-Marseille

Consortium for Development Phase

- **Joint Development Agreement** (JDA) to be signed between the TSO/HNOs promoters of the infrastructure: Enagás, Teréga and GRTgaz
- **Development Phase** will include the elaboration of the Pre-feasibility studies, Engineering and documentation for Authorizations and permits

Financing

≈ 2.5 billion euros

Preliminary cost estimation of the project, to be confirmed by future cost analysis studies

Preliminary technical studies ≈ 35 €M* (Explore Commission funding)

1. European funds: CEF-E programme for projects (up to 50%)
2. Open Seasons
3. Cross-border cost allocation. The Infrastructure Regulation provides for mechanisms to allocate the costs of PCIs to the beneficiary countries by mutual agreement
4. Fees

** 15 €M until mid-2024, pending definition of possible financing sources (EC/Member States)*

Roadmap

STUDIES

IMPLEMENTATION

Pre-feasibility studies

- Environmental impact reports
- Technical proposal
- Public consultations

- Open Seasons
- Fee definitions

Engineering, permits, procurement, project execution

OPERATIONAL START-UP

Start of construction

Oct-Dec 2022 | **2023** | **2024** | **2025** | **2026** | **2029** | **2030**

09/12/2022
Mandate to TSOs to create development consortium

15/12/2022
PCI submission

Publication of PCI list

CEF-E grants for studies

Investment request

CEF-E request, grants for works

CEF-E decision (grants for works)

Next steps. Proposals for conclusion

1 **Acknowledge quality of preliminary studies carried by the consortium**

2 **Ensure the project is closely monitored in the High level Group meetings regarding interconnections in South West Europe**

3 **Support the objective of co-constructing a high quality renewable hydrogen project that could pretend to become a project of common interest (PCI)**

4 **Work on regulation and finance**

- Agree on the necessity of future work to ensure stable regulatory framework which facilitates the implementation of the Barmar project
- **Underline the needs to find co-financing by the European Union as soon as 2023 for the preliminary studies** and validate the principle to agree very soon on the detailed work program and the **budget of the first phase studies (15 M€)**

5 **Next steps. Work program**

- Close follow-up of the work program presented by the TSOs for 2023
- Work to be done to develop production of H2 in partner countries (taking into account the study that will be launched by the European Commission with the three countries)

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