

A hydrogen infrastructure backbone for Spain

PCI 9.1.3. Internal Hydrogen Infrastructure in Spain



Co-funded by
the European Union

Project information brochure

2025 July

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www.infraestructurasdehidrogeno.es

An opportunity for Spain

The hydrogen network will lay the foundations for Spain to become the first green hydrogen hub in the European Union and will have a significant positive impact on the economy and the territory.



A more sustainable energy future.

The network is **key to the decarbonisation** of industry and heavy transport



Technological and industrial development.

Creation of a hydrogen industry and generation of **innovative business fabric** in Spain



Growth and competitiveness.

€3.31 Bn gross investment (years 2024-2030)



Job creation and revitalisation of territories.

17,200 new jobs during the construction of the network and 900 in the operation and maintenance phases

The hydrogen economy in Spain will generate more than €32 Bn of GDP and will maintain some 81,000 jobs each year during its development

Source: Report “Socioeconomic impact of the development of the hydrogen economy in Spain”, prepared by PWC for Enagás (2023)

First axes of the hydrogen backbone network

The development of the Spanish hydrogen network consists of the first 5 axes divided into 15 sections that will run through 13 autonomous communities in Spain.

Vía de la Plata Axis:

≈ 875 km. Four sections:

- Huelva-Mérida
- Mérida-Salamanca
- Salamanca-León
- León-Llanera

Cantabric coast axis:

≈ 440 km. Three sections:

- Llanera-Reocín
- Reocín-Arrigorriaga
- Arrigorriaga-Haro

Levante Axis:

≈ 505 km. Four sections:

- Tivissa-Salzadella
- Salzadella-Paterna
- Paterna-Agullent
- Agullent-Cartagena

CLM Transversal Axis:

≈ 235 km. One section:

- Almodralejo-Puertollano

Ebro Valley Axis:

≈ 535 km. Three sections:

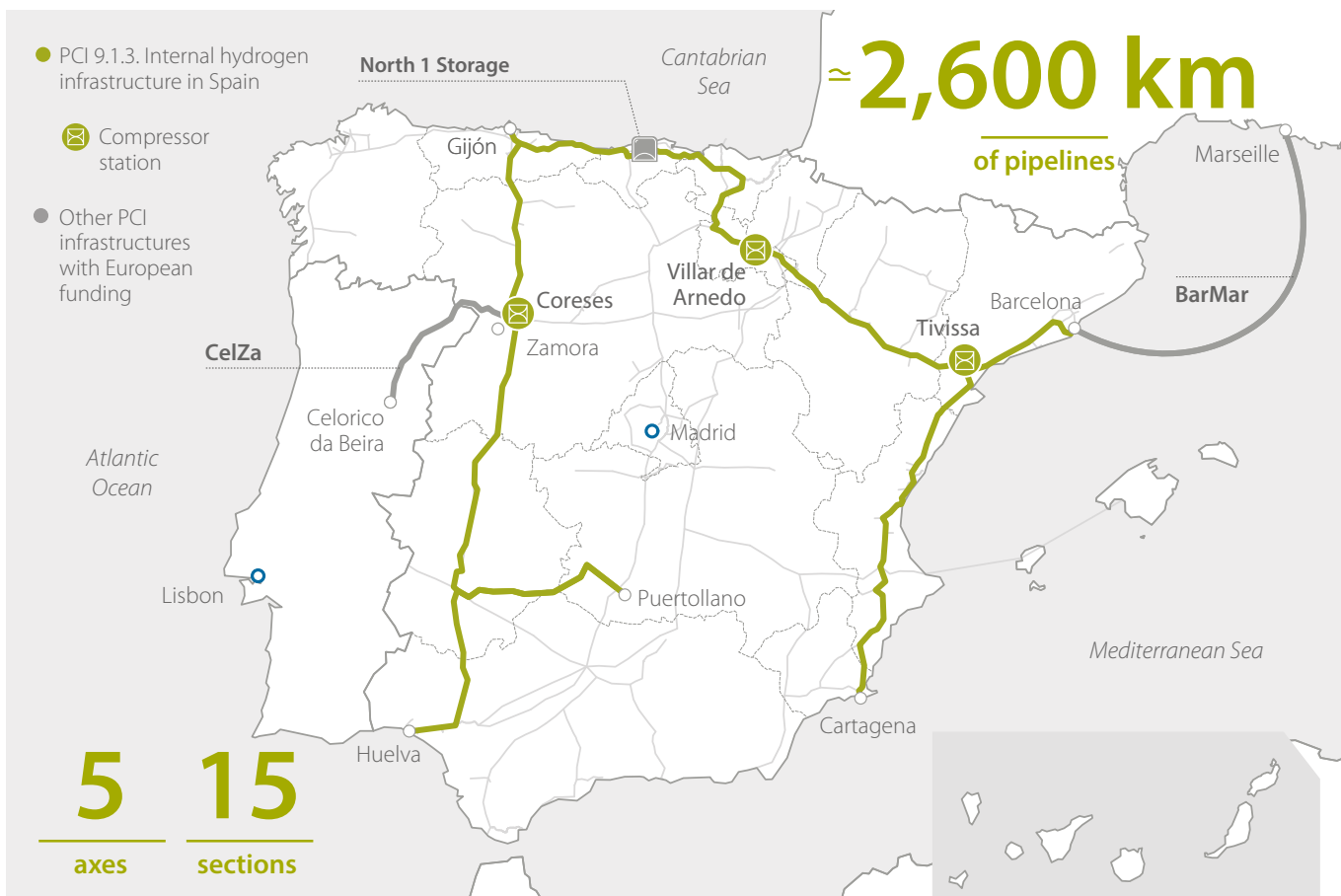
- Haro-Zaragoza
- Zaragoza-Tivissa
- Tivissa-Tarragona-BCN Port

The infrastructure will connect the renewable hydrogen production centres with the identified demand points in Spain, and will link the Iberian Peninsula with the rest of Europe via the H2med corridor.

Network expansion plan

4 new sections submitted in November 2024 to the 2nd call for PCIs

- Guitiriz-Zamora
- Huelva-Algeciras
- North Meseta Transversal (Zamora-Navarra)
- South Meseta Transversal (Puertollano-Madrid-Levante)



A PCI project with European funding

The first axes of the Spanish hydrogen network have been identified as a **Project of Common Interest** (PCI) in the European Commission's first call for hydrogen projects in April 2024.

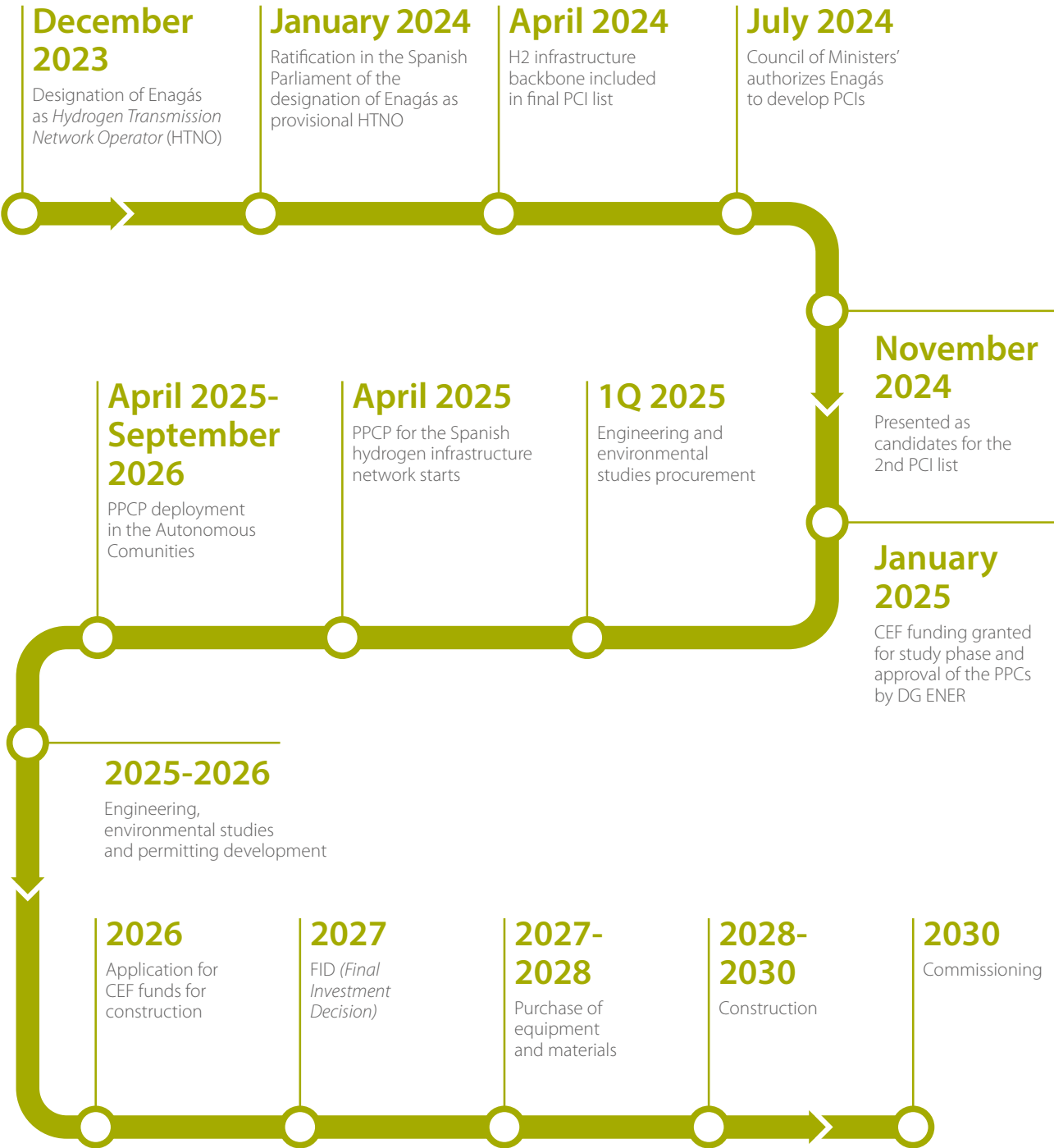
In January 2025, the European Commission's Climate, Infrastructure and Environment Executive Agency (CINEA) granted **100% of the Connecting Europe Facility (CEF) Energy funds** requested by Enagás for the study phase of these first axes of the network.



€32.5 M

of European investment for the **1st phase of studies**

Project timetable



Key hydrogen network infrastructures

Transportation through a network of pipelines is the most efficient technology, from the economic, environmental and safety points of view, to transport green hydrogen from the points of production to the points of consumption.

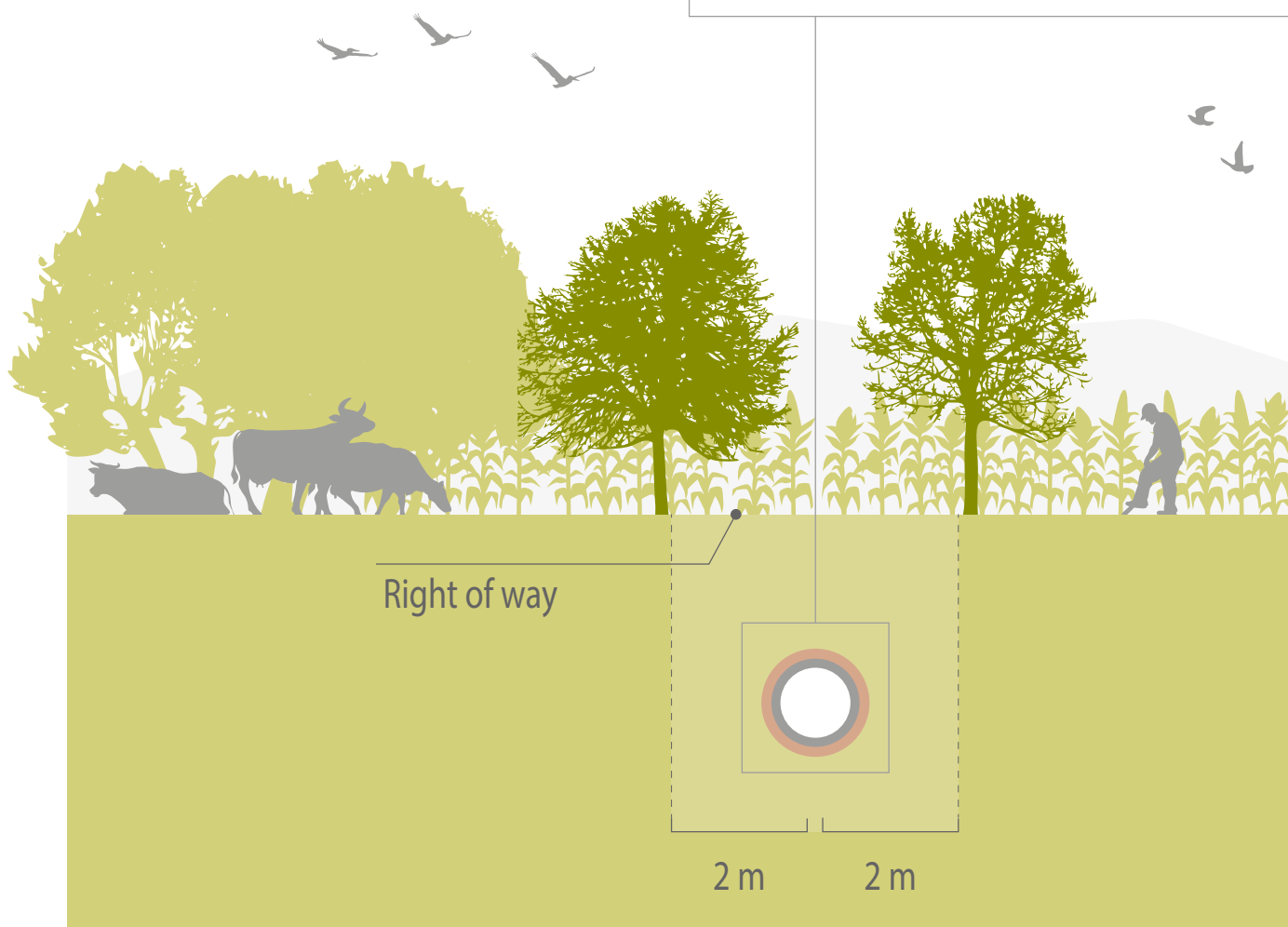
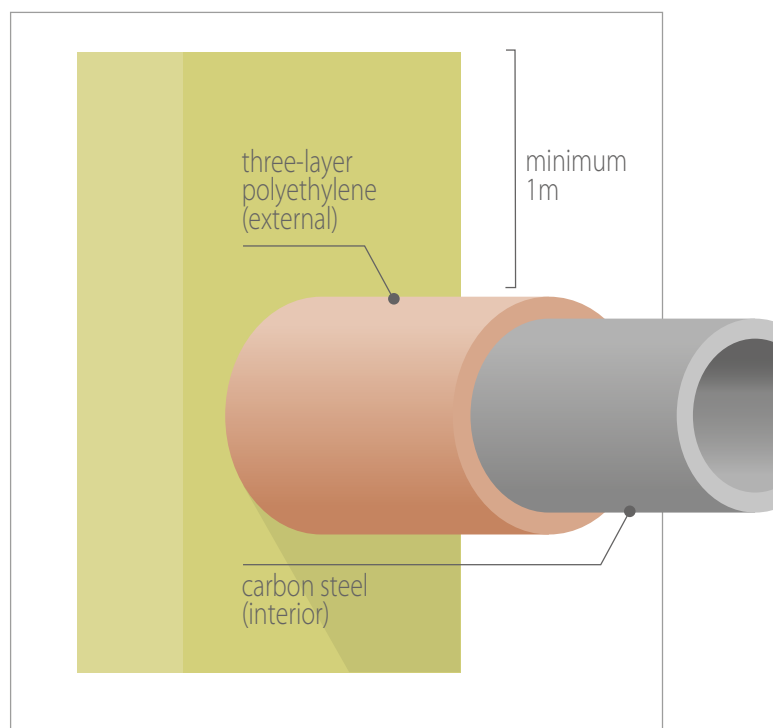
The project of the first axes of Spain's internal hydrogen network consists of the development of 15 underground pipeline sections, new or reconverted, grouped in 5 axes. It also includes surface facilities: compression stations and valve positions.

Hydrogen pipelines

The design of the hydrogen pipelines will be based on the international standards for this type of infrastructure, the applicable legislation in force in the industrial sector, and in accordance with the regulations and complementary technical instructions currently in force in Spain.

It will have all the technical safety and supervision systems to guarantee its safe operation.

The pipeline will be accompanied by a fiber optic cable, inside a bitube, which will allow communications for control and security.



Other network facilities

Valve positions

Preliminary studies for the project estimate about 110 newly constructed valve positions to be located about 20-30 km from each other on the same line as the pipeline route.

They will be equipped with remote activation and control systems, as well as permanent monitoring systems to ensure safe operation.

For each of the valve positions an external low-voltage power supply is required from a nearby point.

Compressor stations

There are facilities that increase the hydrogen pressure in order to transport it over long distances between different territories through the pipeline.

Preliminary studies for the project estimate three compressor stations located in Coreses (Zamora), Tivissa (Tarragona) and Villar de Arnedo (La Rioja).

These are fenced facilities with an estimated surface area of between five and eight hectares, the exact location of which will depend on the technical, environmental and social conditions, taking into account the existence of other Enagás connections in the vicinity.

A high-voltage power line will be required to supply electricity for their operation.

Technical specifications:

- Conduction diameter:
16", 20", 26", 30", 32" (inches)

Double anti-corrosion protection system



**Alternative
project routes**



**Transparency Platform
of the European
Commission**



**Procedure
manual**

Enagás, Hydrogen Transmission Network Operator (HTNO)

The company is the operator of the natural gas transmission networks (TSO) in Spain and Technical Manager of the Gas System. It has also been appointed by the Spanish Government as provisional manager of the country's future hydrogen network (HTNO). In July 2024, the Council of Ministers authorised Enagás Infraestructuras de Hidrógeno (subsidiary established in 2022) to develop European PCIs.



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A transparent participation process

In January 2025, the Spanish Government's Ministry for Ecological Transition and the Demographic Challenge approved the Public Participation Concept Plan (PPCP) for PCI 9.1.3., presented by Enagás.

The company will develop it throughout all the autonomous communities involved for **18 months**, between April 2025 and September 2026 approximately.

Goals



Providing information with transparency about the future hydrogen network to all interested parties



Resolve doubts and explain the need for and benefits of the project



Involving the community and encourage their active participation in the process



Identifying and mitigating impacts and guaranteeing the most appropriate actions to resolve them



Improving project acceptance including environmental sensitivity and social legitimacy in the early project phase

What does it involve?

The deployment of this public participation process can be consulted on the website www.infraestructurasdehidrogeno.es/en.

Enagás will provide detailed information on this process at the participatory workshops that will be held throughout the country with interested parties: local councils, associations and citizens.

These are some of the main informative and participative actions that Enagás will carry out:





Website



Informative brochure and non-technical summary



Workshops with experts



Participatory meetings with citizens and Administration



Information points (fixed and mobile)

Participation in numbers

13

autonomous communities

25

provinces

+540

municipalities

+50

national authorities

≈ 380

organizations and associations

Commitment to environmental and social sustainability

Green hydrogen is a 100% renewable vector essential for combating climate change and for the energy transition.

The hydrogen network development project will have a very low environmental impact thanks to the implementation of preventive and corrective measures at all stages.

From planning to restoration, a **balance between technological development and environmental preservation** is ensured.

The new network will run approximately

80%

along the route of the existing gas infrastructure

21%

Reuse of existing gas pipelines



Construction phase

Temporary impacts derived from the work that will be mitigated with corrective measures.

Commissioning

Minimal impacts during the tests required for the start-up of the facilities.

Operational phase

Reduced impact from the operation, without emissions, of the compressor stations and other complementary facilities, which will be mitigated with regulatory measures.

Dismantling

Temporary impacts derived from land recovery and environmental restoration.

In order to maximise the positive effects of the project and improve environmental prevention, a series of **preventive and corrective measures** have been established in the **different phases** of design, construction and operation.

Preventive measures

Synergic design

Use of existing infrastructure corridors to avoid impacts on natural and protected areas and watercourses.



Sustainable construction

Correct maintenance of machinery, equipment and actions that minimize the impact and help the conservation of land, water, fauna and flora.



Remedial action

Land restoration

Soil restitution, topsoil replacement and waste management.



Restoration of flora and fauna

Activities aimed at restoring and recovering the affected vegetation and local fauna.





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