



GOBIERNO  
DE ESPAÑA

MINISTERIO  
PARA LA TRANSICIÓN ECOLÓGICA  
Y EL RETO DEMOGRÁFICO

# Hydrogen Roadmap

**MINISTRY FOR THE ECOLOGICAL TRANSITION AND THE  
DEMOGRAPHIC CHALLENGE**

*European Gas Regulatory Forum*

**14/10/2020**



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# INDEX

*0. CONTEXT*

*I. HYDROGEN ROADMAP: A COMMITMENT TO  
RENEWABLE HYDROGEN*

*II. H<sub>2</sub> PROJECTS*



## 0. CONTEXT

### Integrated National Energy and Climate Plan (INECP)

#### **Measure 1.8. Promotion of gases renewable**

- Role of H<sub>2</sub> renewable at long term:
  - Industry
  - Seasonal storage
  - Mobility
  - Synthetic fuels
- Specific gas plans renewable gases
  - Production potential and demand

### Draft Law CC and ET

#### **Article 10. Promotion of renewable gases**

*The Government will encourage, through **approval of specific plans**, the penetration of renewable gases, including [...] **hydrogen** [...] in whose manufacture has been used **exclusively raw materials and energy from renewable sources** or allow the reuse of organic waste or by-products of animal or vegetable origin.*

### Relevance

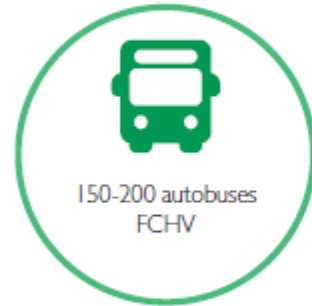
- ✓ **Hydrogen renewable** as one of the main energy vectors in the long term because its production and consumption **is climate neutral and does not generate polluting emissions**, with capacity to be stored as gas under pressure or in liquid state, which allows for a greater degree of manageability.
- ✓ Coherent with the **European Hydrogen Strategy**



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# I. HYDROGEN ROADMAP: A COMMITMENT TO RENEWABLE HYDROGEN

Approved on October 6<sup>th</sup> 2020



*500,000 t/year hydrogen consumption, mostly grey hydrogen, mainly used as a raw material in refineries (around 70%) and chemical product manufacturers (25%)*



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# I. HYDROGEN ROADMAP: A COMMITMENT TO RENEWABLE HYDROGEN

## Regulatory instruments

- Administrative simplification: production + supply facilities
- Public utility direct lines / hydro pipelines
- Renewable H<sub>2</sub> guarantee of origin system

## Sectoral instruments

- Statistics: National H<sub>2</sub> statistics system
- Industry: penetration targets (trade mark) / financial instruments: support industrial adaptation / creation of *hydrogen valleys* + regional tables / **boosting the renewable H<sub>2</sub> value chain industry** in Spain to be a leader within the sector /
- Mobility: incentives for the purchase of vehicles + deployment of hydrogenerators (H<sub>2</sub> corridors) / transformation of diesel locomotives / specific regulations for hydrogenerators / promotion of synthetic biokerosene / support for shipyards / port infrastructure reloading / Sector integration: power to gas and possible participation in balancing services / network injection requirements / boiler combustion requirements





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# I. HYDROGEN ROADMAP: A COMMITMENT TO RENEWABLE HYDROGEN

## Transversal instruments

- Information and training: IDAE information hub / professional profiles
- Studies: potential production and consumption / socio-economic impact
- Contributing to just transition policies and tackling the demographic challenge
- International Dimension

## Boosting R&D&I

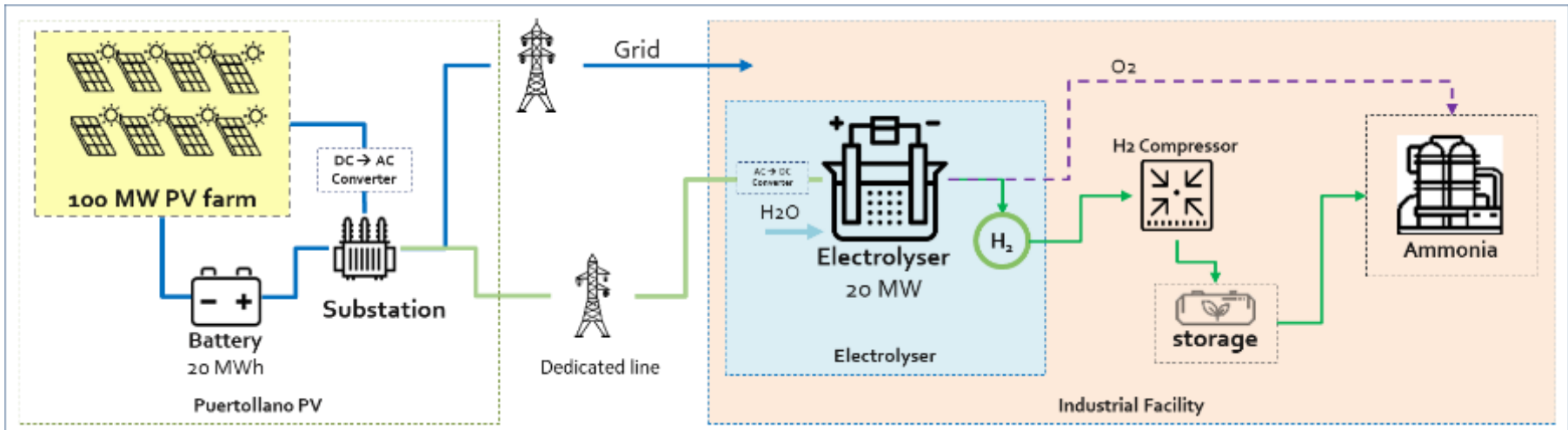
- Role of H<sub>2</sub> in National Scientific and Technical Research and Innovation Plans
- Role of the CDTI and its funding lines
- Role of the NCH2 and international cooperation
- Promotion of specific technologies: combustion for electricity generation / large electrolysers / recycling elements
- Centres of excellence for research
- EU funding lines + EU Recovery Fund



## II. H<sub>2</sub> PROJECTS

### Puertollano

✓ **PUERTOLLANO. H<sub>2</sub>R for the fertilizer industry. Call for Innovation Fund.**



#### Dimension of the project:

- 20 MW of electrolysis (scalable)
- 100 MW solar photovoltaic
- 20 MWh battery

#### End uses:

- Renewable hydrogen as a raw material for fertilizer production

**Location** → Puertollano (Ciudad Real)

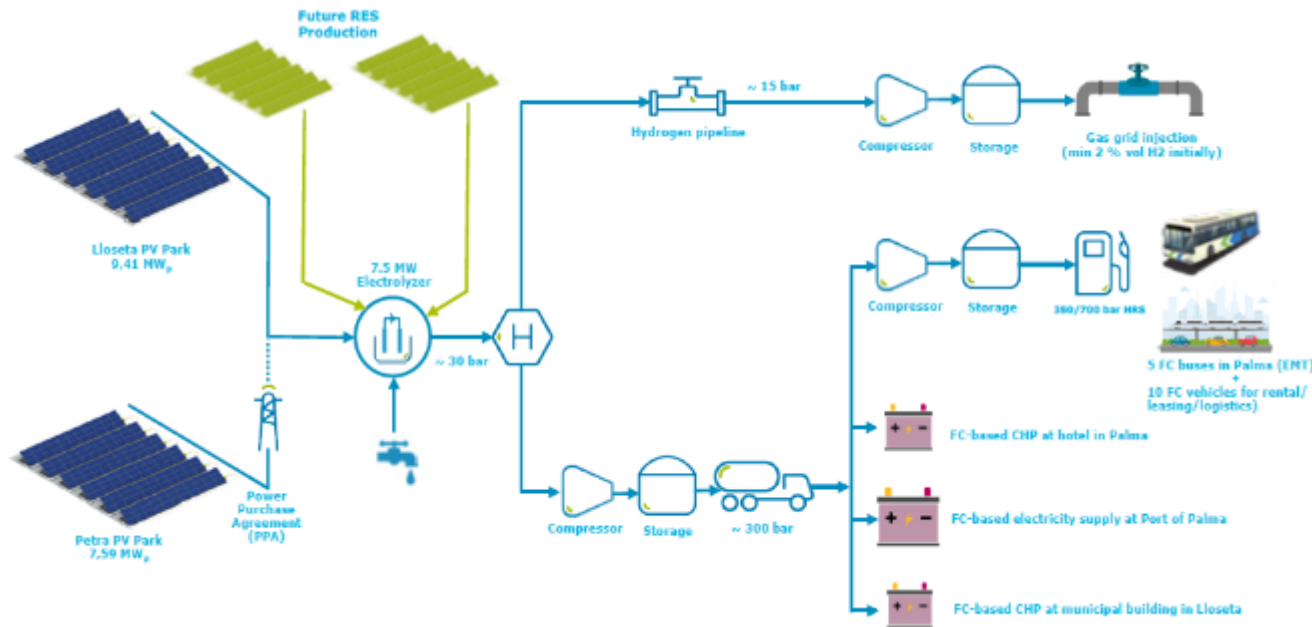
- Refinery
- Petrochemical area



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## II. H<sub>2</sub> PROJECTS Mallorca

### ✓ **GREEN HYSLAND. Hydrogen for tourist demand (FCH JU. Islands topic)**



#### Dimension of the project:

- 7.5 MW electrolysis
- 16 MW solar photovoltaic

#### End uses

- Mobility (urban buses; rent-a-car; port services)
- Thermal (Hotels, public buildings)



**Location** → Lloseta (Island of Mallorca)

- Closure of cement production plant
- Turistic area



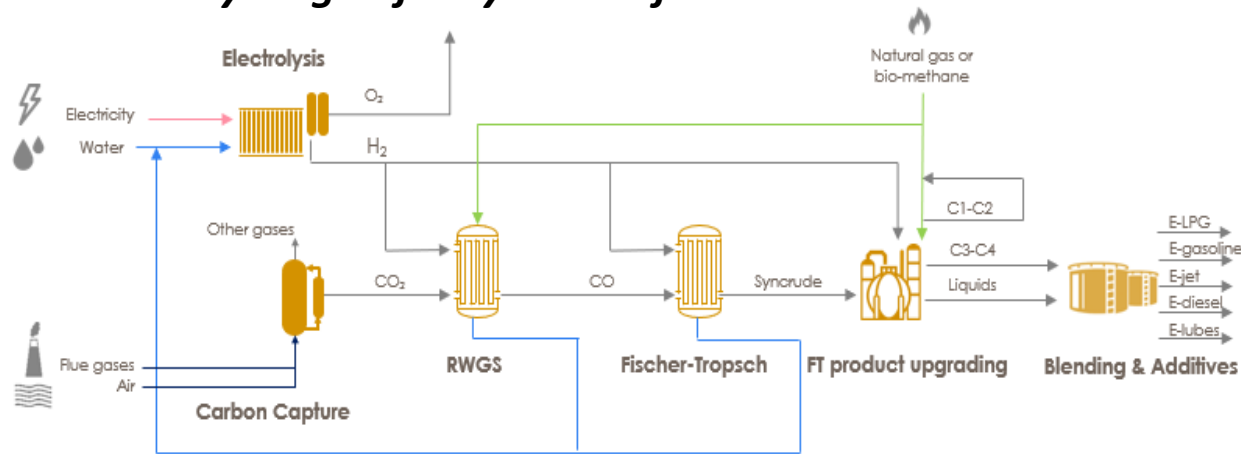


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## II. H<sub>2</sub> PROJECTS

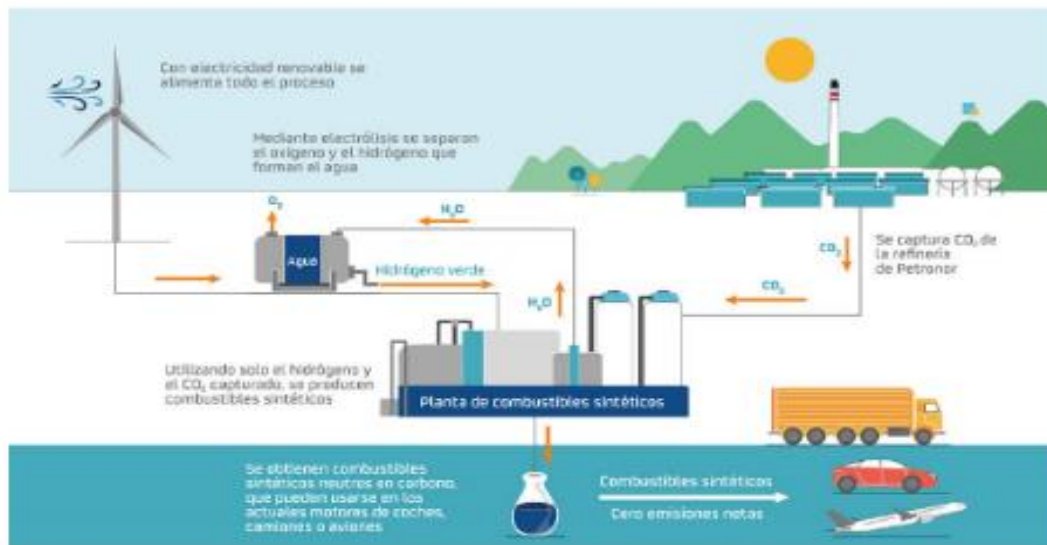
### Bilbao

#### ✓ E-FUELS. Hydrogen for synthetic fuels



Location → Bilbao

- Refinery
- Heavy industry area
- Technological cluster
- Port and airport



#### Dimension of the project

- 10-40 electrolysis (1<sup>st</sup> phase)
- 100 MW electrolyzer (2<sup>nd</sup> phase)
- Wind power installation

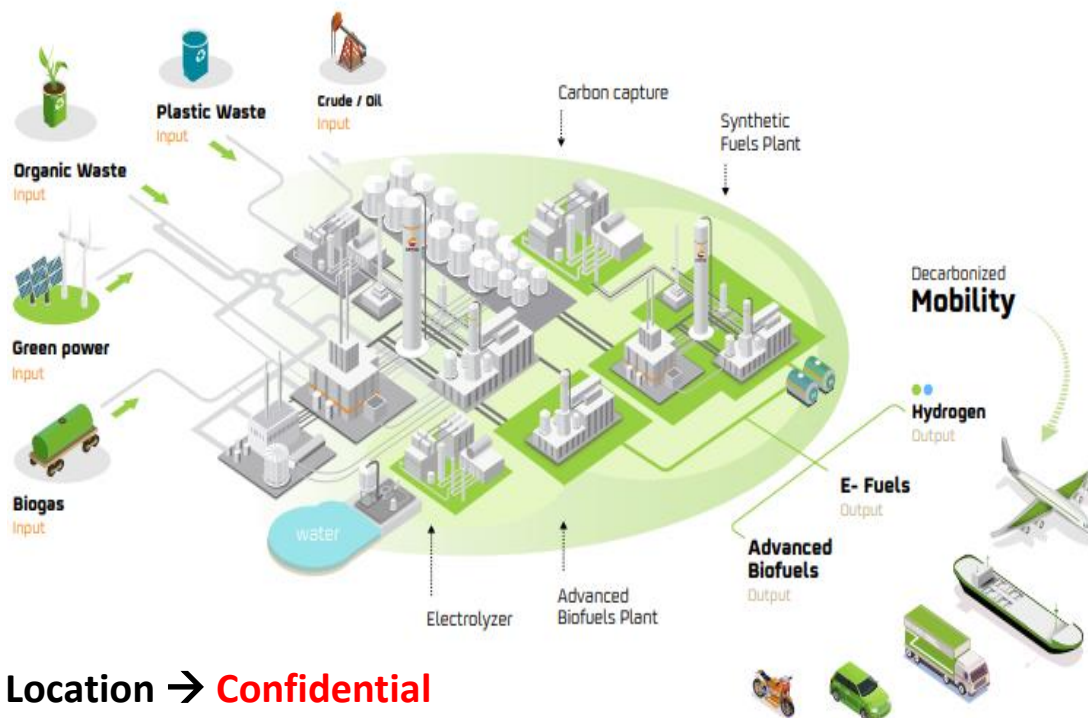
#### End uses

- Manufacturing synthetic fuels
- H<sub>2</sub> for direct use



## II. H<sub>2</sub> PROJECTS

### ✓ *Hydrogen to reach zero net emissions refinery and production of advanced biofuels*



Location → **Confidential**

- Refinery
- Heavy industry area

### Dimension of the project

- 100 MW electrolysis
- Advanced biofuels production
- Carbon Capture
- Circular economy project

### End uses:

- Decarbonization of the refinery
- Use in mobility



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## II. H<sub>2</sub> PROJECTS

### Other projects - Mobility

#### Public Transport

8 buses + 1 hydrogenerator

[Bidding in course](#)

#### Port of Valencia (H2Ports)

Handling equipment

FCH JU funds: 4 M€. Delivery: December 2022.

<https://h2ports.eu/>

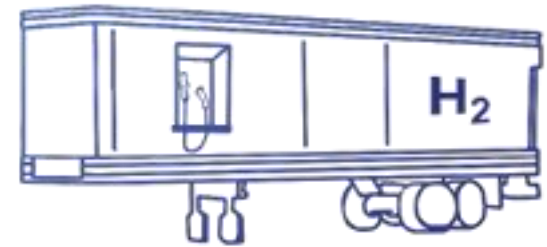
#### Railway. Renfe & CNH<sub>2</sub>

H<sub>2</sub> + LNG tests in a tunnel in Foundation Barredo (Asturias)

Project for CDTI's Proyectos Cien.

#### Sun2Hy (new technology)

Construction of a Photoelectrocatalysis plant to produce in 2025 10 ton h<sub>2</sub>/day





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*Thank you for your attention*