Cepsa's Hydrogen Project

Cepsa´s strategy "Positive Motion"

Our strategy: **Flying towards a sustainable future**

55%
Scope 1&2 **emissions reduction in** 2030 vs 2019

0 Net-emissions
In 2050

7.000 M€
total investment

Our commitment: **Decarbonizing our clients**

Renewable power (Wind + Solar) is generated…

Production capacity of 7GW in solar and wind projects in 2030

→ …to source the production of **Green Hydrogen**…

Production capacity of 2GW by 2030

→ …helping Cepsa to produce in its **Energy Parks**…

Strategically located in Cádiz and Huelva refineries, near key ports and markets
With new **Energy Efficiency** technologies and **Carbon Capture**

→ …different types of sustainable **fuels**…

Biofuels production capacity of 2.5 Mt by 2030

- **SAF/HEFA** from 2023/26 — Aviation
- **HVO** from 2026 — Road transport, Maritime
- **E-fuels** from 2030 — Industry, Aviation, Road transport, Maritime
- **Green H2** from 2026 — Industry, Aviation, Road transport, Maritime

→ …to help clients in their **decarbonization**

Industry · Aviation · Road transport · Maritime

From "Positive Motion" to "Hydrogen Vision"

Leading the green hydrogen transition from 2GW in Spain of green H_2 by 2030 in the Valle Andaluz to 6 GW worldwide.

From the current H_2 production (c.23% Spanish Market) to 100% green H_2 by 2030

2023

- **70 kty** catalytic H_2
- **45 kty** grey H_2 from SMR

2030

- **70 kty** catalytic H_2
- **45 kty** electrolytic
- **36 kty** Bio SMR + **14 kty** electrolytic
- **125 kty** ammonia/methanol
- **24 kty** electrolytic

Energy Parks

Cepsa chemicals

Biodiesel + SAF

Green maritime fuels

Mobility

Cepsa has already strong grounds to deliver this strategy:

One of the largest H_2 consumers in Spain

Experience in managing H_2 safely

7 GW pipeline of renewable projects

#1 bunkering company in Spain

Large plots of land available in Huelva and Algeciras

Relevant network of refueling stations serving large fleets of road transport

Cepsa's H2 Strategy

Cepsa will install green Hydrogen production assets in two location in southern Spain (Huelva and Algeciras) next to its existing Energy Parks

- Positioning Spanish ports as **international benchmarks** in green H_2 corridors
- Accelerating the **development of sustainable mobility** with specific projects promoted by Cepsa.
- Contributing to the **fulfillment of Spain's and Europe's commitments to decarbonization**
- Promoting the **combination of different renewable energy sources** and hydrogen uses

6 Mty

Of avoided CO_2 emissions

New Jobs created:

10.000

Obligations in the aviation and maritime sectors will boost green fuels demand

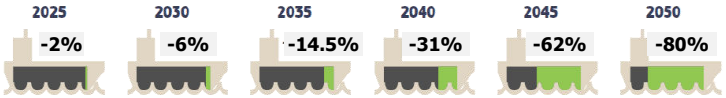
Maritime

CO_2 emissions

Annual average **carbon intensity reduction** trend (baseline 2020)

✓ From **2%** in 2025 to **80%** in 2050

Percentage of GHG reduction



Carbon intensity reduction %

Source: Article 4 – GHG intensity limit of energy used on-board by a ship

- **50% reduction of total emissions and 70% of specific CO_2 emissions by 2050**, decarbonization as soon as possible in this century
- This target will be tightened towards 100% in 2023 in order to meet the 1.5°C goal
- Aligned with IMO, but higher goals:
- There will be incentives for RFNBOs

IMO

SEA CARGO CHARTER

POSEIDON PRINCIPLES

Aviation

Fuels

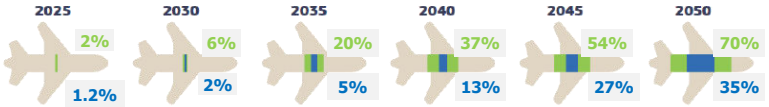
SAF

✓ From **2%** in 2025 to **70%** in 2050

E-SAF

✓ From **1.2%** in 2025 to **35%** in 2050

Percentage of volume share: SAF & e-SAF



SAF

e-SAF

Source: ReFuelEU Aviation Regulation, Annex 1 – Volume shares

Total. Refers to the absolute amount of GHG emissions from international shipping.

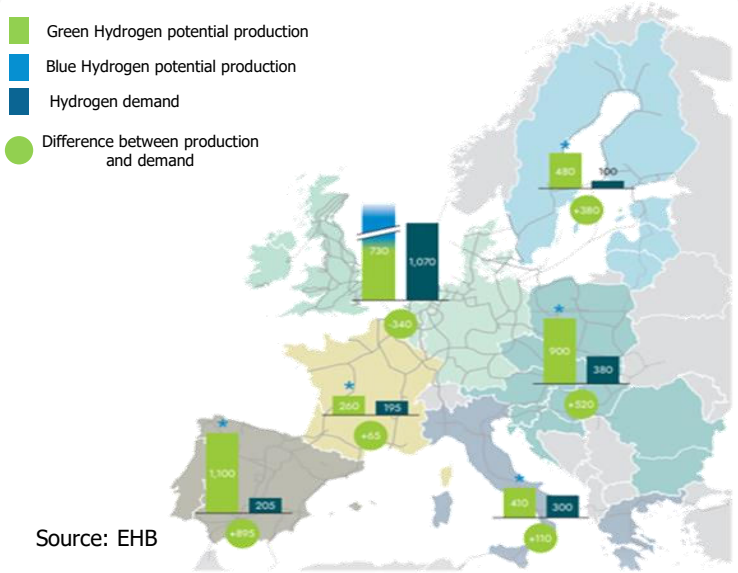
Intensity. Carbon dioxide (CO_2) emitted per ton-mile.

RFNBO. Renewable fuels non biological origin (H_2 based fuels)

European Hydrogen corridors

Spain will play a key role in the decarbonization of Europe due to its production potential and location

Production vs demand by country in 2050



Source: EHB

Spain will be the **biggest H_2 producer** country in EU

Central Europe will need to **import** Hydrogen

Europe will be able to produce **100 %** of its **demand**

Main European corridors

Five potential corridors

12 Mt throughout Europe

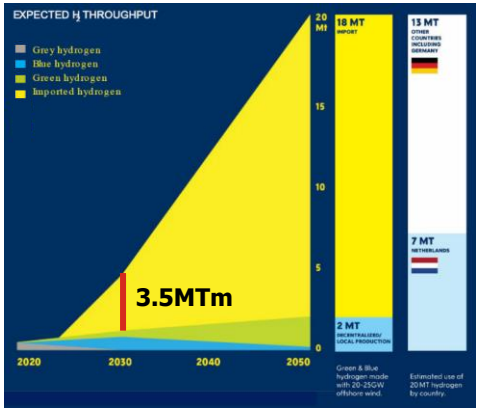
H_2 flows from countries with the **largest gap** between **production** vs. domestic **demand**

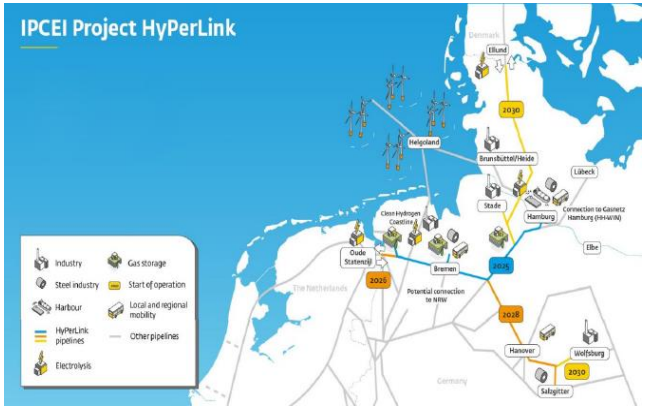
Spain has a **land corridor and** a **maritime corridor** with Central Europe.

Cepsa locations are ideal for establishing the first green hydrogen corridor with Europe

Port of Rotterdam is the entry gate to the highest energy hub in Europe

Our agreement with the Port of Rotterdam gives us access to the hydrogen backbone and Delta corridor connecting Rotterdam with Germany



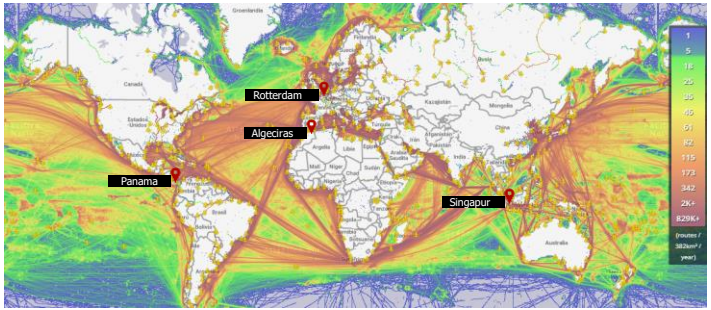


Source: Port of Rotterdam

Decarbonizing maritime transportation is a strategic opportunity for Cepsa

Spain, and specifically Andalusia, is uniquely positioned for bunkering given its strategic location

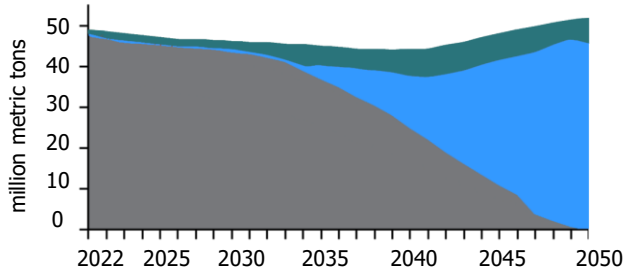
Global maritime traffic

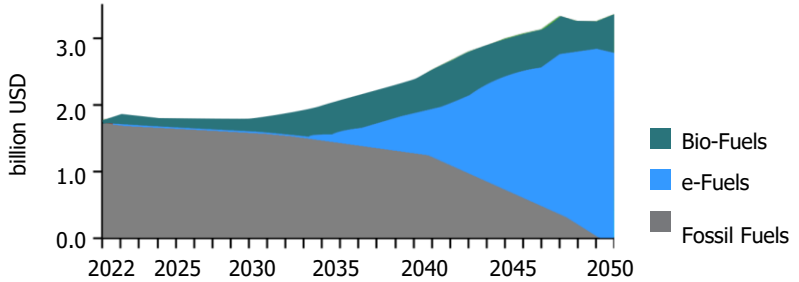


Key aspects

- The **port of Algeciras and its bay** is among the **Top 10 world ports** in the **bunkering** business, only surpassed in Europe by Rotterdam, all of which have a low Hydrogen production capacity.
- Nearly **30%** of the **national bunkering operations** take place in the Port of Algeciras.
- Bunkering ports are those where a perfect match of maritime traffic and availability of competitive fuels coexist.

Fuel Demand





Source: DNV

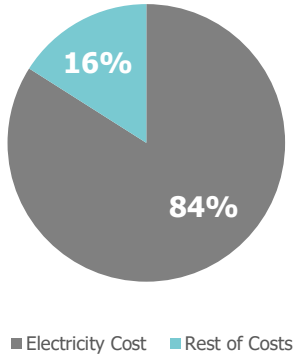
Identifying key drivers to achieve a competitive hydrogen production

Cepsa's strategy aims to produce competitive green Hydrogen in the long term, where the key is the electricity cost and thus the load factor

Hydrogen production cost driven by electricity cost

Hydrogen Production Cost Breakdown

The percentage can vary depending on the project's scale



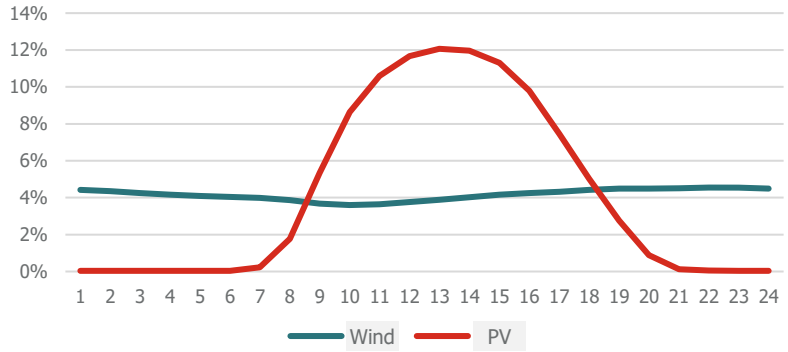
+80% of green Hydrogen total production cost consists of the renewable electricity cost

Source: Mckinsey

Renewable production Load Factor (LF) is key

Wind vs Solar Hourly Production Profiles

Average production in Spain for the last years



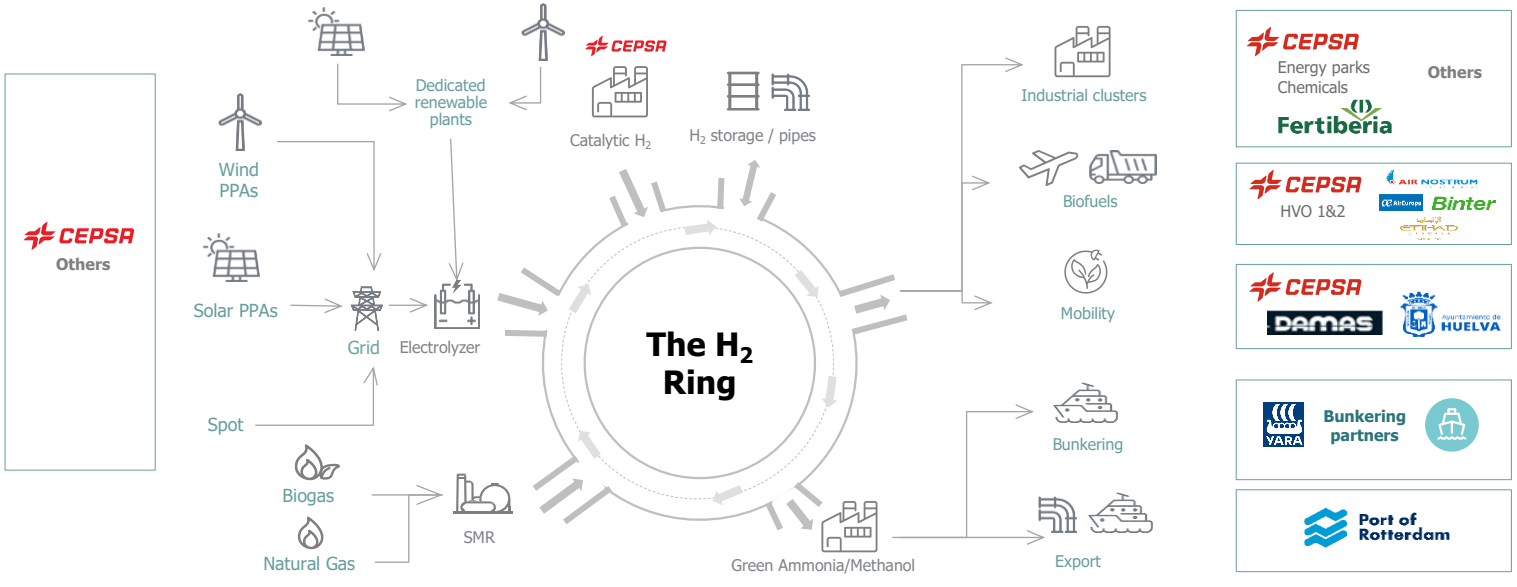
Combining solar and wind power would provide a 70% LF

Source: Red Eléctrica de España

The H_2 Ring

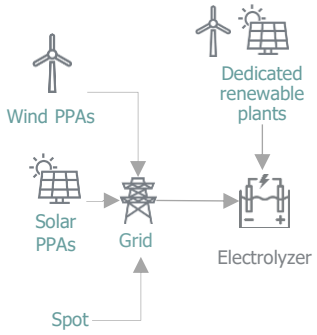
The H_2 ring optimizes the sourcing of different types of hydrogen and its allocation to different users avoiding redundancies and increasing the security of supply

1 Energy purchases **2 Production** **3 Final Users**



Cepsa's Project will be developed in two phases in Huelva and in one in Algeciras

Huelva's Project

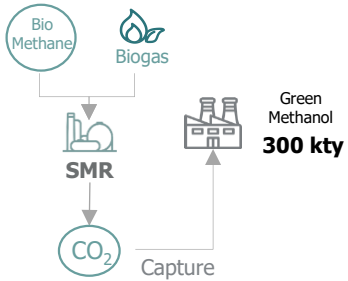


Electrolytic hydrogen

Phase 1 2026:
400-600 MW

Phase 2 2028:
400 MW

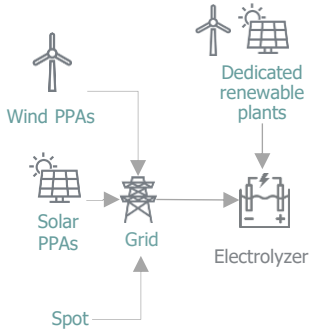
+



Target FID

Phase 1 Q4 - 2024

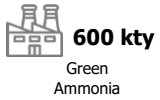
Algeciras' Project



Electrolytic hydrogen

2028:
1 GW

+



Target FID

Q2 - 2026

Note: Catalytic hydrogen not included

Current developments

Three main projects under development

Palos de la Frontera - Huelva

Project name : ONUBA

- Electrolyzer: **400 Mw**
- 25% PEM, 75% ALK
- Use: Hydrogen Consumption for Industrial use
- **Partners: Fertiberia, ENAGAS**
- **FID: Jul 2024**
- **COD: Q4 2026**

Status:

- **OEMs RFQ Received. Basic**
- **Engineering ready to start**

Punta del Sebo - Huelva

Project name : ONUBA II

- Electrolyzer: **200 MW**
- **Methanol Plant : 300.000 Tm/y**
- Single OEM ALK
- **Partners: MAERSK**
- **FID: Q4 2025**
- **COD: Q4 2028**

Status:

- **OEMS: Selection process started**
- **Methanol Technologist: same.**

San Roque - Cadiz

Project name : CARTEIA

- **Electrolyzer: 1 Gw**
- **Ammonia plant : 600.000 tm/y**
- OEM:25% PEM, 75% ALK
- **Partners: YARA, EDP**
- **FID: Sep 2025**
- **COD: Q4-2028**

Status:

- **OEMS: First contacts with technologists**

Cepsa will develop the H_2 projects in its own sites

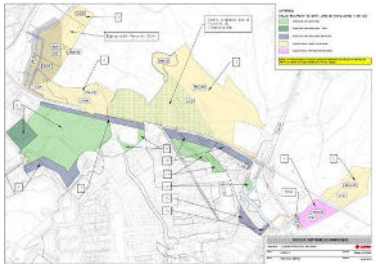
These locations already have the main elements key for the hydrogen production

	Huelva	Algeciras
Available Industrial Land	✓	✓
Existing high voltage connection	◔	◔
Access to water supply	◔	◔
Permitting	✓	◔
Fuel Storage Facilities	✓	◔
Proximity to deep-water port	✓	✓

✓ Available ◔ Ongoing

Huelva

Algeciras



Cepsa's value proposition

Based on Cepsa's unique hydrogen strategy

- **Attracting top international companies to partner with us**
- **Investment grade**
- **Fast track permitting**
- **Priority in future grid access capacity**
- **PPA Long Term Contracts**
- **Clear PPA pipeline visibility**
- **Posibility to co-develop**
- **High volumen needs** (2GW of H_2 requiere ca. 12TWh)