

Energy Transition Plan in the Port of Barcelona: Towards decarbonization

Jornada EIC. Sostenibilidad en el transporte marítimo.
Col·legi Enginyers Industrials de Catalunya



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Hèctor Calls

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The Port of Barcelona

Social

More than 500 companies
40.000 people work daily
5.3 million passengers (23)

Economic

Turnover: **189 M€** (23)
Total value of handled cargo: **113.600 M€** (23)
Total traffic: **64 Mt** (23)
Aprox. **2%** of GDP of Catalonia
1.1% Catalan labour market

Environmental

Emissions of the Port of Barcelona

Source: Barcelona Port Authority



10,4% BCN city

NOx

7% BCN city

PM₁₀

1.5% BCN city

SO_x

Negligible

GHG Emissions Port of Barcelona

 **350,000 tn/year**

Energy Consumption 2023

>950 GWh/year

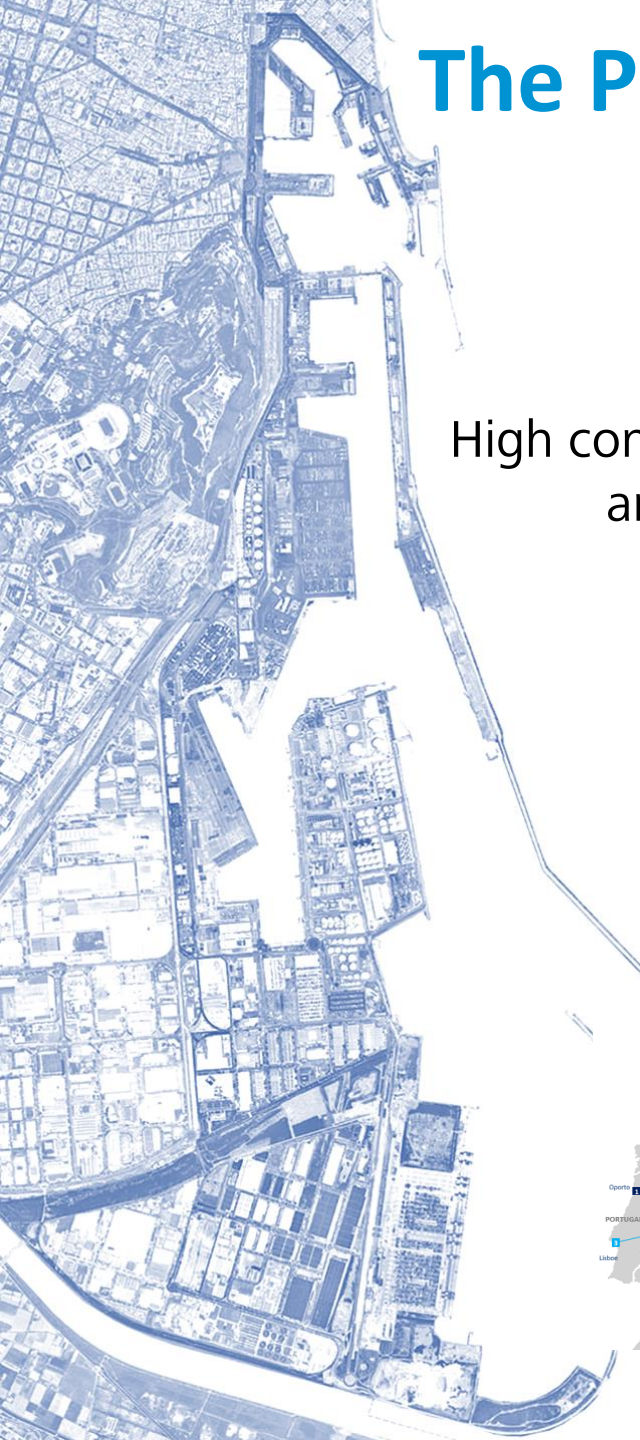


Highly diversified Port

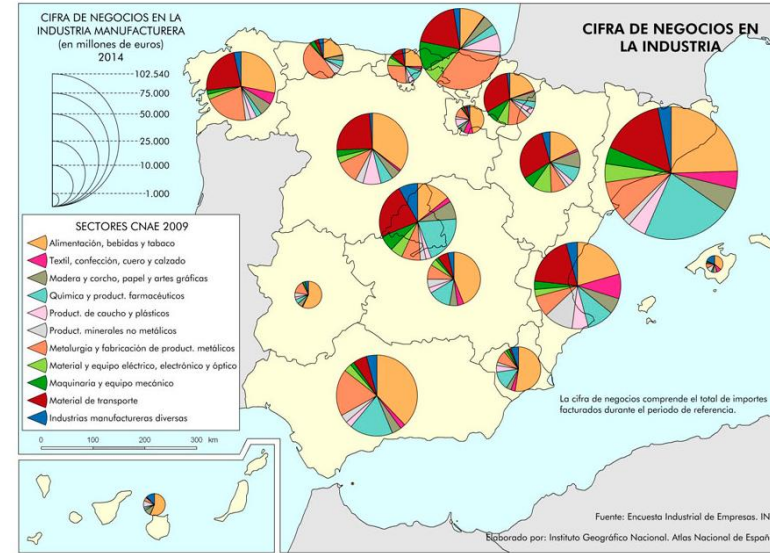
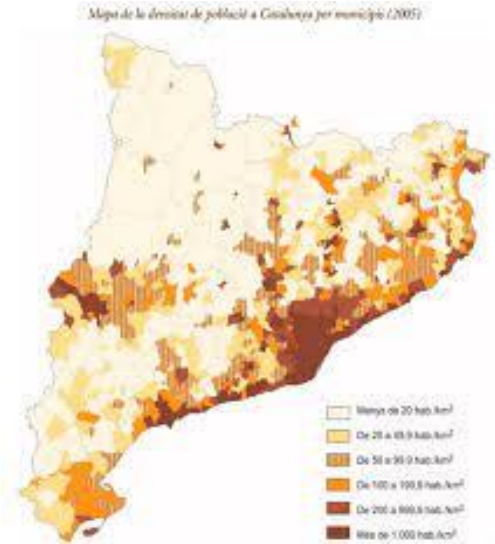


Well connected by road and train

The Port of Barcelona



High consumption area



Important industrial cluster

Multimodal associated terminals



Road connection Ten-T



Railway connection



Short Sea Shipping and Highways of the seas



Europe – Mediterranean

The Port of Barcelona



Near the international Airport
Large industrial and residential area
Inland intermodal terminals network



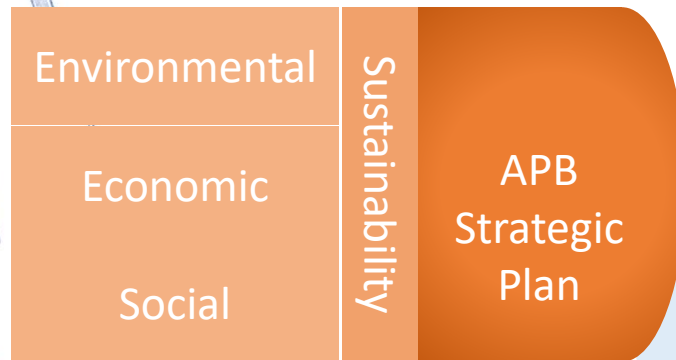
CLIMATE CHANGE CONTEXT

What is our framework?

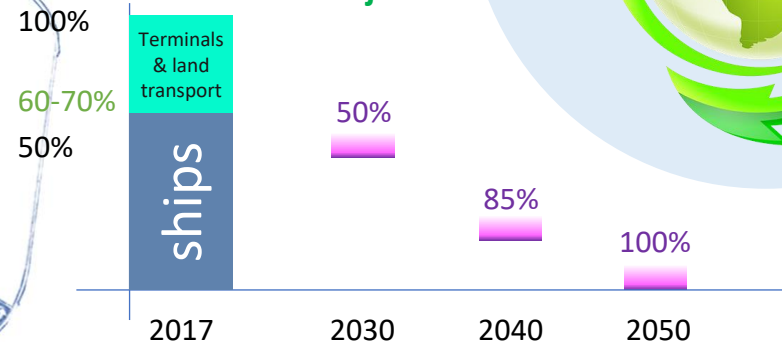
Port of Barcelona ambition levels

50% reduction of GHG by 2030 compared to 2017
Focus on the energy transition to reduce atmospheric pollution and greenhouse effect gases

- Develop a new energy model
- Decarbonize maritime-port activity
- Reduce pollution
- Increase multi-modality



GHG reduction objectives



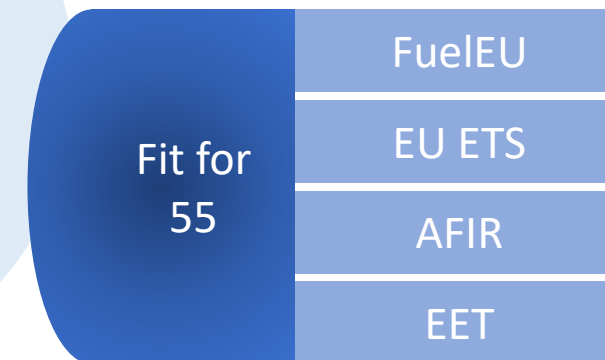
UN Ambition levels

And that total annual GHG emissions from international shipping should be reduced 20% in 2030, 70% in 2040, 100% by 2050 compared to 2008.



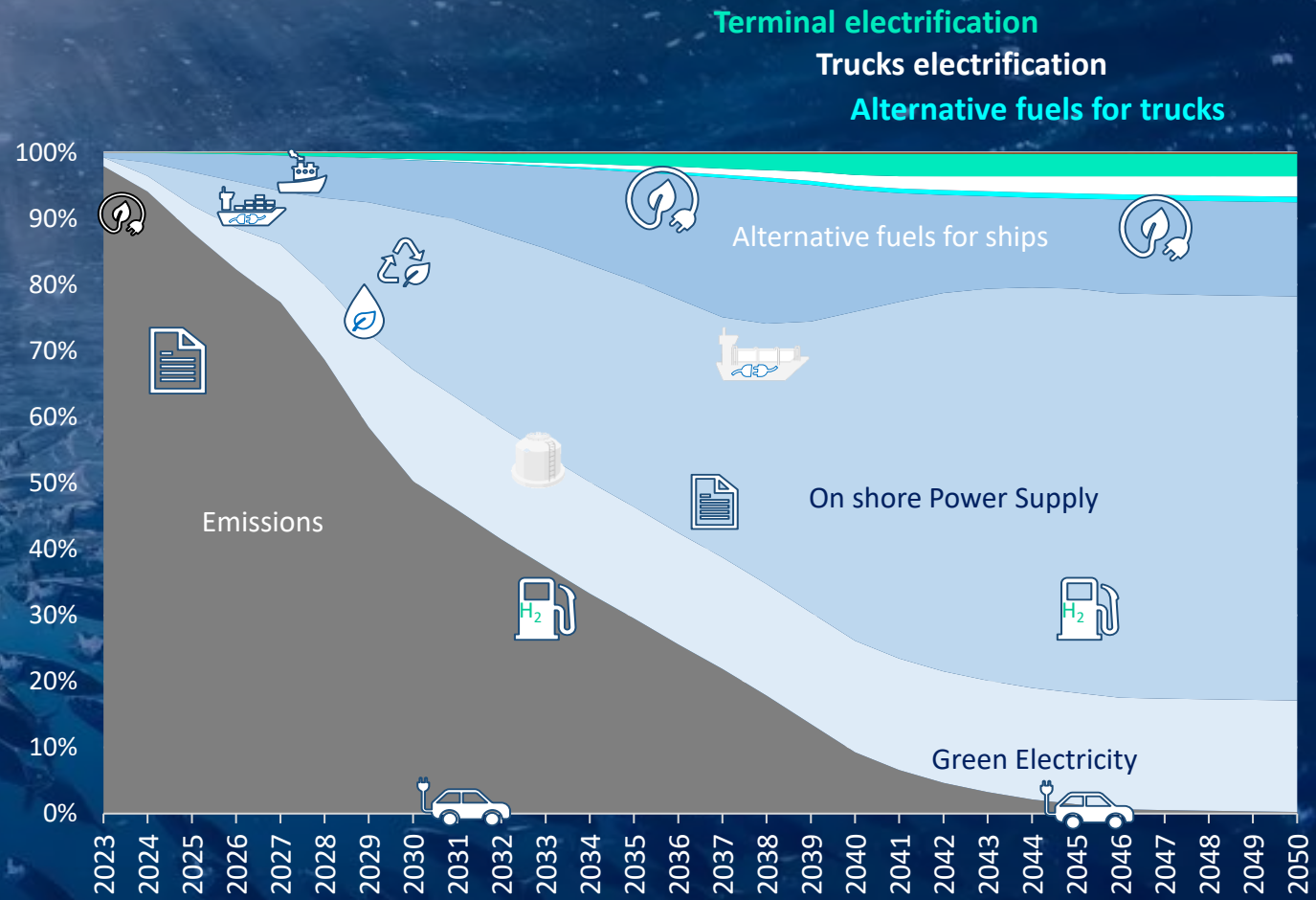
EU Ambition levels (Green Deal)

Under the European climate law, EU countries must cut greenhouse gas emissions by at least 55% by 2030. Their goal is to make the EU climate neutral by 2050.



RePower Europe accelerating energy transition

Energy Transition Plan



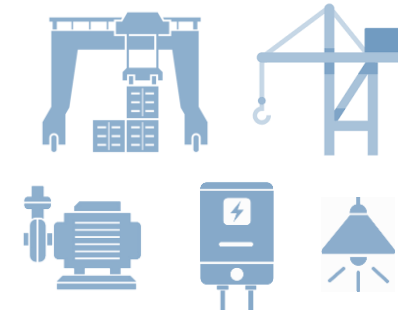
Transition plan scopes

Port Premises cargo handling and vessels



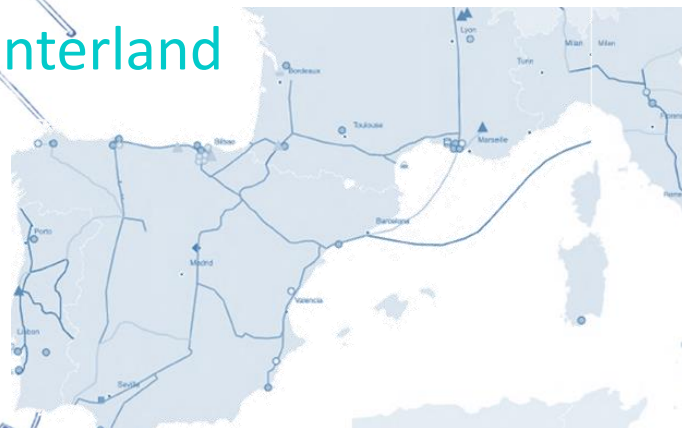
Vessels OPS
and bunkering

Port Premises Facilities



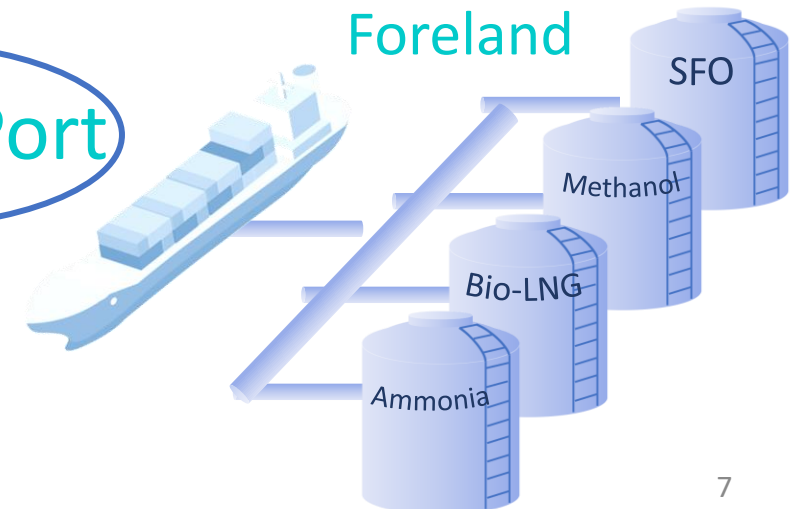
Inside Port

Hinterland



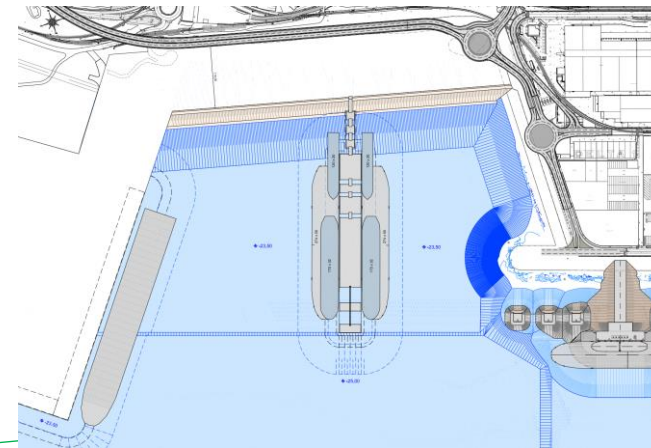
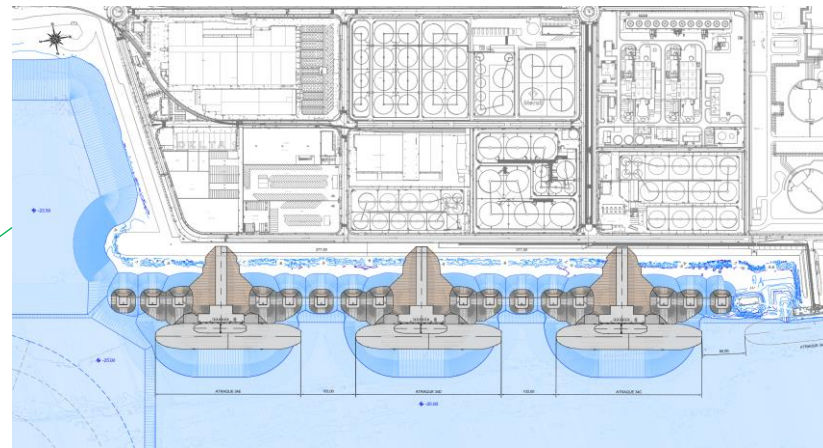
Outside Port

Foreland



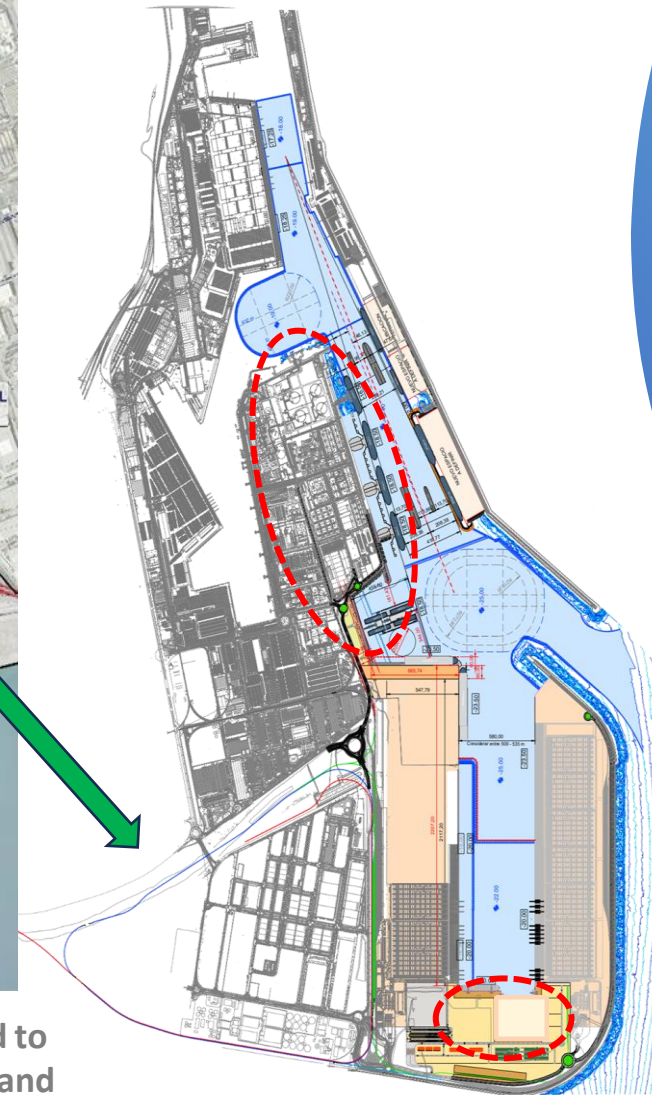
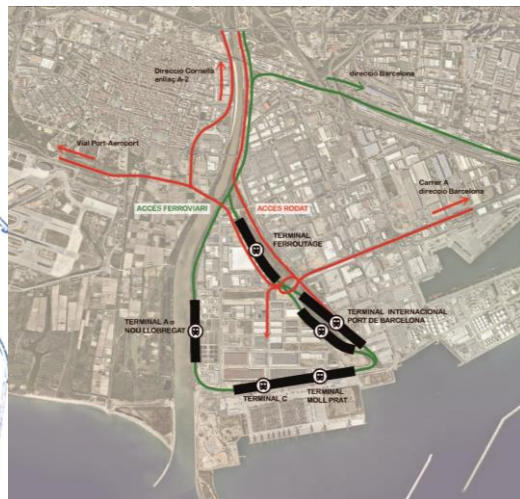
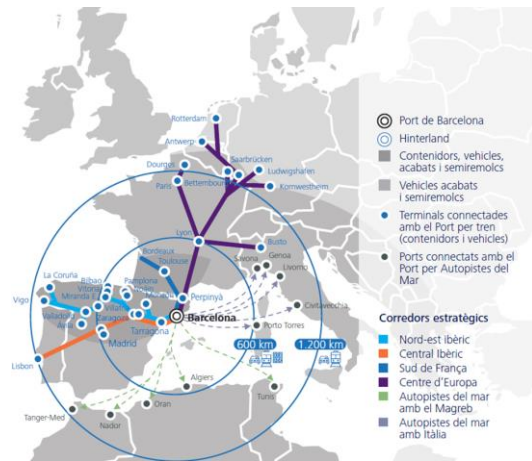
Port planning and Energy Transition

Port planning must incorporate energy transition principles, by means dedicated suitable spaces along the port as well as by designing and providing Infrastructures to accommodate future facilities and projects required for an effective energy transition.



Planning for coming changes

MULTI-MODALITY

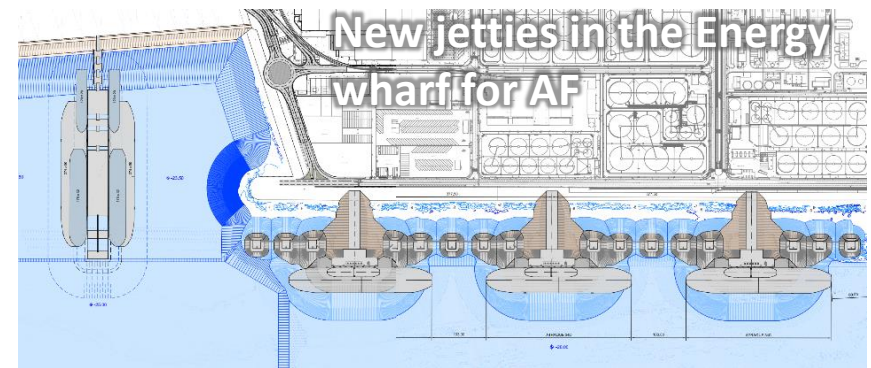
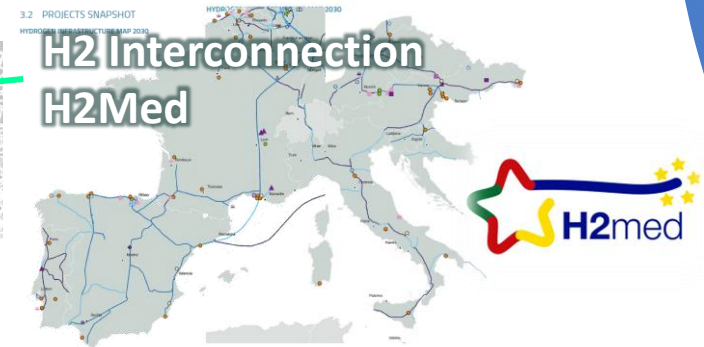
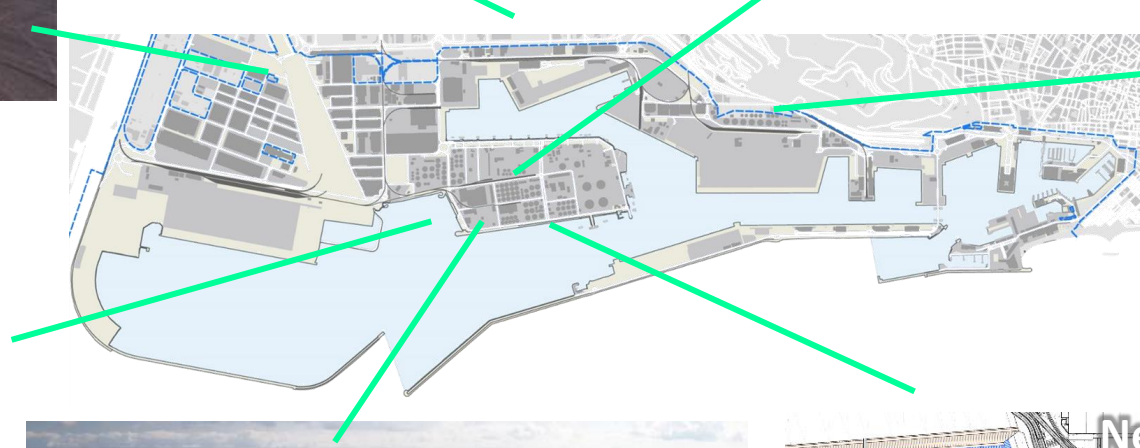
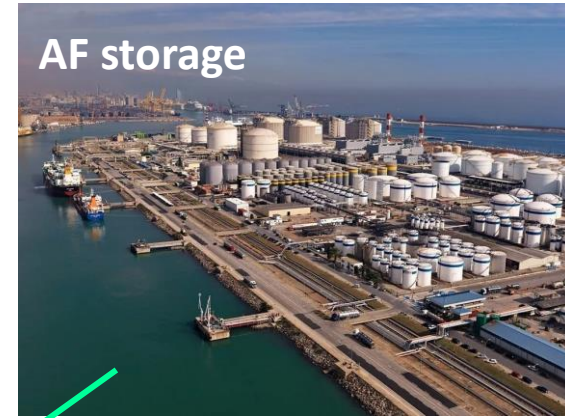


From now to <2030: New railway and road accesses – 3 new rail terminals directly connected: Europe and National grid

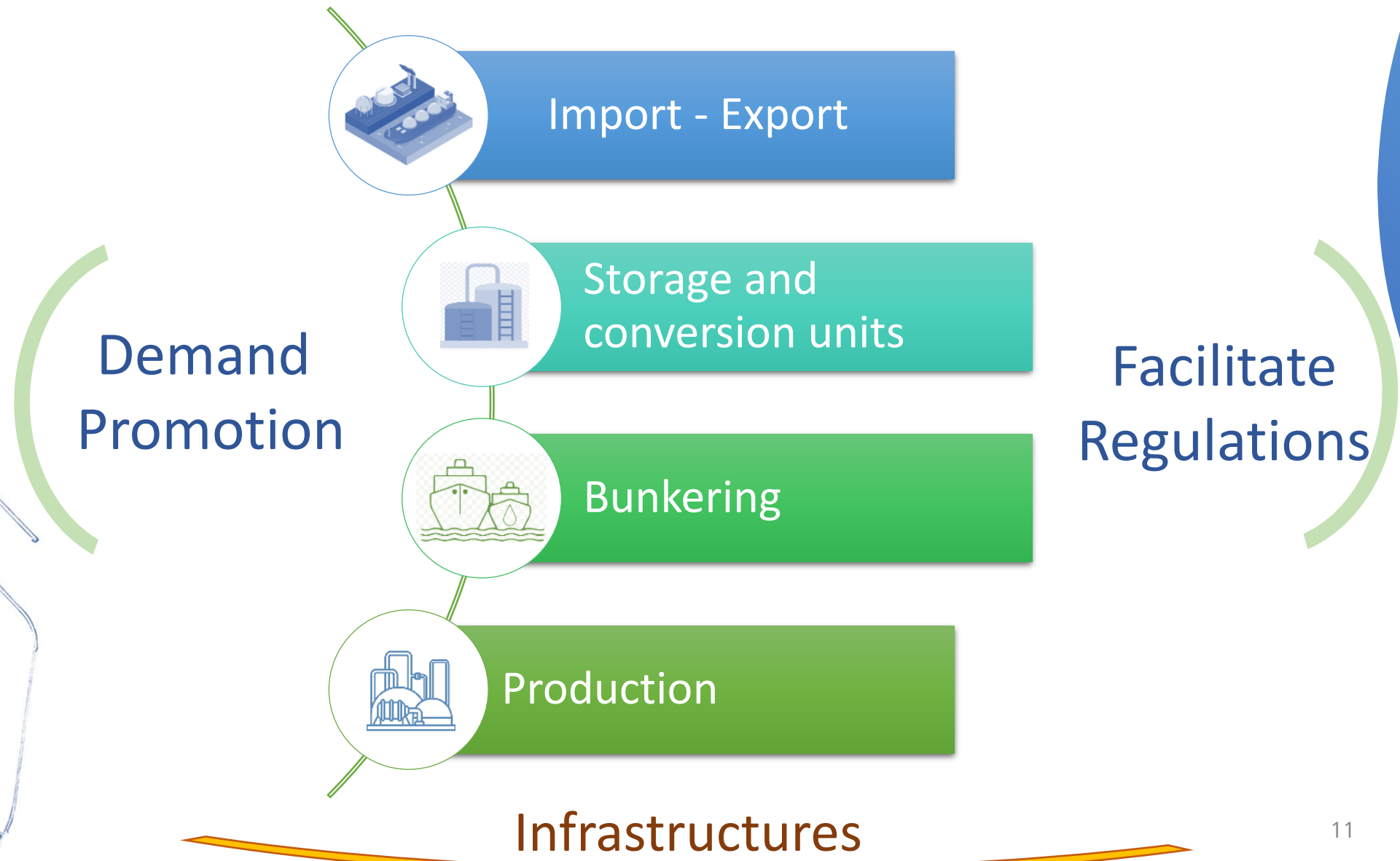
Increasing railway sharing from 15% to >30%

Connected to industrial and urban hinterland

Ongoing & Projected Actions Alternative Fuels (AF)

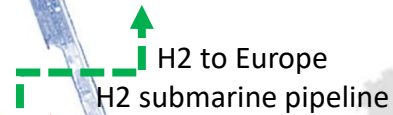


Role of the Port: Green fuels supply chain - Hub

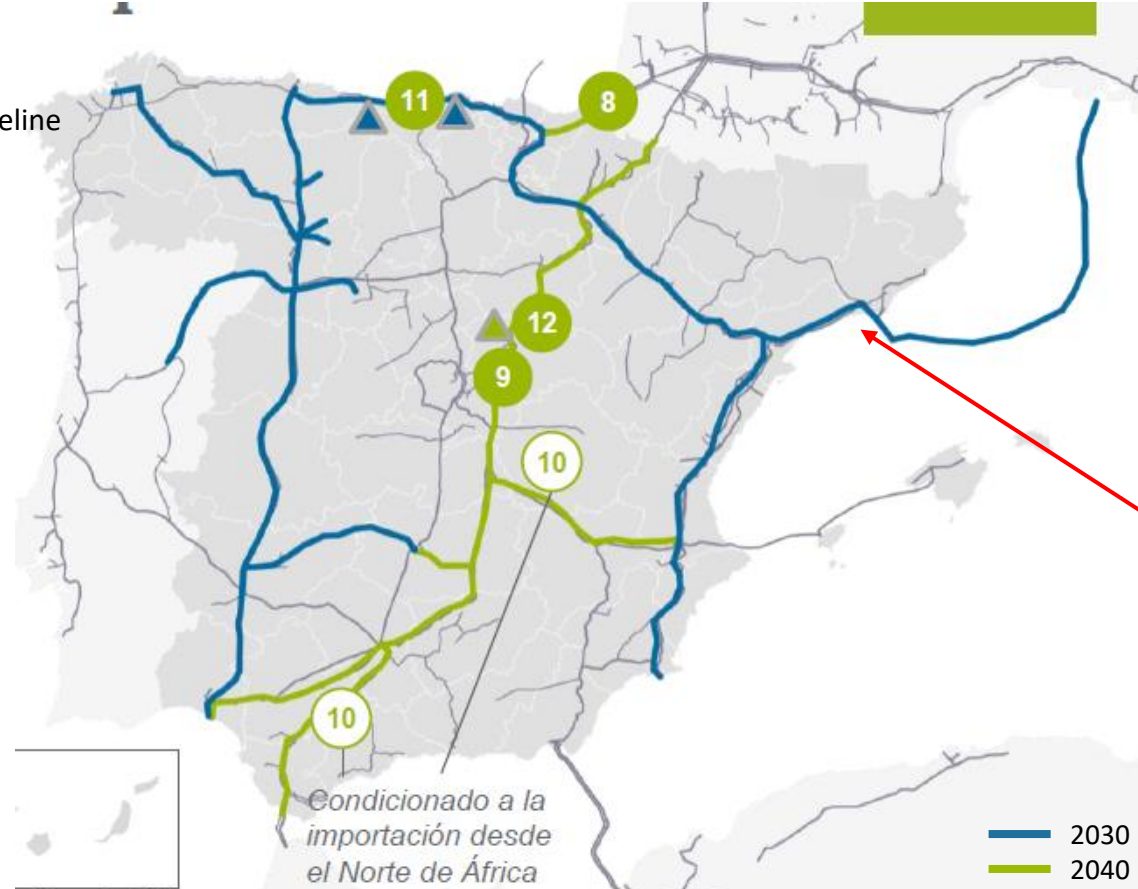


Ongoing & Projected Actions related with hydrogen and AF

Planned hydrogen transport network: H2MED (2.000.000 Tn/year) Iberian Peninsula to Central Europe
Arrival at the Port of Barcelona – Storage and compression – Submarine pipeline to Marseille



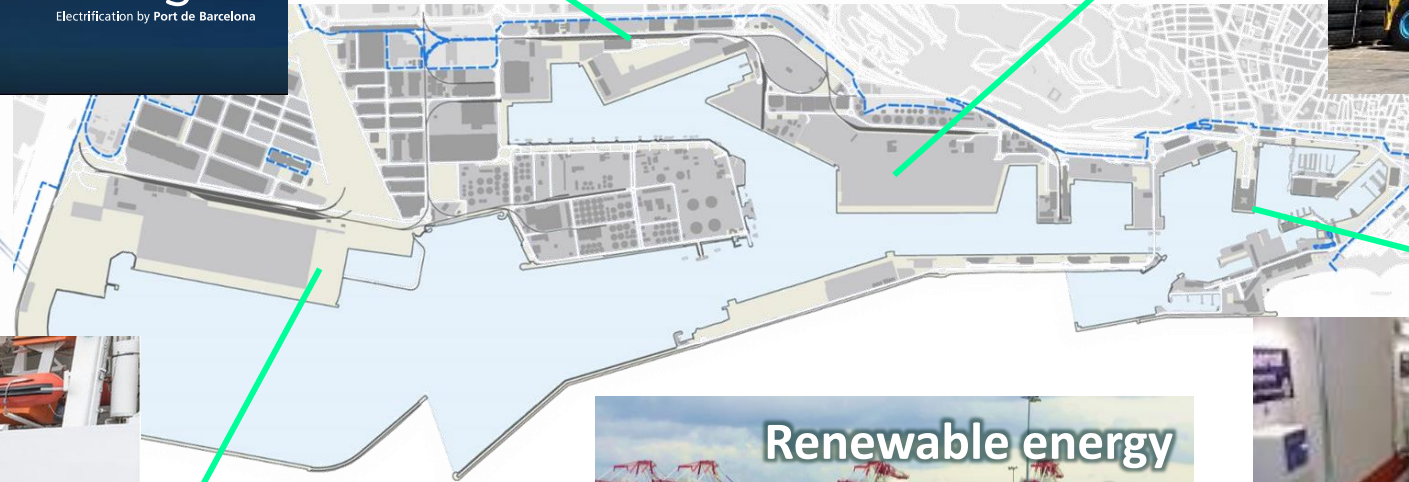
H2 to Europe
H2 submarine pipeline



10% of REPower
EU objectives

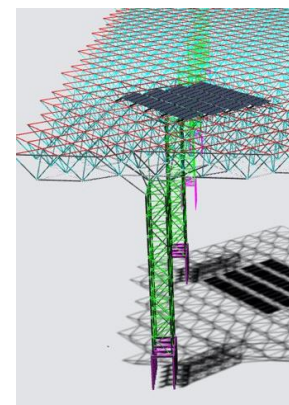
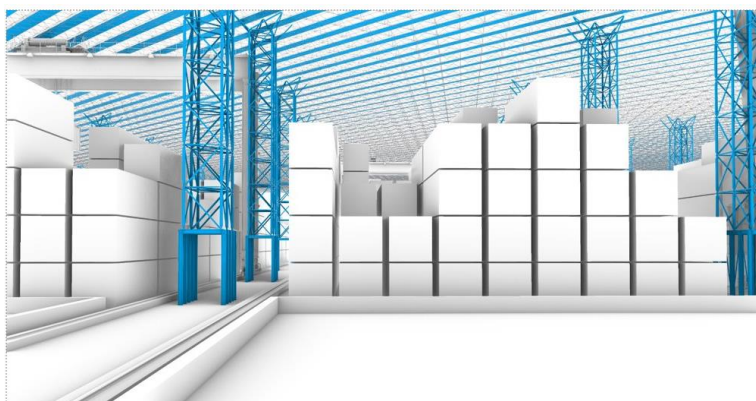


Ongoing & Projected Actions Electrification



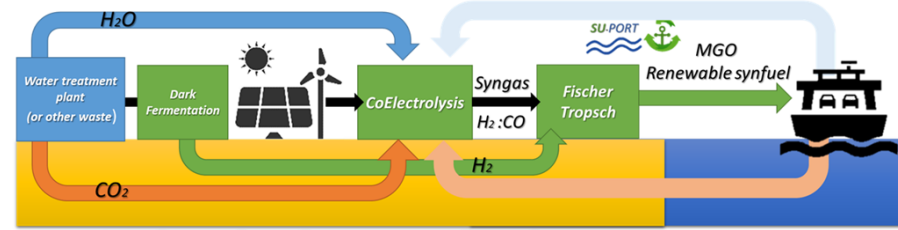
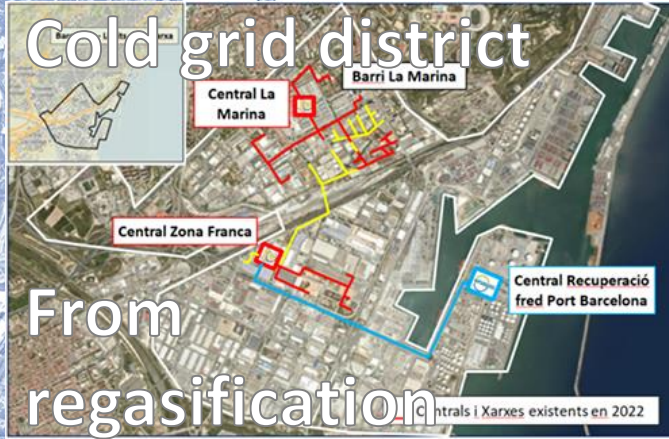
Ongoing & Projected Actions related Renewable energies

Potential configurations and uses in Port yards

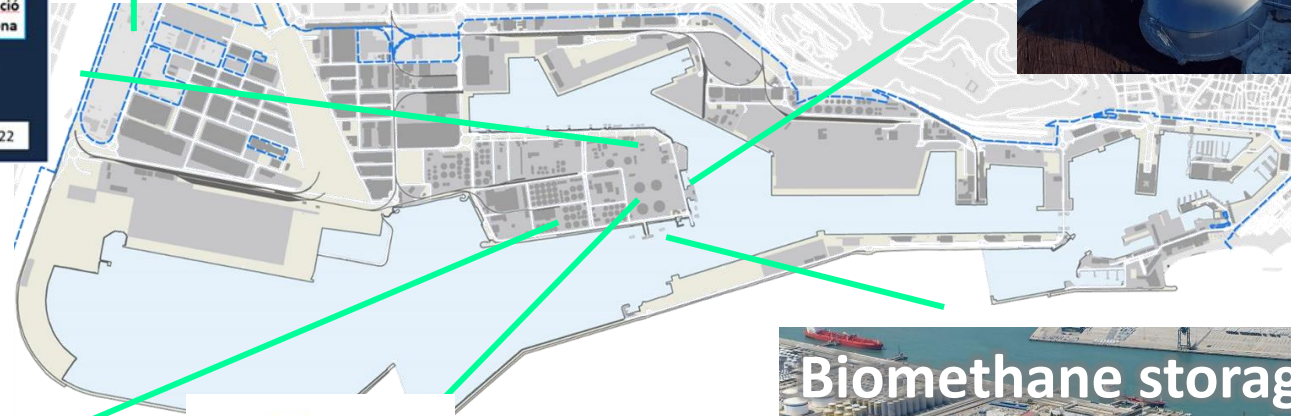


Ongoing & Projected Actions

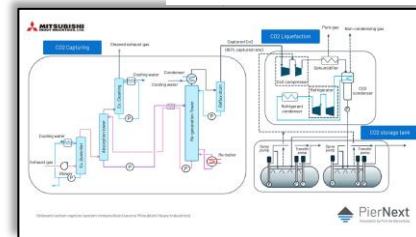
Circular economy



Sinfuels from sludge



CO₂ Capture from industry



Ongoing & Projected Actions

Multimodality and digitalization

Intermodality



Promotion

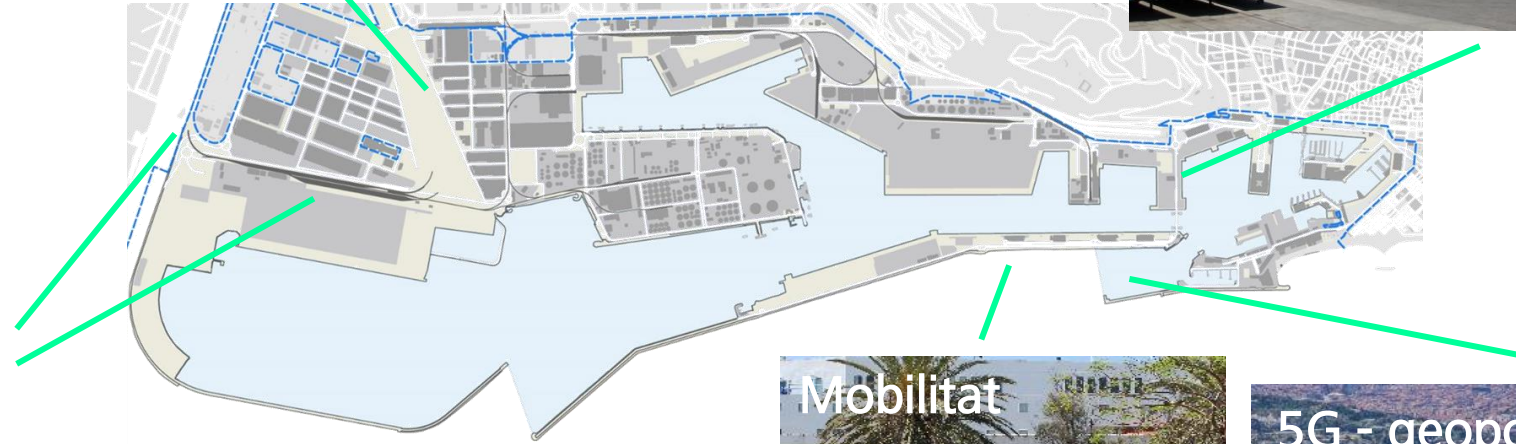
Port Digital Twin



Short Sea Shipping



New south Accesses
3 new Railway terminals



Plataforma



digital

Mobilitat



passengers

5G - geopositioning



Ongoing & Projected Actions related with Green Policies

Green policies – Revates

Reduce pollution: Provide incentives for calls by the most sustainable vessels

Terminals

Measures to incentivize investments on clean technologies

- Subsidies to the environmental investments of the concessionaire companies. In 2021, the concessions invested a total of €2.7 million to obtain the discounts. (production of photovoltaic energy, car chargers, electric handling equipment...)

Vessels

Measures to incentivize clean vessels by discounts on port dues

Commercial discounts to LNG or batteries use:
- National Law: 50% discount on T1

-Additional measures of the Port of Barcelona:
+ 30% discount for using them in the Port
+ additional 10% if used during navigation to Barcelona

Incorporation of International incentives schemes for vessels

ENVIRONMENTAL SHIP INDEX (since 2011)



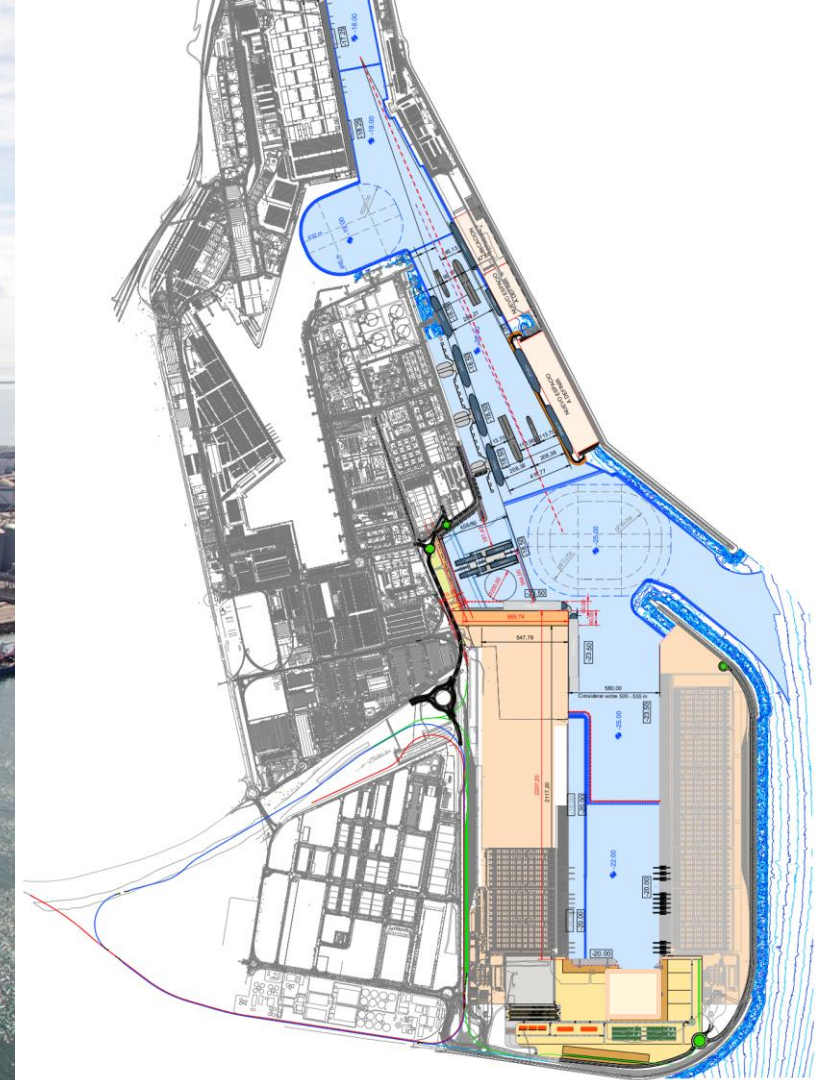
CLEAN SHIPPING INDEX (since 2007)



GREEN AWARD (since 2000)



SMART ENERGY HUB



Ready for energy transition



Port de Barcelona

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