



European flagship Action for cold ironING in ports



Co-financed by the Connecting Europe
Facility of the European Union

Clean power Supply Plan: Roadmap for Energy Transition Towards Carbon Neutrality in the port of Leixões

Hugo Lopes

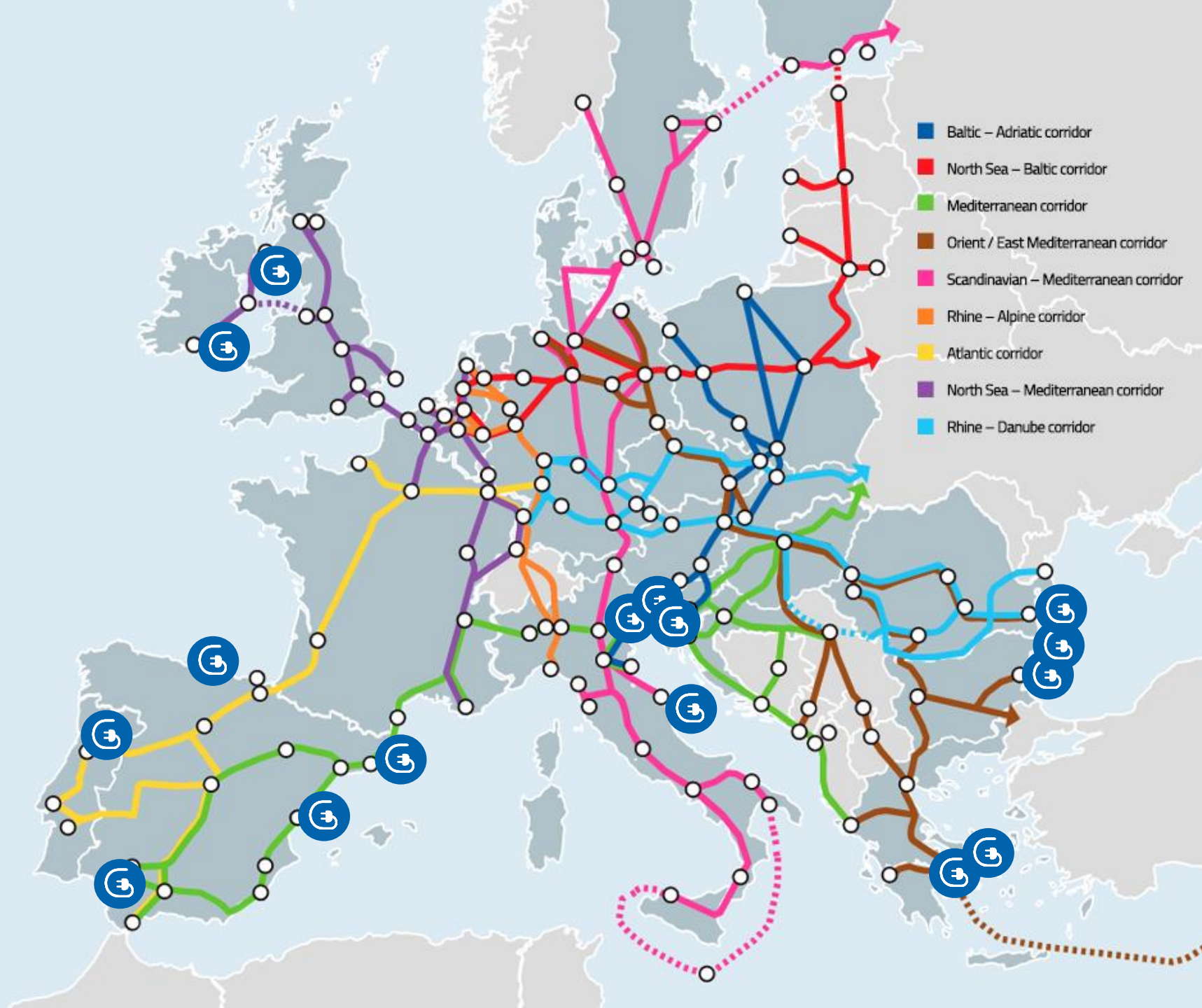


APDL

PORT AUTHORITY
DOURO • LEIXÕES • VIANA

EALING

- Port of Valencia (Spain)
- Port of Barcelona (Spain)
- Port of Huelva (Spain)
- Port of Gijon (Spain)
- Port of Venice and Chioggia (Italy)
- Port of Ancona (Italy)
- Port of Trieste & Monfalcone (Italy)
- Port of Burgas (Bulgaria)
- Port of Constanta (Romania)
- Port of Piraeus (Greece)
- Port of Rafina (Greece)
- Port of Varna (Bulgaria)
- Port of Koper (Slovenia)
- Port of Leixoes (Portugal)
- Portos dos Açores (Portugal)
- Port of Dublin and / or Cork (Ireland)





WHO WE ARE?

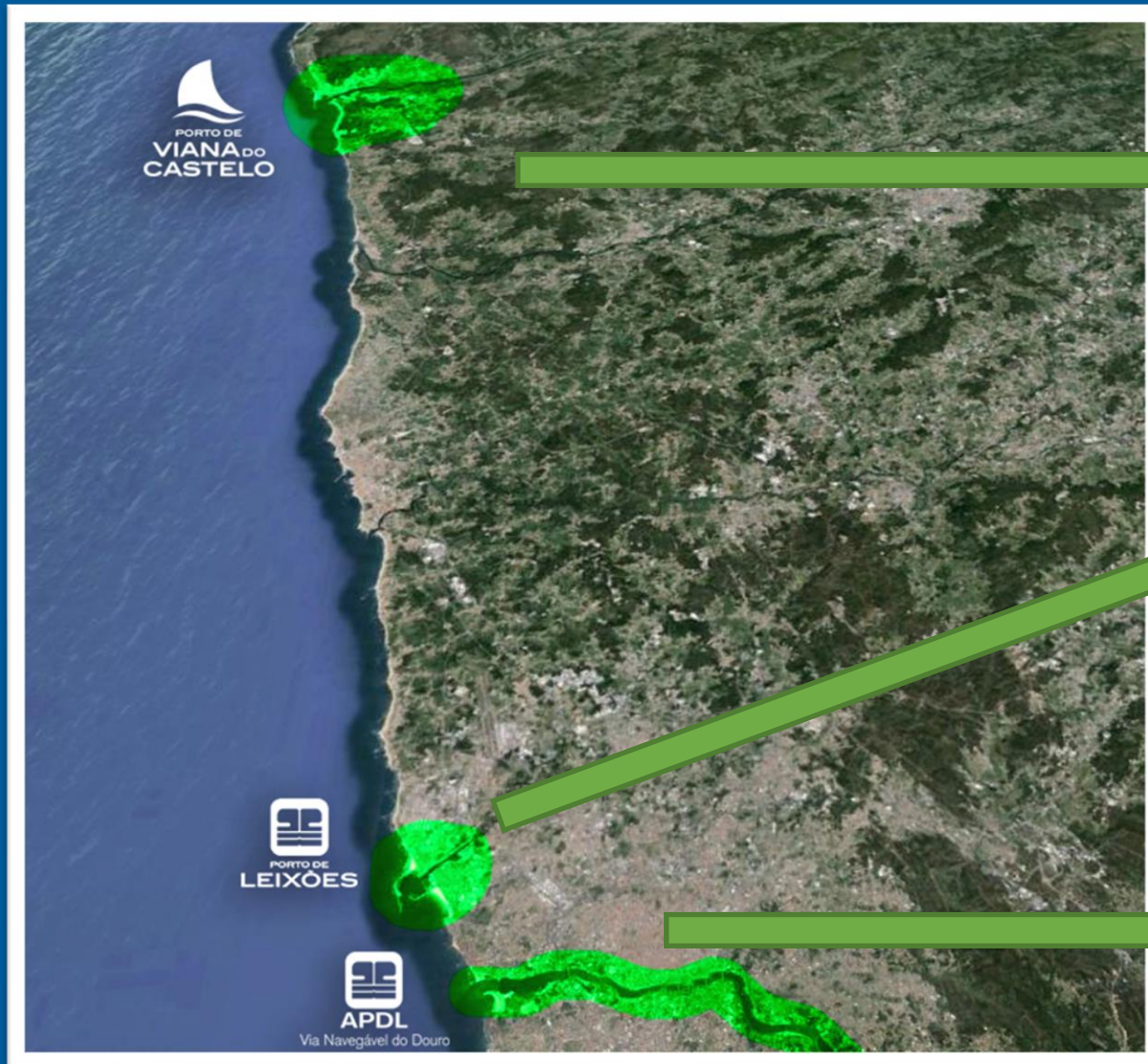


#APDL2035

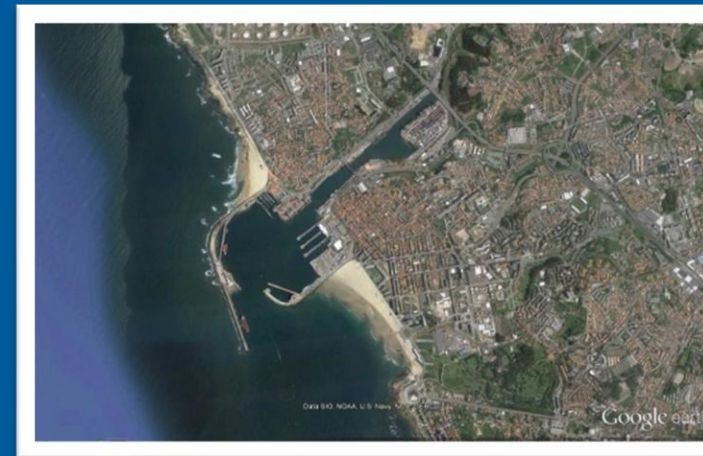


APDL
PORT AUTHORITY
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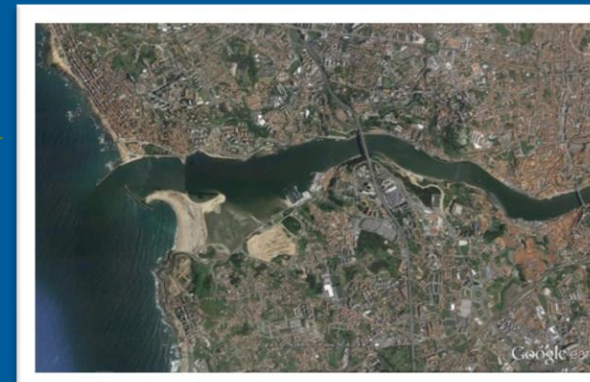
BUSINESS UNITS



Viana



Leixões



Douro



SUSTAINABILITY AT APDL



Relatório de Sustentabilidade 2016 Relatório de Sustentabilidade 2017 Relatório de Sustentabilidade 2018 Relatório de Sustentabilidade 2019 Relatório de Sustentabilidade 2020



Relatório de Sustentabilidade 2011 Relatório de Sustentabilidade 2012 Relatório de Sustentabilidade 2013 Relatório de Sustentabilidade 2014 Relatório de Sustentabilidade 2015



Relatório de Sustentabilidade 2006 Relatório de Sustentabilidade 2007 Relatório de Sustentabilidade 2008 Relatório de Sustentabilidade 2009 Relatório de Sustentabilidade 2010

Sustainability Reports since 2006



OBJETIVE:
MONITOR AND MINIMIZE ENVIRONMENTAL IMPACTS

OBJETIVE:
ENSURE THE SAFETY OF PEOPLE AND OPERATIONS

OBJETIVE:
CREATE VALUE AND INVOLVE BUSINESS PARTNERS IN COMMITMENTS TO SUSTAINABILITY

OBJETIVE:
PROFESSIONAL AND PERSONAL VALUATION OF PEOPLE WHO WORK IN THE COMPANY

OBJETIVE:
PROMOTE CORPORATE SOCIAL RESPONSIBILITY AND INTERACTION WITH LOCAL COMMUNITIES



An aerial photograph showing a coastal city with a dense urban area, a large port facility with multiple piers and ships, and a sandy beach along the coast. The water is a vibrant blue-green color. The text is overlaid on the left side of the image.

PORT & CITY

New sustainable paradigm

The future requires resilient ports

Invest in the Core Business and in the Business Diversification



#2035APDL

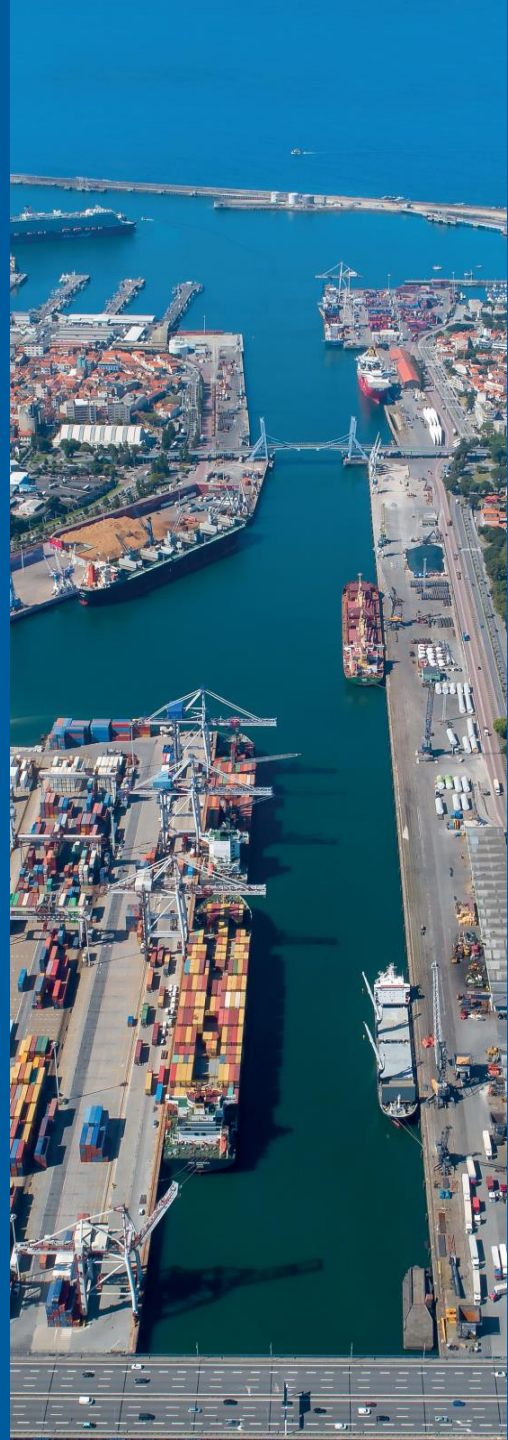
R&D



INNOVATION



PORT OF
LEIXÕES
APDL



Roadmap towards Carbon Neutrality by 2035



APDL

ADMINISTRAÇÃO DOS PORTOS
DOURO • LEIXÕES • VIANA

MARITIME TRANSPORT



Emissions

- **2,8 % worldwide GHG**
(1070 million tons CO2eq)

At an European level is also an important and **growing source** of GHG emissions



Importance

- **+80% world's trade is carried by sea**
 - Plays an essential role on EU economy
- Mode of transportation with high energetic efficiency

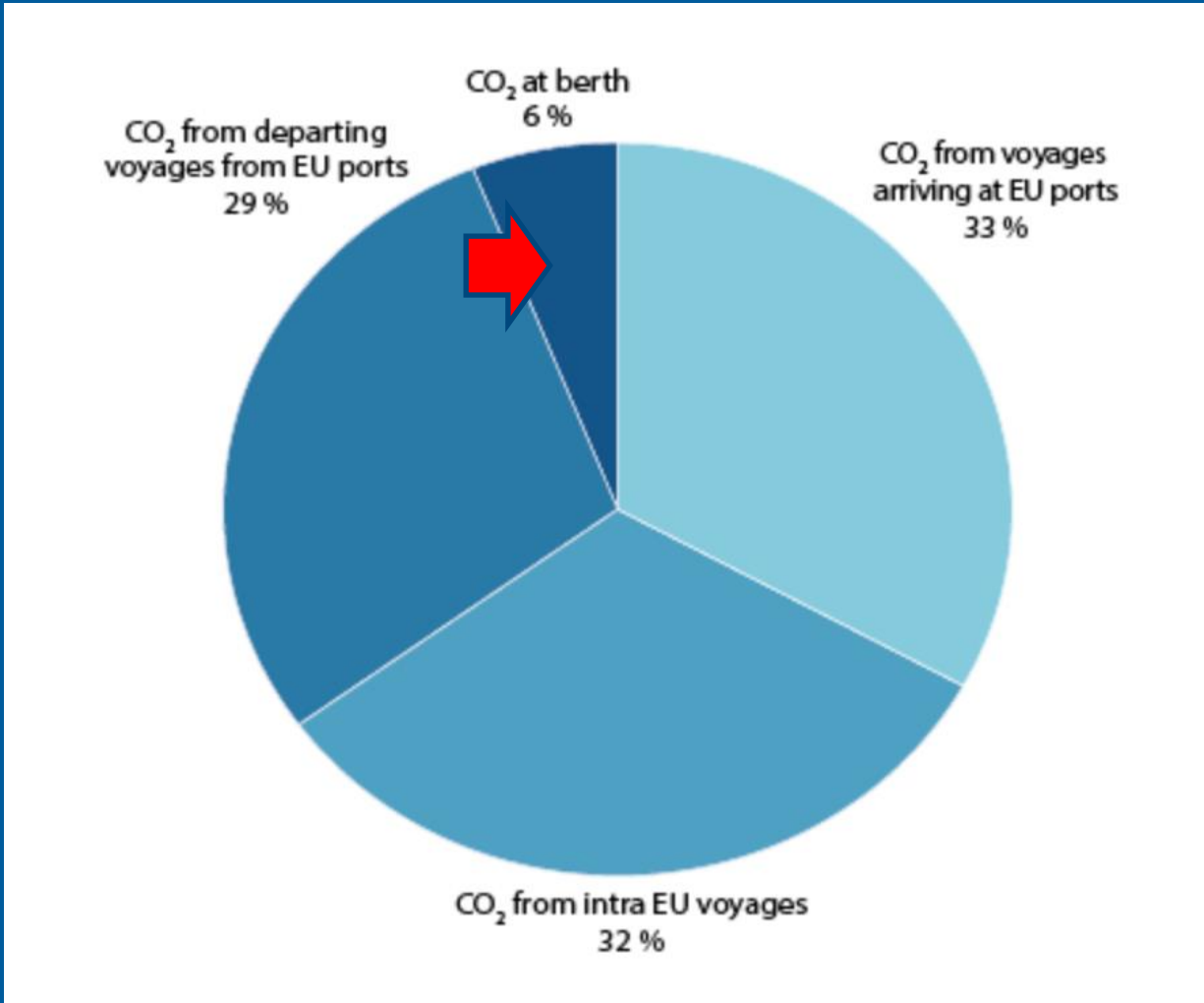


Regulation

- **IMO** – International Maritime Organization
- **EMSA** - European Maritime Safety Agency

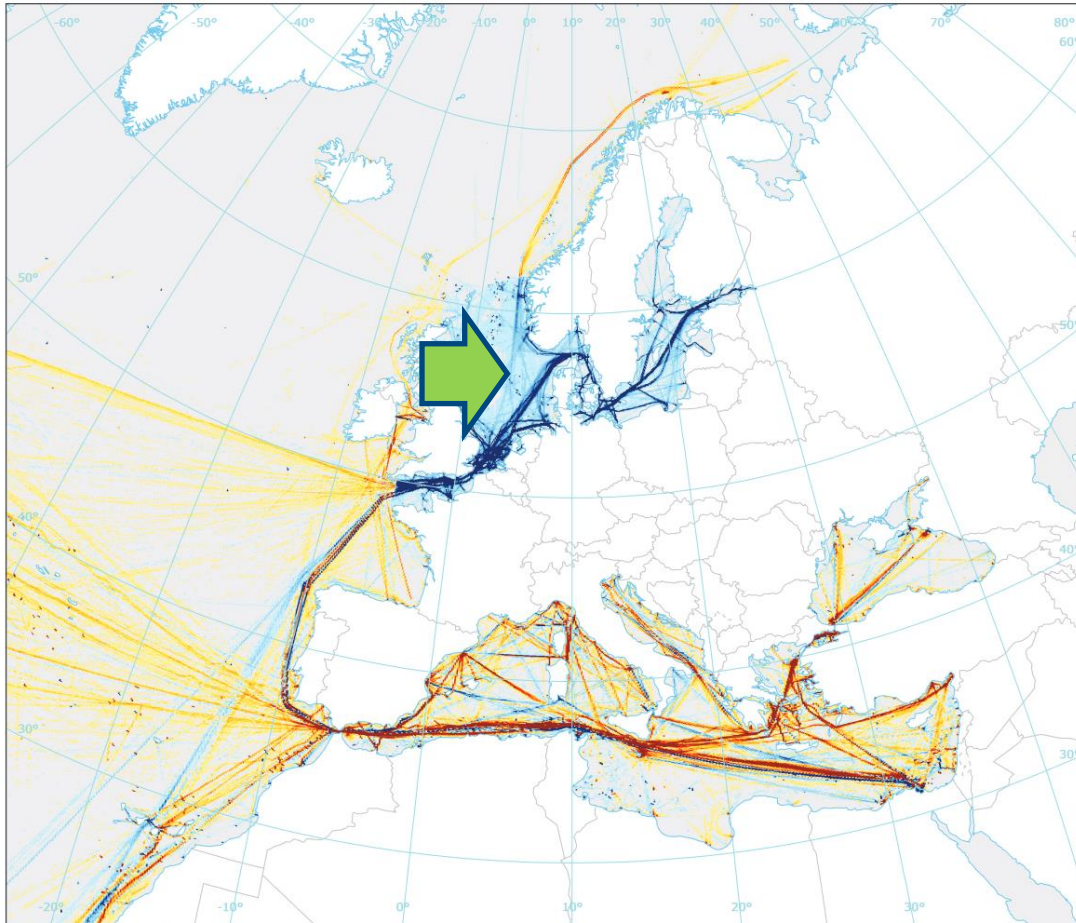


MARITIME TRANSPORT

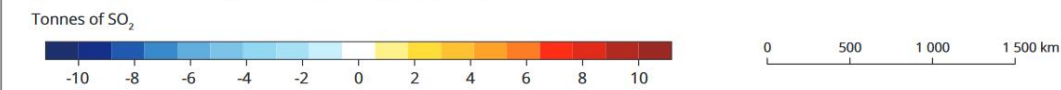


MARITIME TRANSPORT

Map 4.1 Difference in SO₂ emissions in European shipping areas between 2014 and 2019

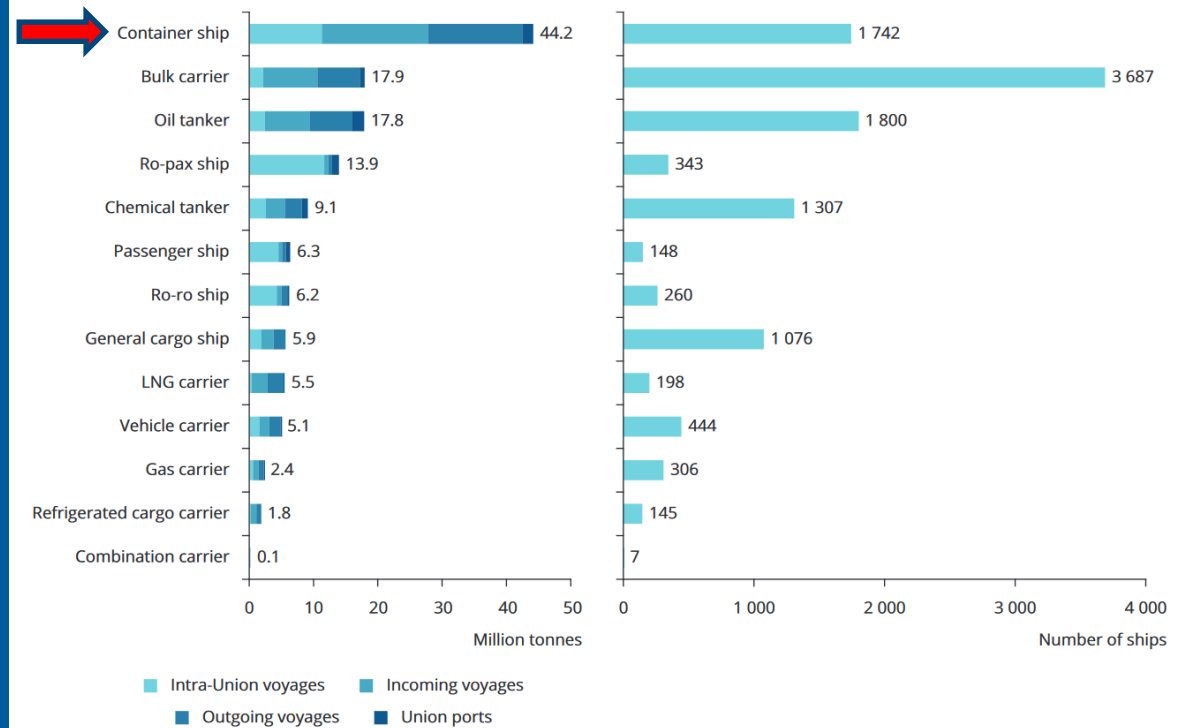


2014-2019 Difference of SO₂ emissions from shipping in European Seas



Source: STEAM (2021).

Figure 4.3 Total amount of CO₂ emissions by ship type, 2018



Note: Ro-ro, roll-on roll-off.

Source: EMSA/THETIS-MRV (2018).



Strategies - Decarbonization - IMO



Measures

Reduce Carbon Intensity (compared to 2008):

- **40%** (CO₂ /ton-mile) by 2030
- **70%** (CO₂ por ton-mile) by 2050

Reduce Total/Global Emissions (compared to 2008):

- **50%** - 2050 (recently...July 2023- netzero)

Long term measures

- R&D + Green Alternative fuels



Indexes

Energy Efficiency Existing Ship Index
(**EEXI**)

Carbon Intensity Indicator
(**CII**)

Ship Energy Efficiency Management Plan
(Part III)

.....

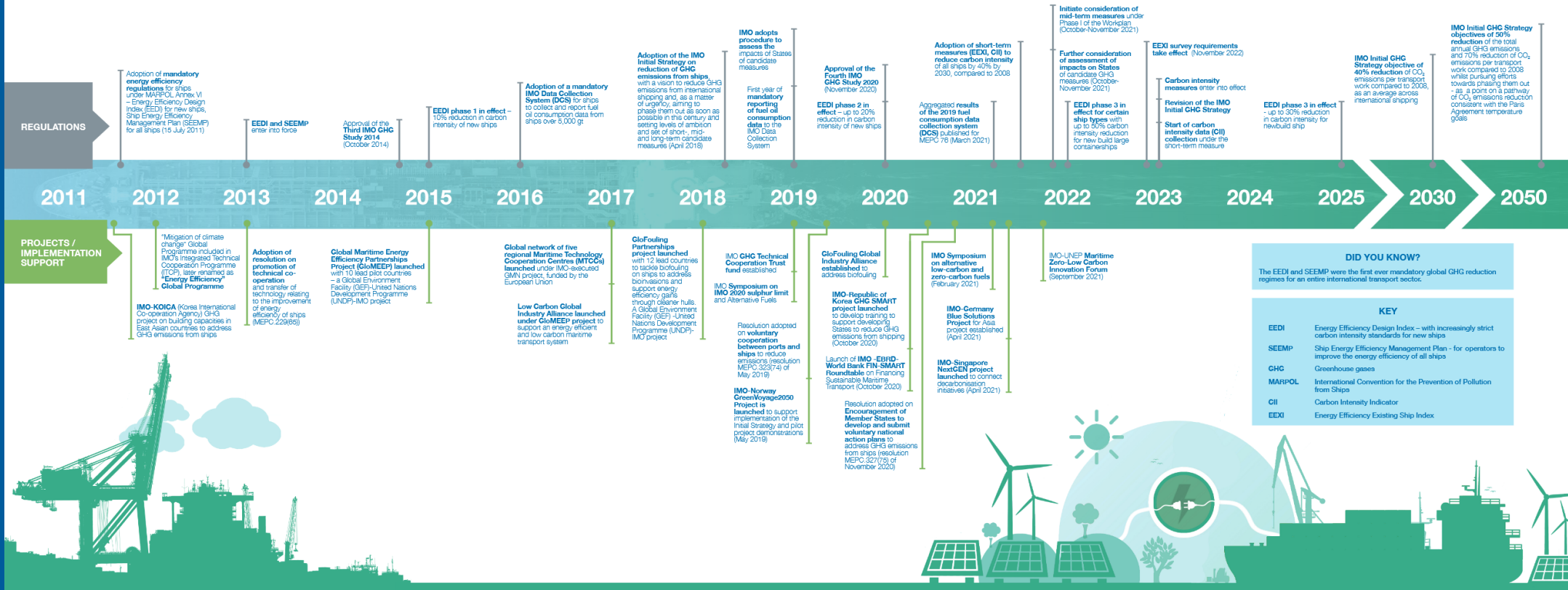


MARITIME TRANSPORT

Strategies - Decarbonization - IMO

Addressing climate change

A decade of action to cut GHG emissions from shipping



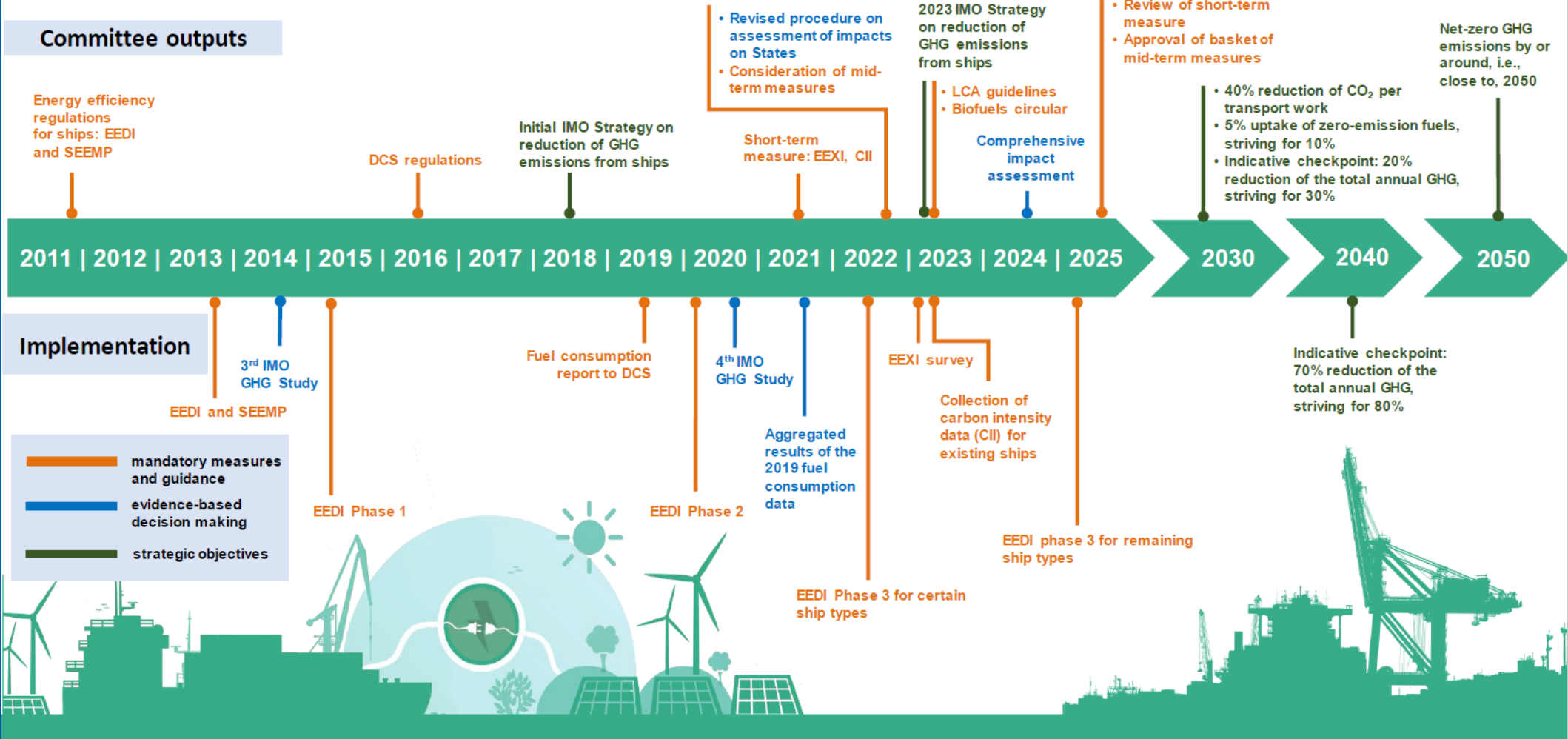
MARITIME TRANSPORT

Strategies - Decarbonization - IMO



Addressing climate change

Over a decade of regulatory action to cut GHG emissions from shipping



MARITIME TRANSPORT

Strategies - Decarbonization - EU



Monitoring Emissions

**Emissions Report
(THETIS MRV)**

**Include progressively ship
emissions on EU-ETS
(Emission Trading System)**



**EU Fit for 55 – shipping
Package**

**Maritime Regulation
FuelEU**

**AFIR Regulation
(Alternative Fuels Infrastructure)
Onshore Power Supply | Alternative fuels**

**Renewable Energies
Directive (RED)**

ETS Directive



Emissions

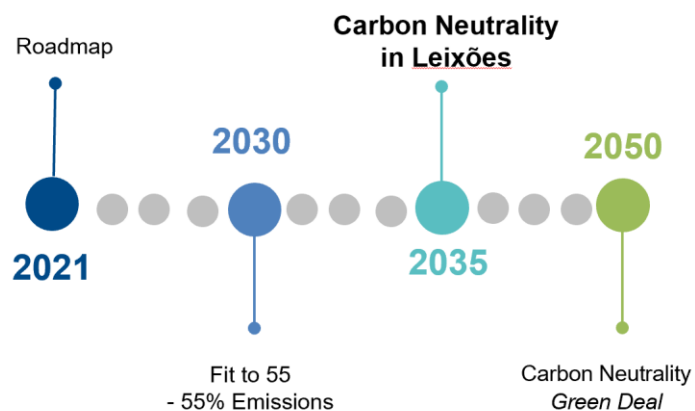
**Reduction of
2%(2025) | 80% (2050)**

**OPS mandatory (2030)
Cruise and Container Ships**










ACTION PLANS TOWARDS CARBON NEUTRALITY - APDL

Anticipating EU and Fit to 55 goals due to Climate Emergency



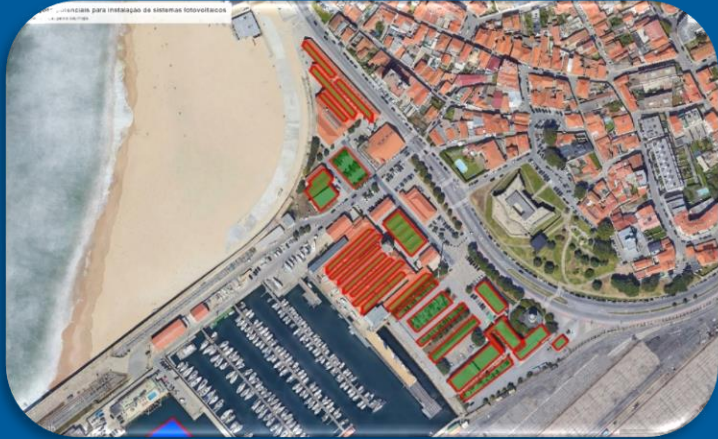
ROADMAP FOR ENERGY TRANSITION TOWARDS CARBON NEUTRALITY

ACTION PLAN	MAIN OBJECTIVE
 ONSHORE POWER SUPPLY (OPS)	Decarbonisation of maritime traffic during its stay at the Port of Leixões.
 RENEWABLE ENERGY	Use the resources of the port to produce clean energy and become a self-sufficient port.
 ALTERNATIVE FUELS	Use of “Green” alternative fuels: Monitoring demand, developing pilot, Ensuring supply, creating incentives
 ELECTRIFICATION OF PORT ACTIVITIES	Decarbonisation of port activity and land traffic.
 DIGITALISATION	Support the energy transition of the Port of Leixões through the implementation of new digital technologies.
 AIR QUALITY	Monitoring of the real impact of the implemented measures on the improvement of air quality.
 ELECTRICAL GRID	Availability of an electrical network with sufficient capacity to supply the new demands foreseen for the port.





SOLAR



WIND



RENEWABLE ENERGY

- PV Panels on Roofs of Buildings, Parking Lots

- 1 turbine of 4 MW (Wind Energy)



WAVES



Leixões

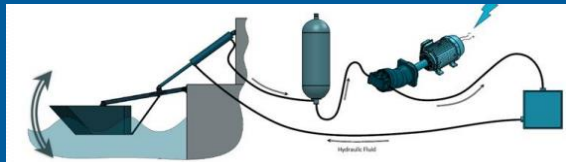


Douro

- 1 MW Pilot (Wave Energy) Douro river mouth

- Integrating Renewable Energy into Electric Grid

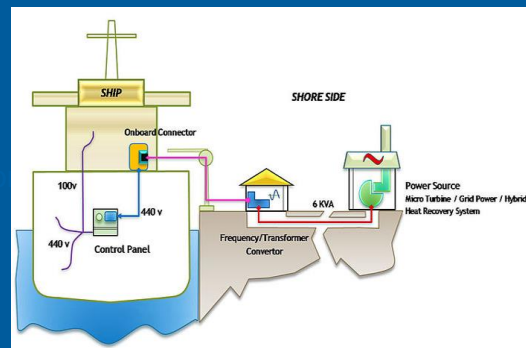
- Producing up to 35 GWh/year (Can be increased by producing in other APDL domains)



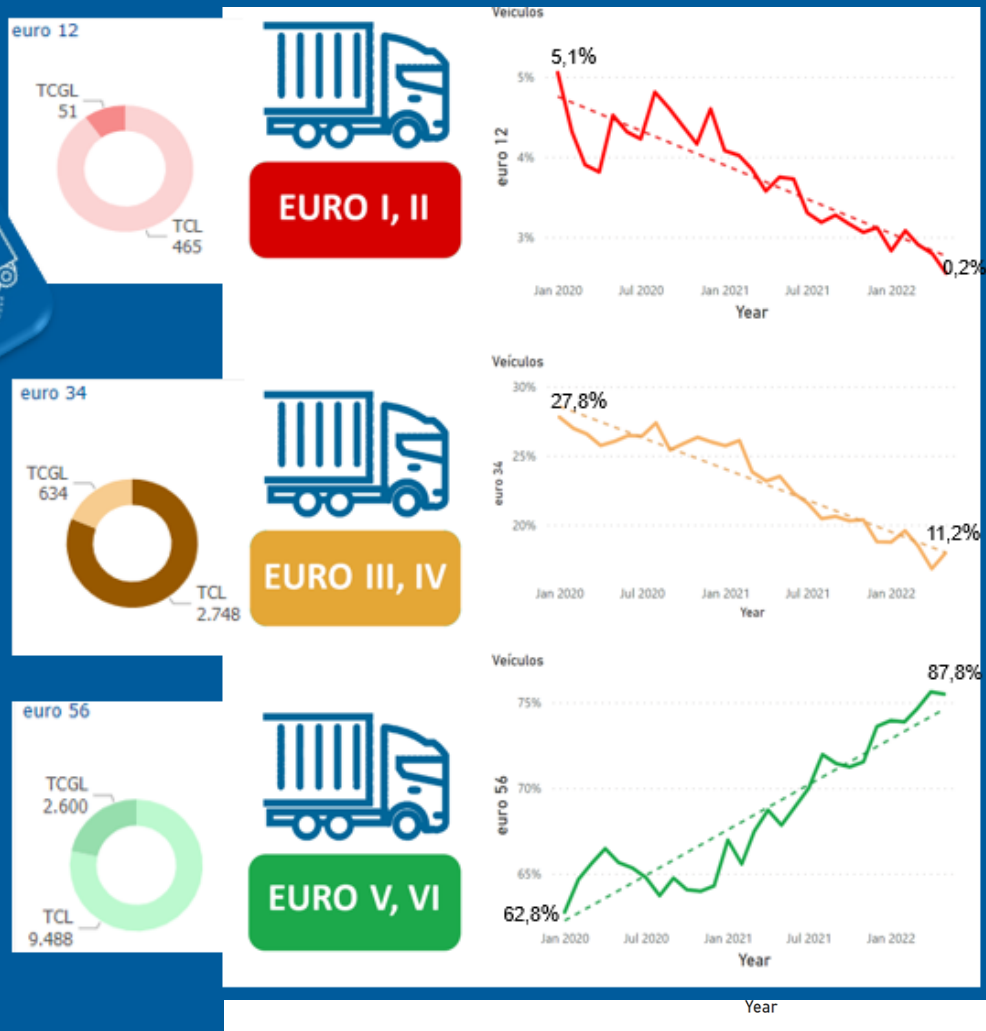
ELETRIFICATION OF TERMINALS (OPS - ONSHORE POWER SUPPLY)



- Connection to High Voltage Network (HV) – New Substation 60 MVA)
- Development of Medium Voltage Network (MV) – 30kV
- OPS Pilot - Development and Implementation
- OPS in Cruise, Container Terminals (2030)
- OPS in all Docks
- Reducing Noise and Emissions
- +40 Million €



DECARBONIZATION



- Reduction of Gas Emissions from Trucks and Tugboats
- Measuring Air Quality
- Eco-Truck



- Prohibiting the entry of trucks with Euro I, II, III and IV certification in the Port

DECARBONIZATION



- Electrification of Port Activities (forklifts, reach stackers, cranes and other equipment)

- Electric and Hybrid Vehicles Fleet



- Electric Vehicles Charging Stations

- Electric shuttle – for port workers



- Monitoring demand for Alternative Fuels

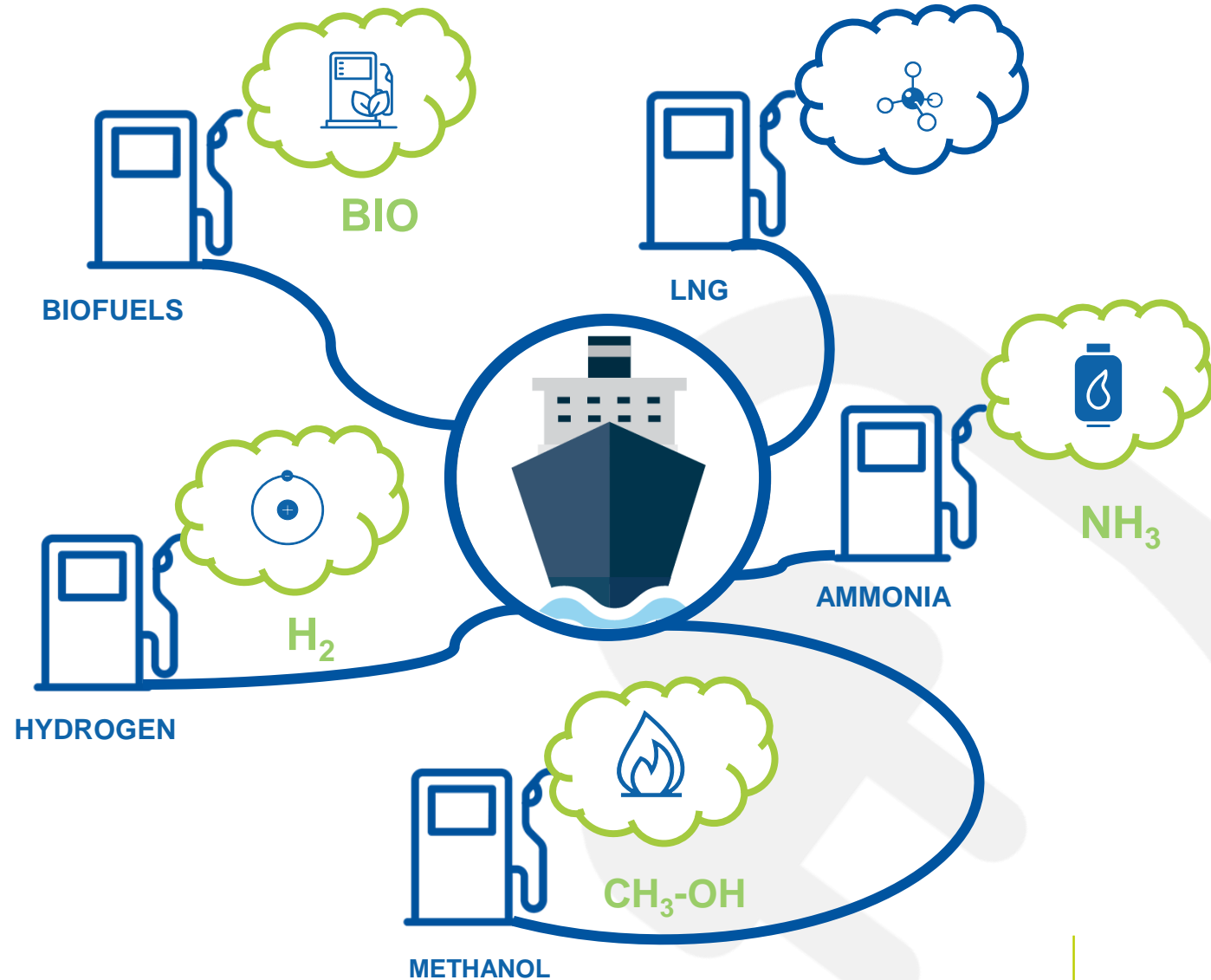
- Development of a Biodiesel Pilot

There is no "one size fits all!"

- Introduction of Carbon Rate

- Port Fees Reduction for Ships with Better Environmental Performance

- Green Fuels Storage (Hydrogen, Ammonia, Methanol*)
 - * PRR /RRP – H2Driven. Agendas mobilizadoras/ mobilizing agendas

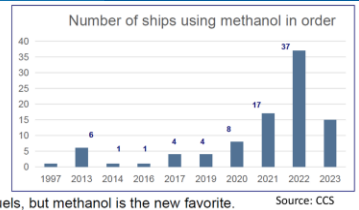
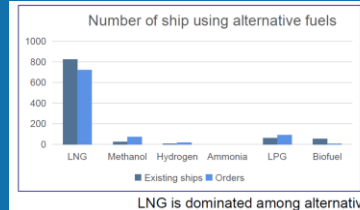
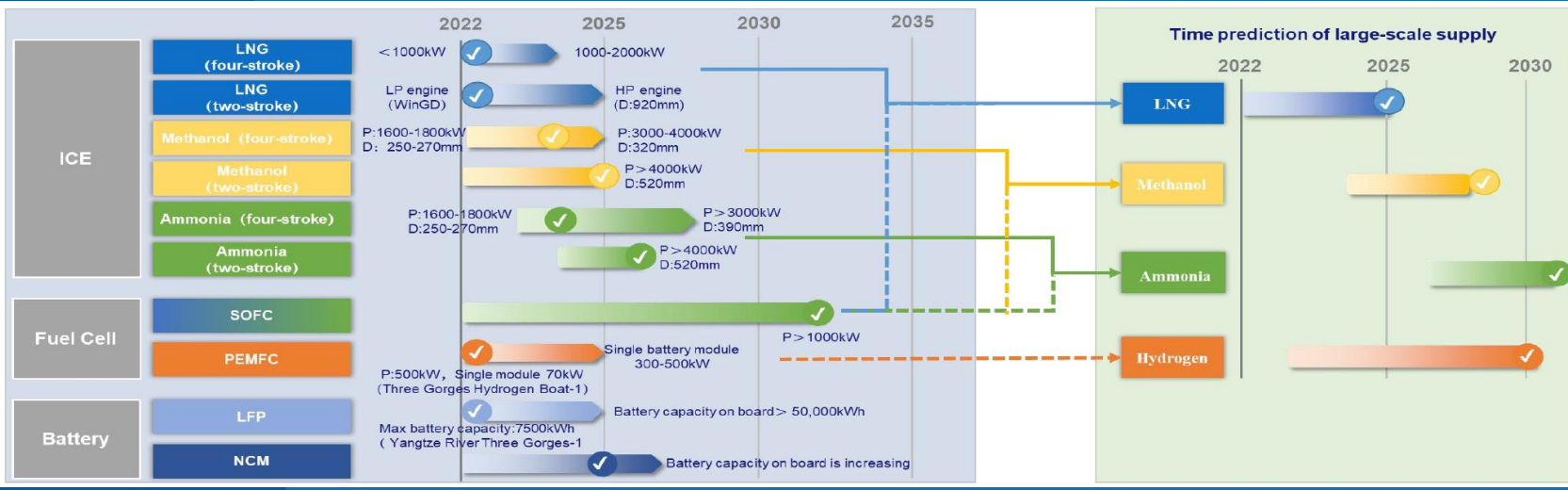


ALTERNATIVE GREEN FUELS



CRITERIA - vessels

- ❑ Space for fuels
- ❑ Energy/ton
- ❑ Risk (operation)
- ❑ Toxicity
- ❑ CAPEX + OPEX
- ❑ TRL + Technology

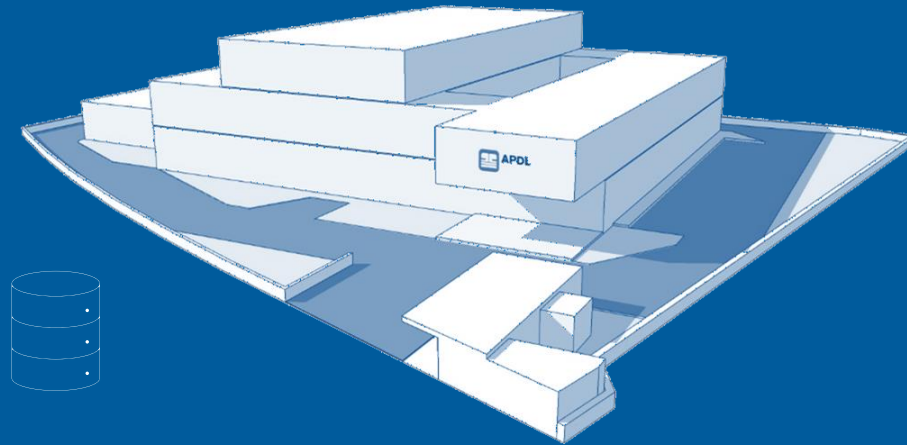
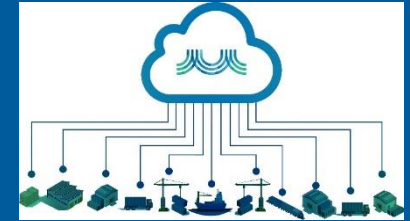


LNG is dominated among alternative fuels, but methanol is the new favorite. Source: CCS



DIGITALIZATION

- + EFFICIENCY
- + SPEED
- EMISSIONS
- ENERGY CONSUMPTION



IoT



BlockChain



BigData



AI



Sensors



5G LoraWan



DigitalTwin




SmartGrid



#2035APDL




PORTO DE
LEIXÕES
APDL




CARBON NEUTRALITY
Decarbonization roadmap,
energy transition




DIGITALIZATION
1010
1010
Data center, LSW, Sensors, 5G,
IoT, AI, blockchain, cybersecurity




INFRASTRUCTURE
New terminal, north terminal
reconversion




OPS
On shore power supply




ALTERNATIVE FUELS
Fuels of the future
LNG, H2, NH3




AUTOMATION
Electrification, remote
operation and automation



RENEWABLE ENERGY
Energy mix, self-sufficiency,
diversification of energy sources



INTERMODALITY
Highway, railway, maritime
transport



MARITIME ACCESSIBILITY
Breakwater extension, dredging

VISION FOR 2035

Be an **international reference** port in **southern Europe** in the transition to an energy system based on the use of its own natural resources, with the ambition of being a **self-sufficient and net zero emissions port**



USING RENEWABLE ENERGY AS THE MAIN SOURCE OF ENERGY



SELF-SUFFICIENT PORT



REDUCE CARBON FOOTPRINT



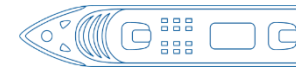
PUBLIC HEALTH (IMPROVING AIR QUALITY IN THE PORT)



STRENGTHEN RELATIONS WITH SURROUNDING COMMUNITY



Excellent City-Port Relationship



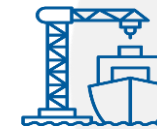
Perfect Experience for Passengers



Qualified and Enthusiastic Workers



Economic Sustainability



Efficient Operations



Sustainable Development

Social Responsibility

Cooperation and Collaboration

Efficiency

WE CREATE MOBILITY AND VALUE SUSTAINABILITY...

THANK YOU !



APDL
PORT AUTHORITY
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Hugo Lopes

Head of Development and Sustainability

 **OBJETIVOS DE DESENVOLVIMENTO SUSTENTÁVEL**



Thanks!



European flagship Action for coLd ironING in ports

Contacts

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Discover more at

www.ealingproject.eu



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