



PIANC French Section



PIANC Mediterranean Days and Conference «Port of the future» by Cerema 25 to 27 october 2023 in Sete France

Energy Transition in Portuguese ports

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Sustainability and Energy Transition at APDL

Hugo Lopes

Head of Development and Sustainability



APDL
PORT AUTHORITY
DOURO • LEIXÕES • VIANA



WHO WE ARE?

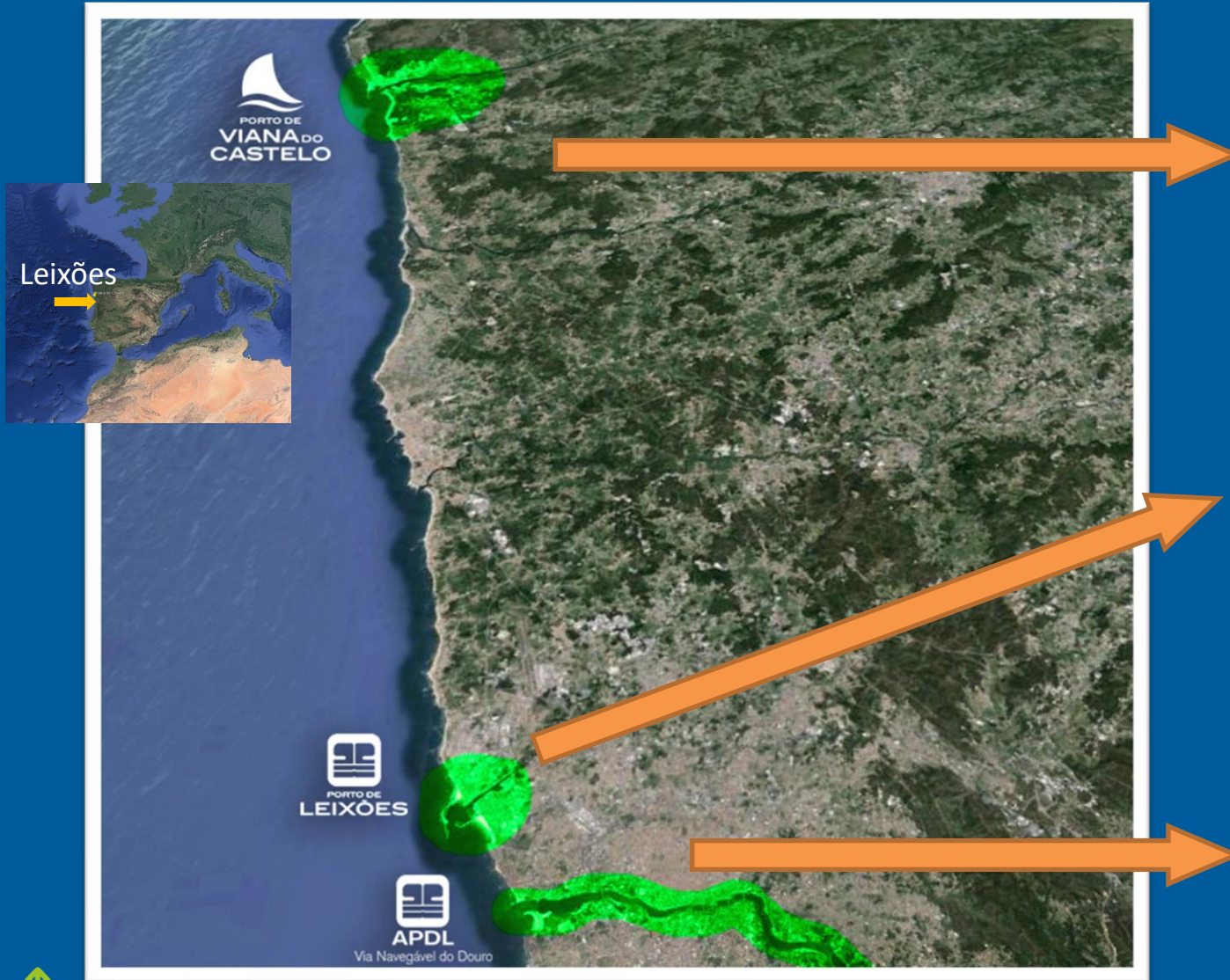


#APDL2035

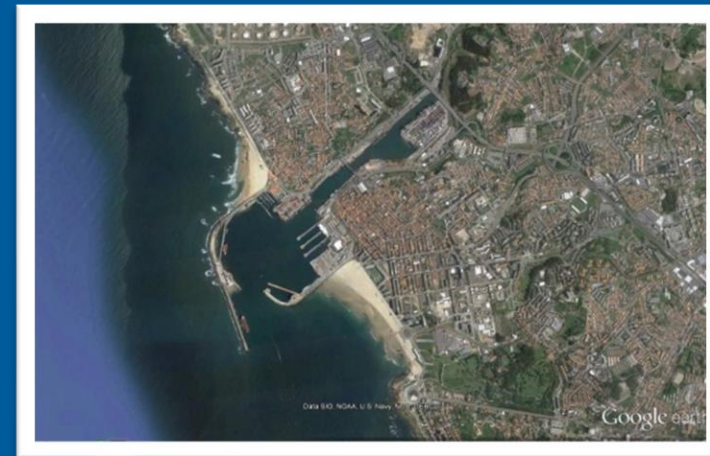


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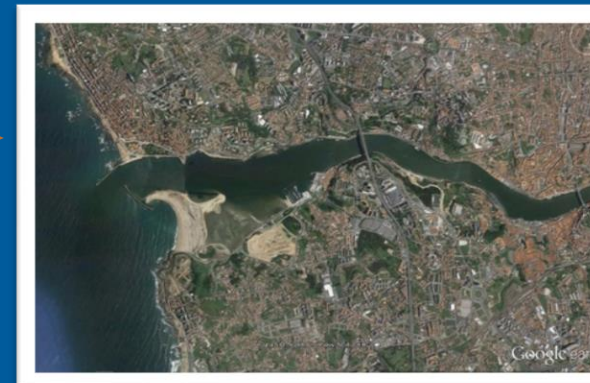
BUSINESS UNITS



Viana



Leixões



Douro



#2035APDL



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 several piers and ships, and a sandy beach along the coast. The water is a deep 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

R&D | INNOVATION



#2035APDL



PORT OF
LEIXÕES
APDL

ENVIRONMENTAL CHALLENGES



Urban Harbor

About 2.5 Million People Live Within a 50 km Radius of Port of Leixões



European Green Deal

50% Reduction in Emissions by 2030
Climate Neutrality by 2050



EU Fit for 55 Package

EU ETS
40 % Energy Produced from RE

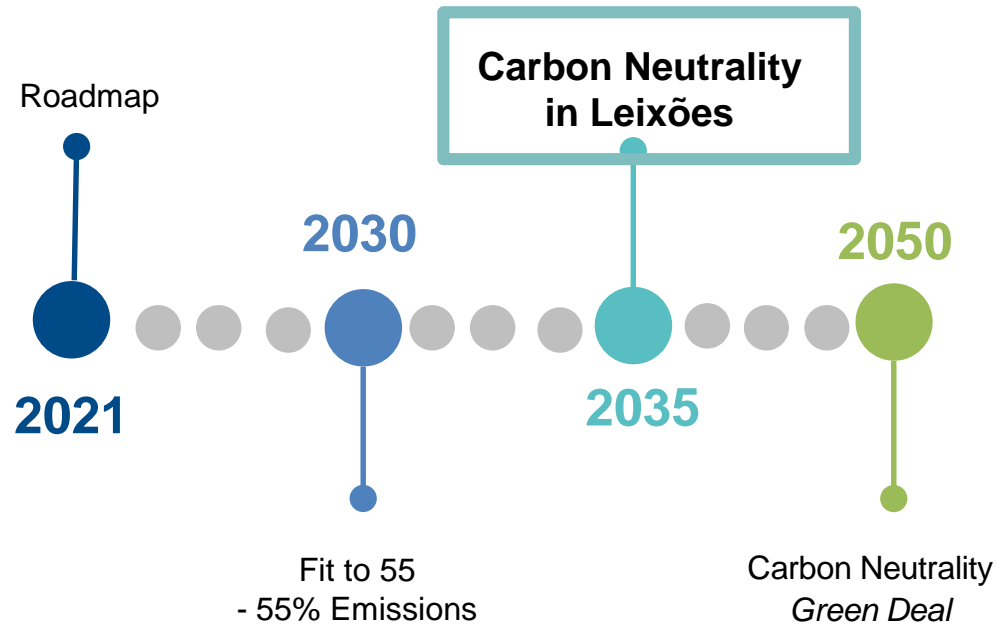


BANI
Brittle, Anxious, Non-linear, Incomprehensible

VUCA
Volatility, Uncertainty, Complexity, Ambiguity

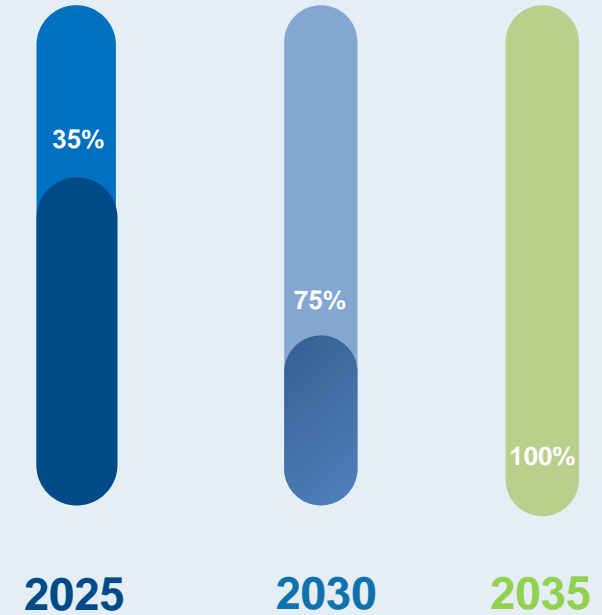


Anticipating EU and Fit for 55 goals due to Climate Emergency



Being resilient and taking action...

Emission Reduction



DECARBONIZATION



ENERGY TRANSITION



DIGITALIZATION



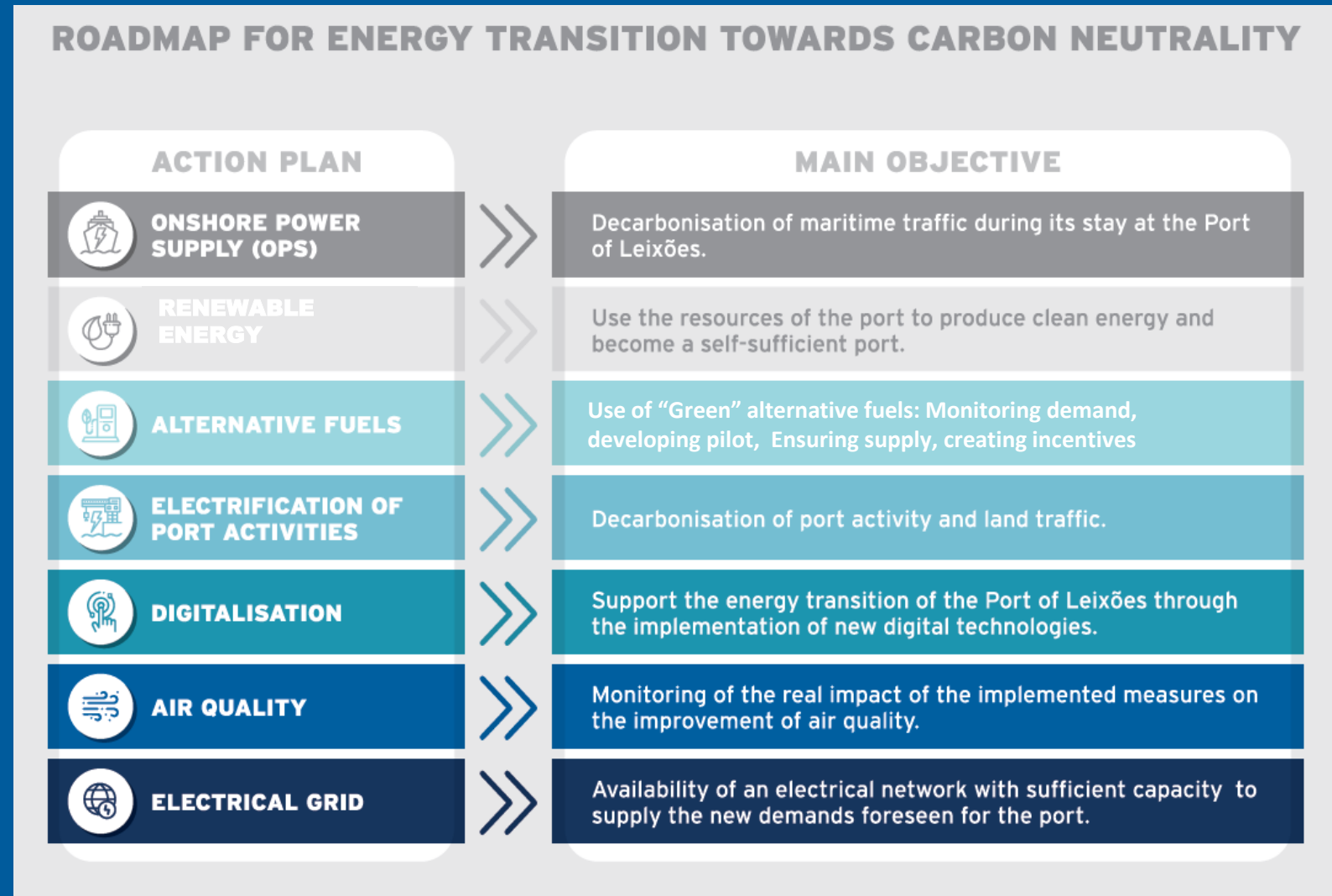
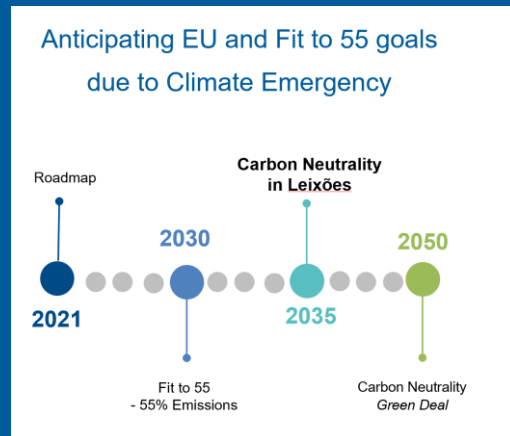
BUSINESS DIVERSIFICATION

ACTION PLANS



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ACTION PLANS TOWARDS CARBON NEUTRALITY - APDL



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PORT OF
LEIXÕES
APDL

OPS - ONSHORE POWER SUPPLY & ELECTRICAL GRID

Leixões



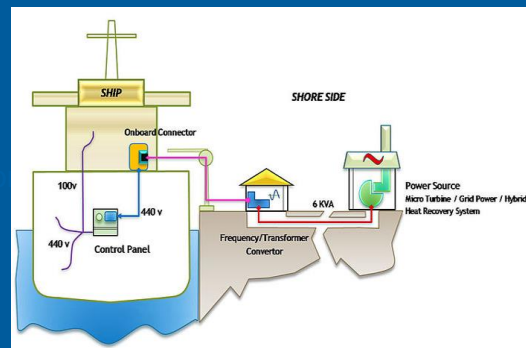
- Connection to High Voltage Network (HV)

- Development of Medium Voltage Network (MV)

- Pilot Development and Implementation

- OPS in all Docks

- +40 Million €



RENEWABLE ENERGY



SOLAR



WIND



WAVES



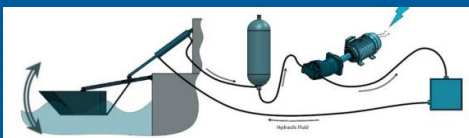
Douro



WAVES



Leixões



- PV Panels on Roofs of Buildings, Carports, Floating Solar Panels

- 1 turbine of 4 MW (**Wind Energy**)

- 1 MW Pilot at Douro river mouth (**Wave Energy**), can scale-up to 5MW in other locations (Leixões)

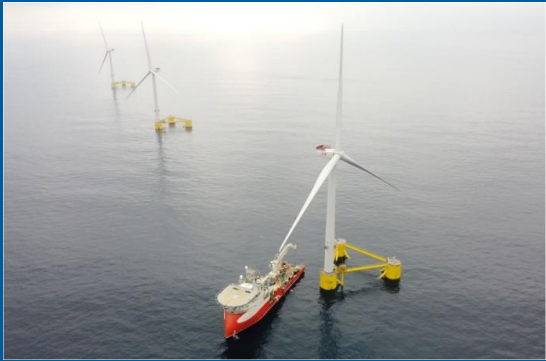
- Renewable Energy-to-grid Integration

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

RENEWABLE ENERGY

Viana do Castelo test site may evolved to become a strategic HUB for Offshore Renewables

Viana



Floating offshore wind



Wave energy conversion devices



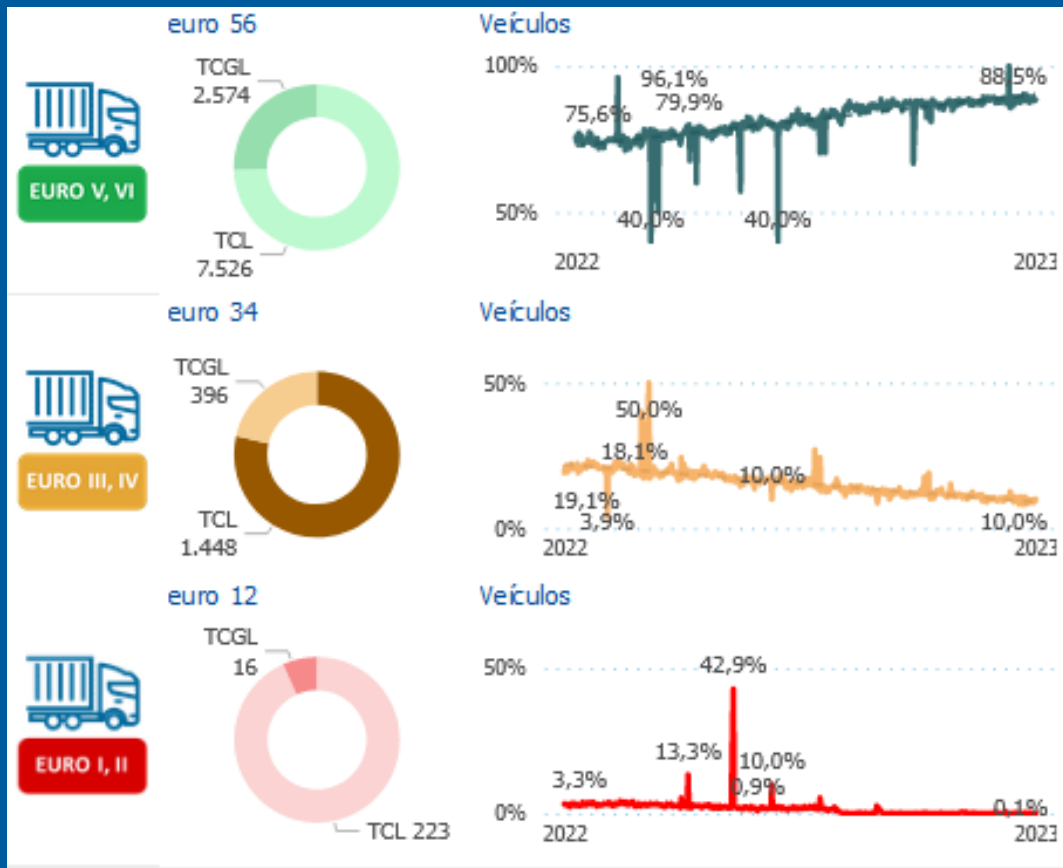
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- Reduction of Gas Emissions from Trucks and Tugboats
- Measuring Air Quality
- Eco-Truck



- Prohibiting old trucks in the port

ELECTRIFICATION OF PORT ACTIVITIES



- 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



Leixões

There is no "one size fits all"

- Monitoring demand for Alternative Fuels

- Development of a Biodiesel Pilot

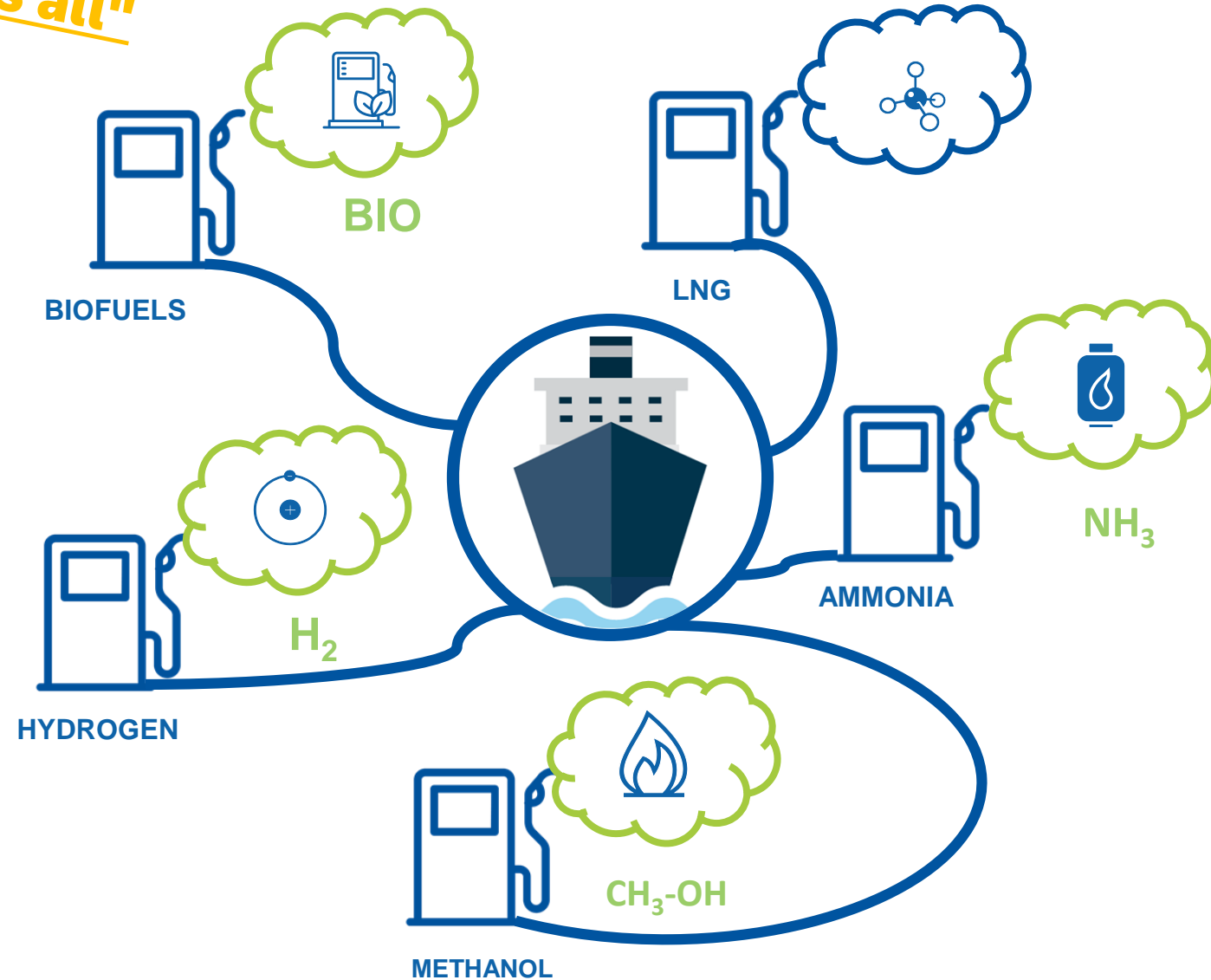
- Introduction of Carbon Rate

- Port Fees Reduction for Ships with Better Environmental Performance

- Green Fuels Storage (Hydrogen*, Ammonia, Methanol**)

- *Green H2 Production

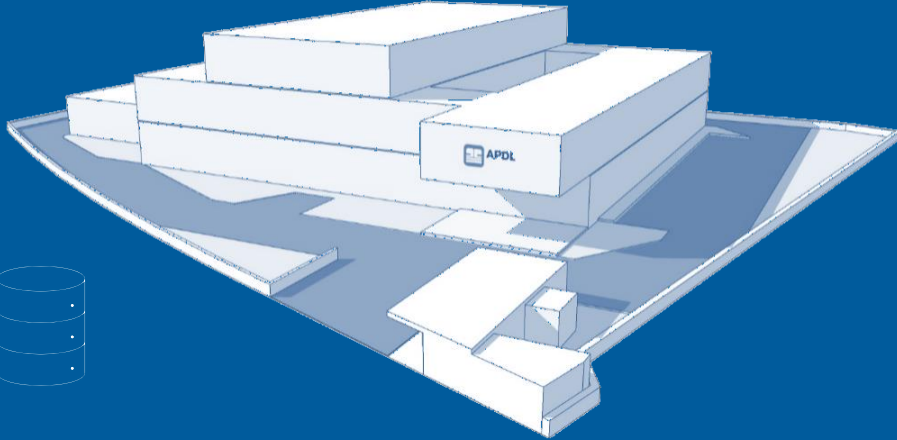
- ** PRR/RRF – H2Driven. Mobilizing Agendas



DIGITALIZATION



- + EFFICIENCY + SPEED
- EMISSIONS - ENERGY CONSUMPTION



IoT BlockChain BigData

AI Sensors 5G LoraWan DigitalTwin SmartGrid

URBAN, INTELLIGENT AND SUSTAINABLE PORT

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



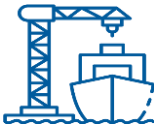
Perfect Experience for Passengers



Qualified and Enthusiastic Workers



Economic Sustainability



Efficient Operations



Sustainable Development

Social Responsibility

Cooperation and Collaboration

Efficiency

WE CREATE MOBILITY AND VALUE SUSTAINABILITY...

Requirements BD : + 100M€ | greener solutions | funds | partnerships | private investors | disruptive business models





PORT OF
SINES

Road map for the green transition of the Port of Sines



www.apsinesalgarve.pt





Portugal's new role in the EU external energy policy strategy

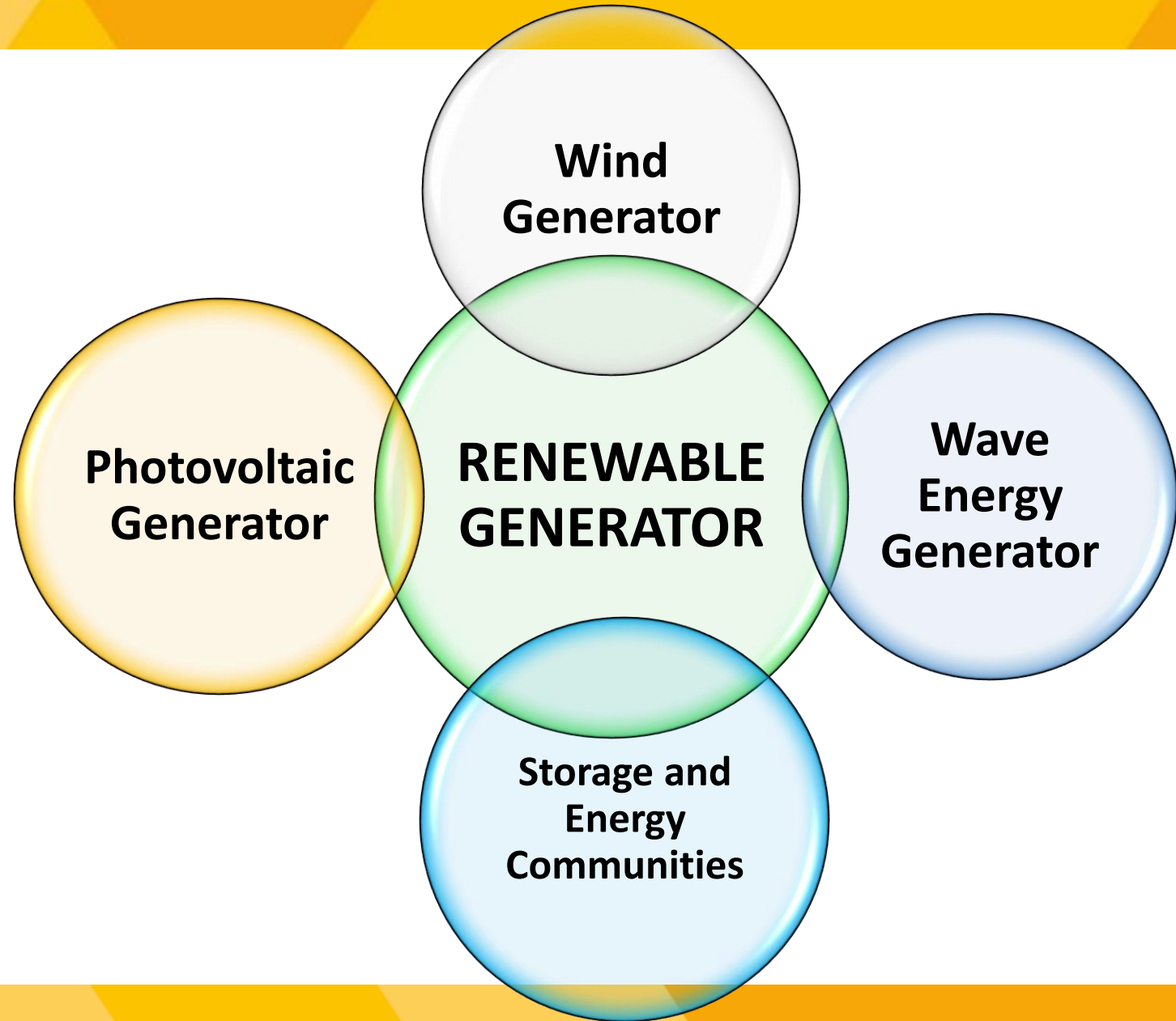
Together with **REPowerEU** plan, the Commission published new EU external energy policy strategy and Portugal can play a new and important role.

EU external energy policy strategy aims at:

- diversifying its energy supply and boosting energy savings and efficiency
- accelerating the global green and just energy transition
- building long-lasting international partnerships

The energy transition is imperative.

Clean energy planning involves diversifying its origin, considering the integration of various renewable generators.



EXTERNAL SOURCE 2021: 30kV/10MVA

ENERGY NEEDS 2023

Consumption 27 GWh/year

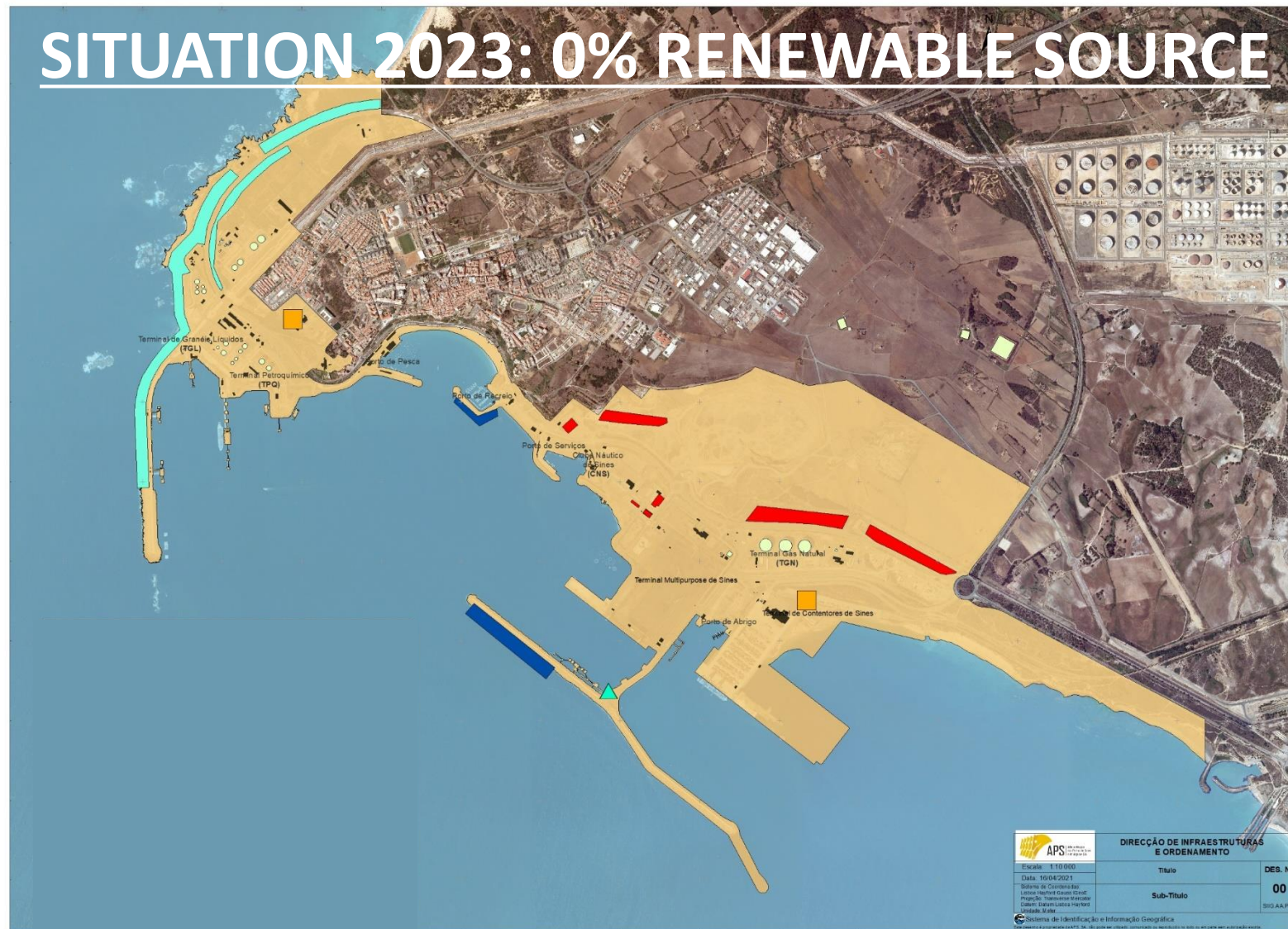
RENEWABLE GENERATOR 2023:

Estimated power: 0 MW

Estimated production: 0 GWh/year

Renewable consumption quota 0%.

SITUATION 2023: 0% RENEWABLE SOURCE



OPS - Onshore Power Supply at the Container Terminal

- The Port of Sines will have a consumption of 27GWh/year in 2023, which will quadruple (4x) by 2030
- Each OPS system can supply up to 10GWh/year to container ships
- It is estimated that by 2030 the Port of Sines will have 4 OPS systems in the container terminal

It is estimated that the OPS systems at the Port of Sines will be responsible for 40% of the energy needs in 2030

EXTERNAL SOURCE 2030: 60kV/64MVA

ENERGY NEEDS 2030

Estimated consumption 93 GWh/year

RENEWABLE GENERATOR 2030:

Estimated power: 27 MW

Estimated production: 68 GWh/year

Share of renewable consumption
73%.

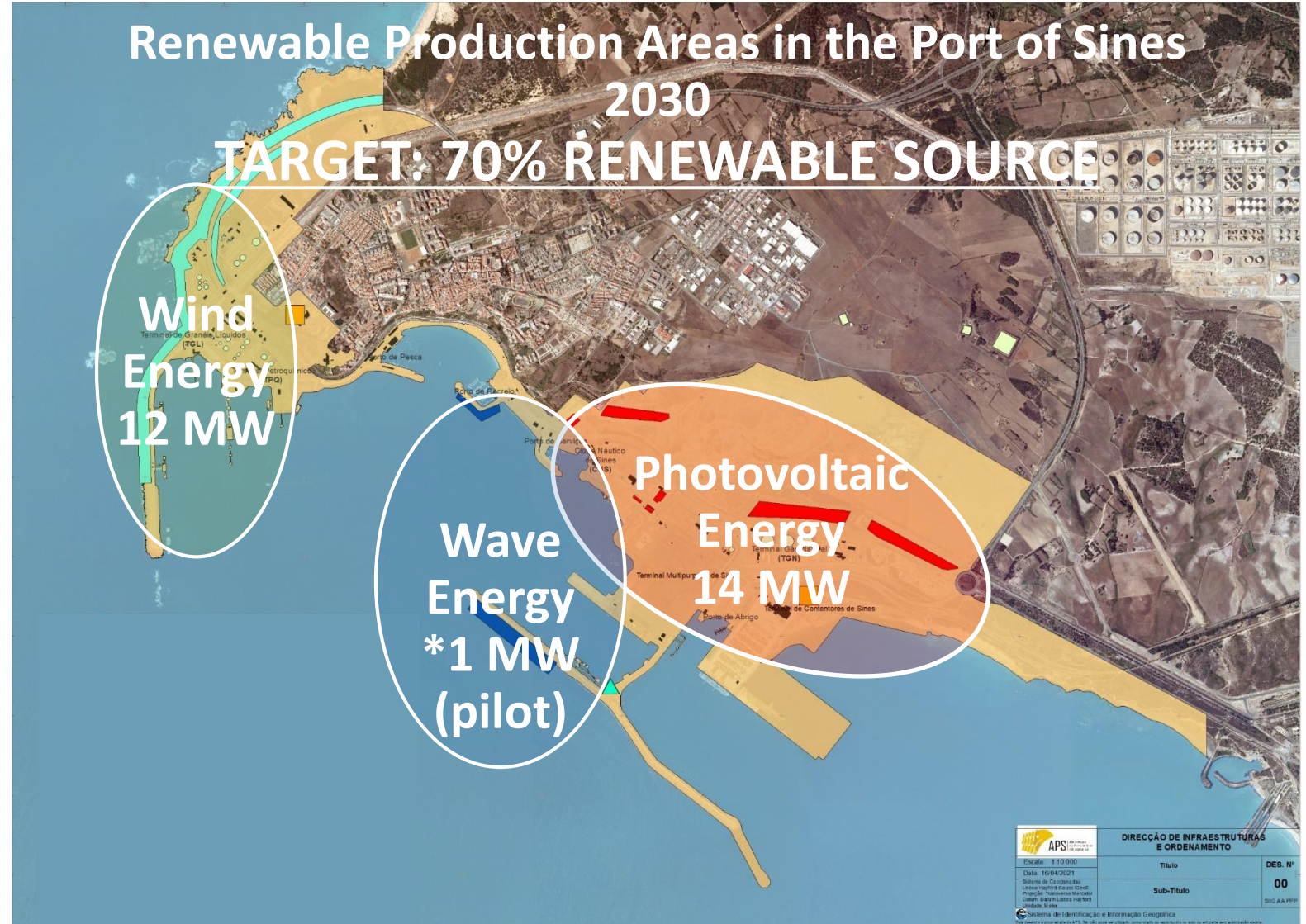
**Renewable Production Areas in the Port of Sines
2030**

TARGET: 70% RENEWABLE SOURCE

**Wind
Energy
12 MW**

**Wave
Energy
*1 MW
(pilot)**

**Photovoltaic
Energy
14 MW**



EXTERNAL SOURCE 2050: 60kV/64MVA

ENERGY NEEDS 2045

Estimated consumption 123 GWh/year

RENEWABLE GENERATOR 2045:

Estimated power: 48.5 MW

Estimated production: 130 GWh/year

Renewable consumption quota 107%.

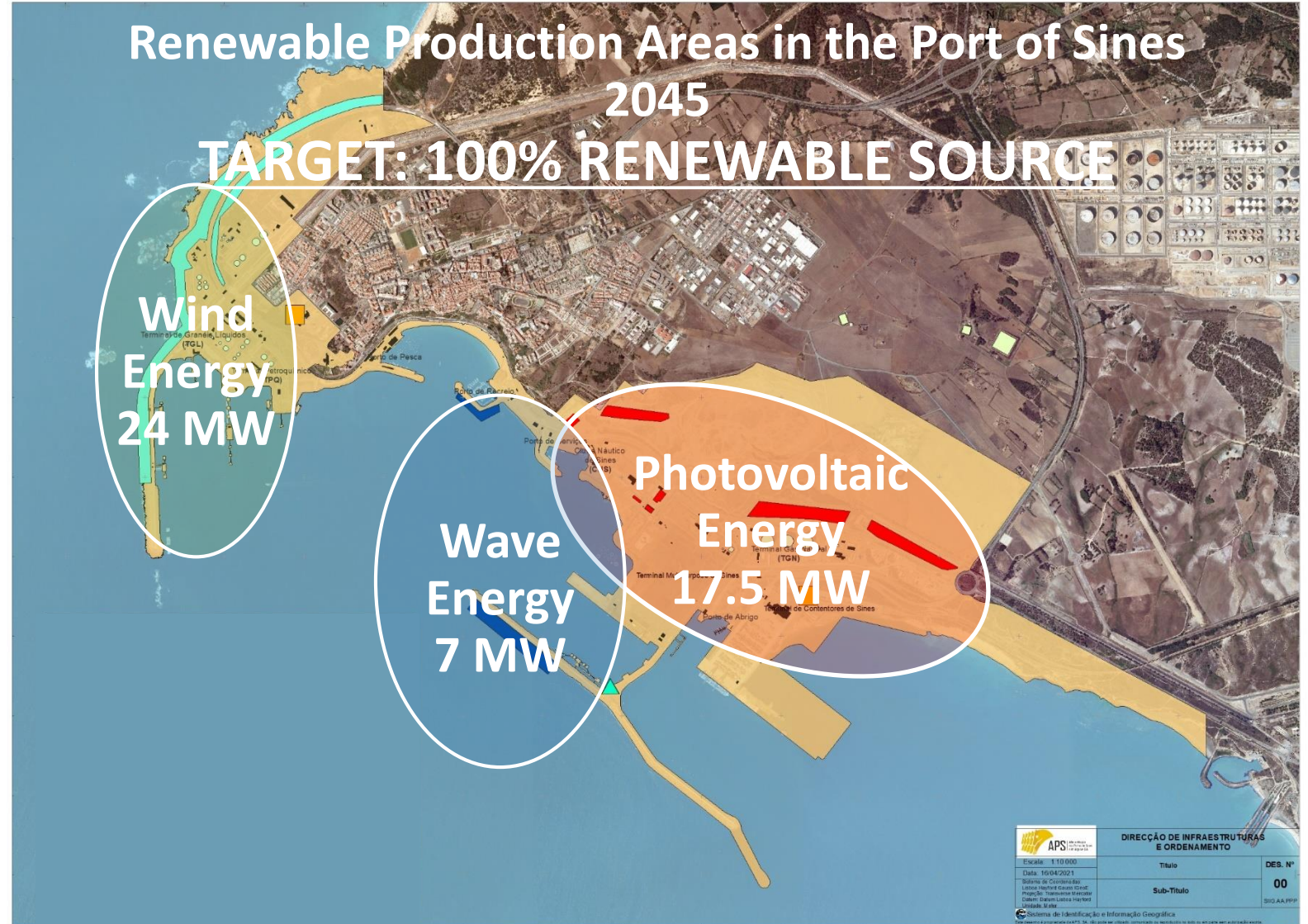
**Renewable Production Areas in the Port of Sines
2045**

TARGET: 100% RENEWABLE SOURCE

**Wind
Energy
24 MW**

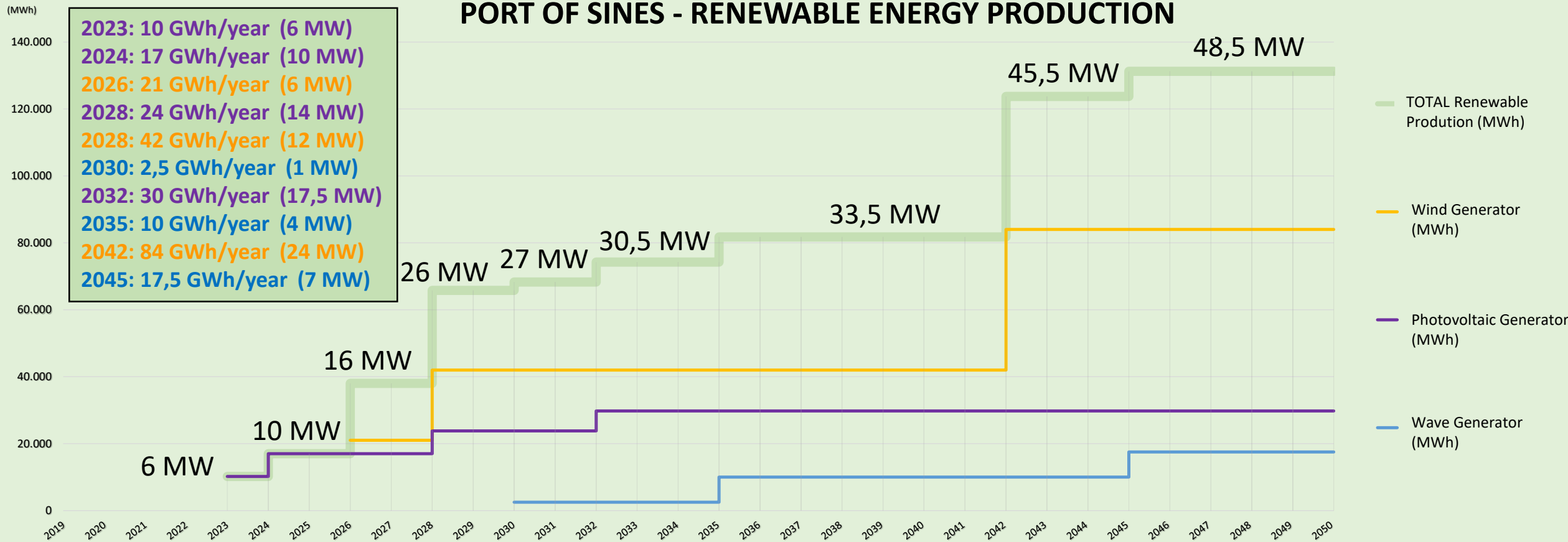
**Wave
Energy
7 MW**

**Photovoltaic
Energy
17.5 MW**



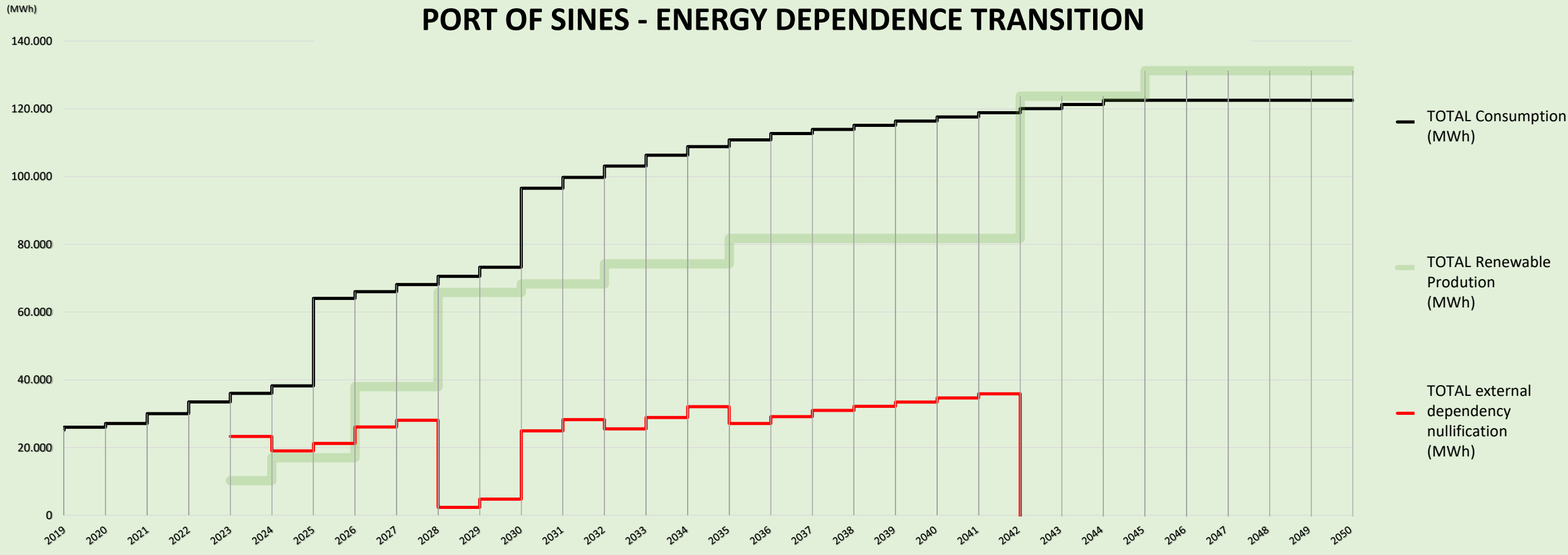


Port of Sines - Renewable Energy Production





Port of Sines - Renewable Energy Production



VISION

- The Port of Sines is supplied by MT. It will be HT from 2023 onwards.
- The Port of Sines has a consumption of 27GWh/year and will be 93GWh/year by 2030 if the supply of electricity to ships at berth is implemented.
- The Port of Sines has potential for renewable production in its area of jurisdiction that ensures and exceeds its needs.
- To obtain a 100% renewable production by 2045 is necessary to maximize production and minimize waste from overproduction.

Renewable production surplus STORAGE or REC?

The use of STORAGE TECHNOLOGY (batteries) allows the deferred consumption of the production, minimizing surpluses.

The constitution of a REC (renewable energy community) values the overproduction and allows sharing the benefits of port renewable production beyond the physical boundaries of the Port, benefiting the adhering customers of the surrounding REC community.

The ideal solution will be a combination of both!

Conclusions and Final Remarks



THANK YOU!



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Development and Sustainability