Multi-year Expert Meeting on Transport, Trade Logistics and Trade Facilitation
11th Session

Maritime Transport in Times of Polycrisis

23-24 October 2024, Geneva

Swot+ in the Path of Making Tanger Med Advance in its Ability to:

Use, Produce and/or Distribute Renewable Energy and Improve Energy Efficiency

Presentation By

Hicham Kharoufi

Tanger Med Port Authority

TANGER MED

Multi-Year Expert Meeting on Transport, Trade Logistics and Trade Facilitation
11th session 24/10/2024 - UNCTAD Geneva, Switzerland

SWOT+ IN THE PATH OF MAKING TANGER MED ADVANCE IN ITS ABILITY TO:

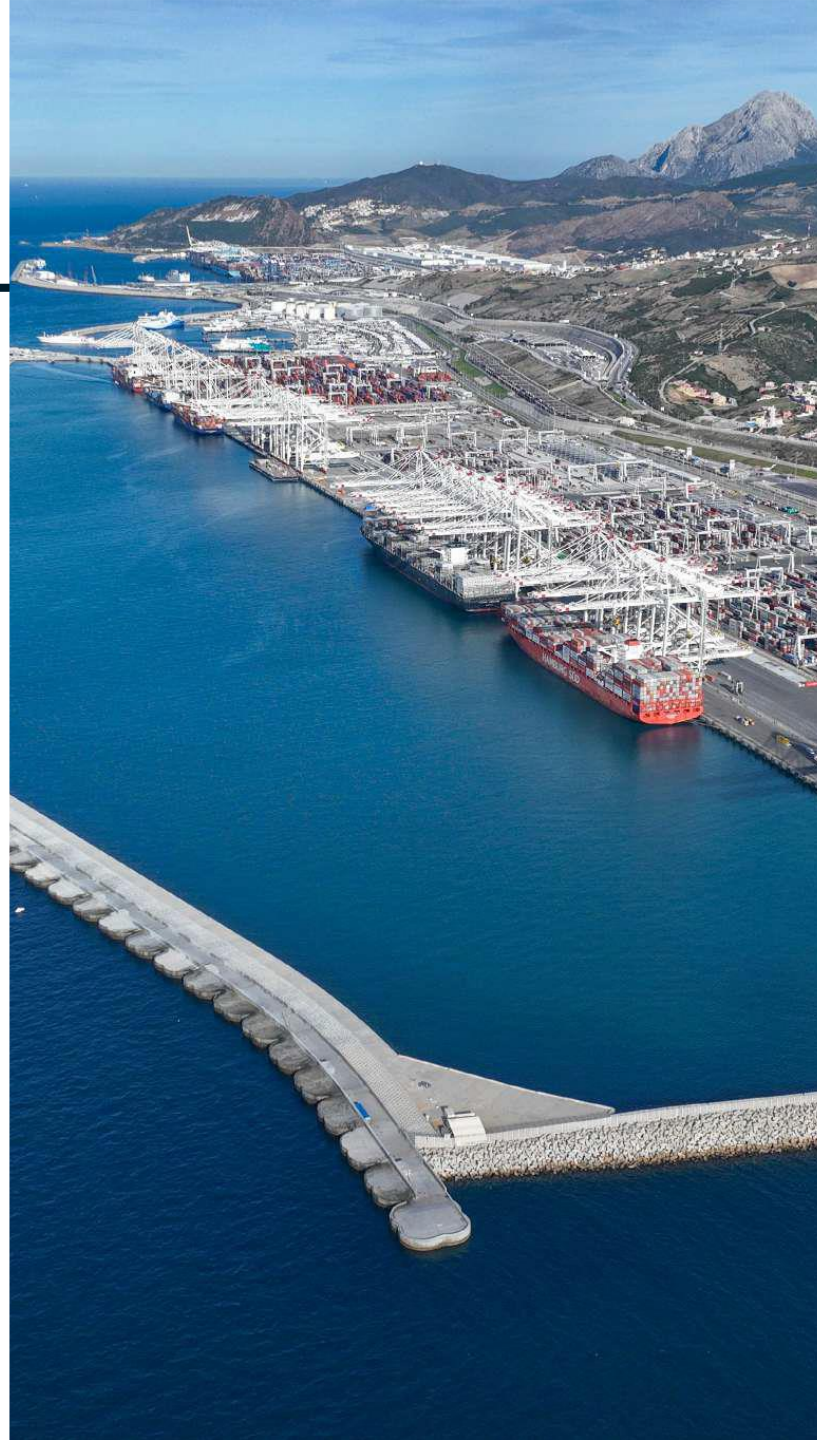
USE, PRODUCE AND/OR DISTRIBUTE RENEWABLE ENERGY AND IMPROVE ENERGY EFFICIENCY

TANGER MED PORT AUTHORITY

UN trade & development
UNCTAD

Table of Contents

INTRODUCTION



Importance of Renewable Energy and Efficiency:

- Global efforts to combat climate change and transition to cleaner energy
- Ports are large consumers of energy
- Ports need to decarbonize operations and reduce GHG by improving energy efficiency

✓ Improving energy efficiency contributes to the port's sustainability and aligns with global decarbonization goals.

Objective: This analysis aims to explore Tanger Med's Strengths, Weaknesses, Opportunities, and Threats in the context of its renewable energy and energy efficiency strategies, while also outlining actionable steps (SWOT+) considering the port environment and to ensure continuous improvement.

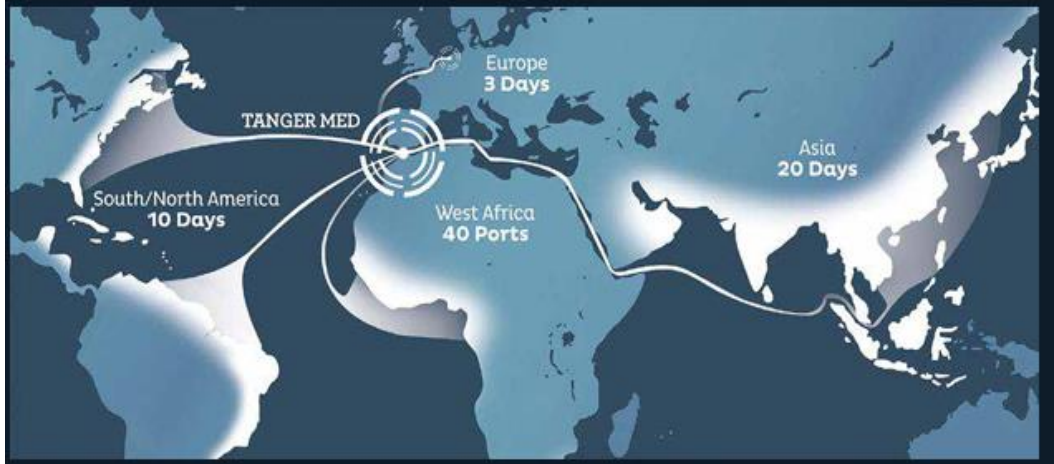
Tanger Med Port

Established in 2007 in the center of maritime trade NS-EW at the heart of world trade: the strait of Gibraltar, Tanger Med is:

- The Biggest port in Africa and Mediterranean Sea
- **19th** biggest container port worldwide
- **4th** most efficient container port
- **8** terminals (4 deep draft container terminals)
- **+17000** port calls
- **+1200** port calls of mega container vessels
- **+16000** tug jobs
- **Committed to sustainability and energy efficiency**

PORT CAPACITIES	
Hydrocarbon Activity	15 000 000 (T)
Container Activity	9 000 000
Vehicles Activity	1 000 000
Ro-Ro Activity	700 000
Passengers Activity	7 000 000

WEEKLY MARITIME CONNECTIONS TO
MORE THAN 180 PORTS AND 70 COUNTRIES



DISTRIBUTION OF CONTAINER TRAFFIC IN TONNAGE BY GEOGRAPHICAL AREA

AFRICA	ASIA	EUROPE	TRANSATLANTIC
34%	18%	37%	11%

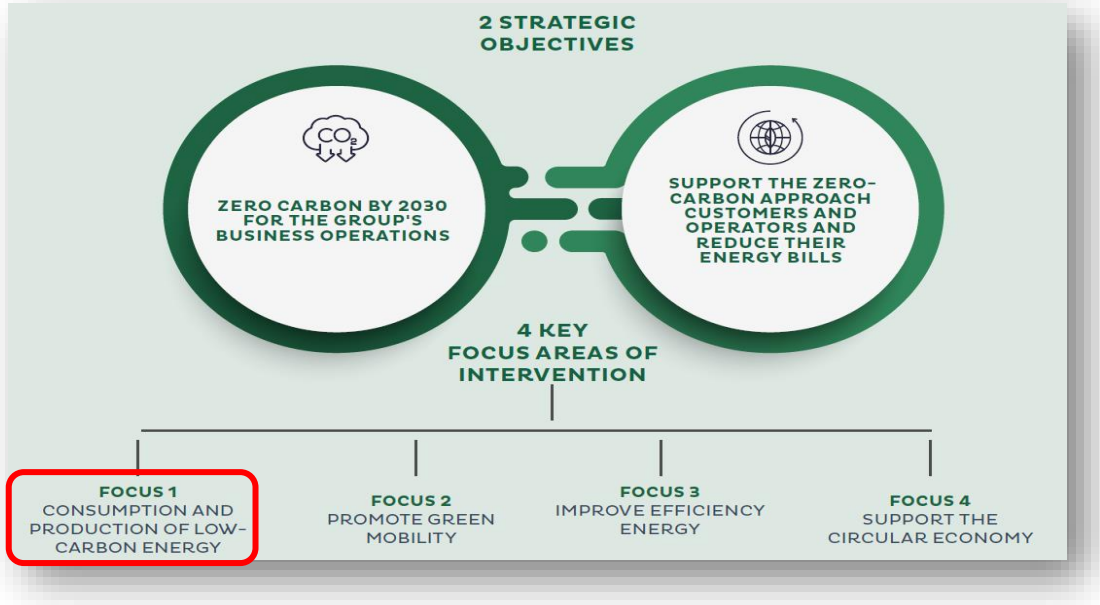
CSR & ENERGY TRANSITION

Focus 1:

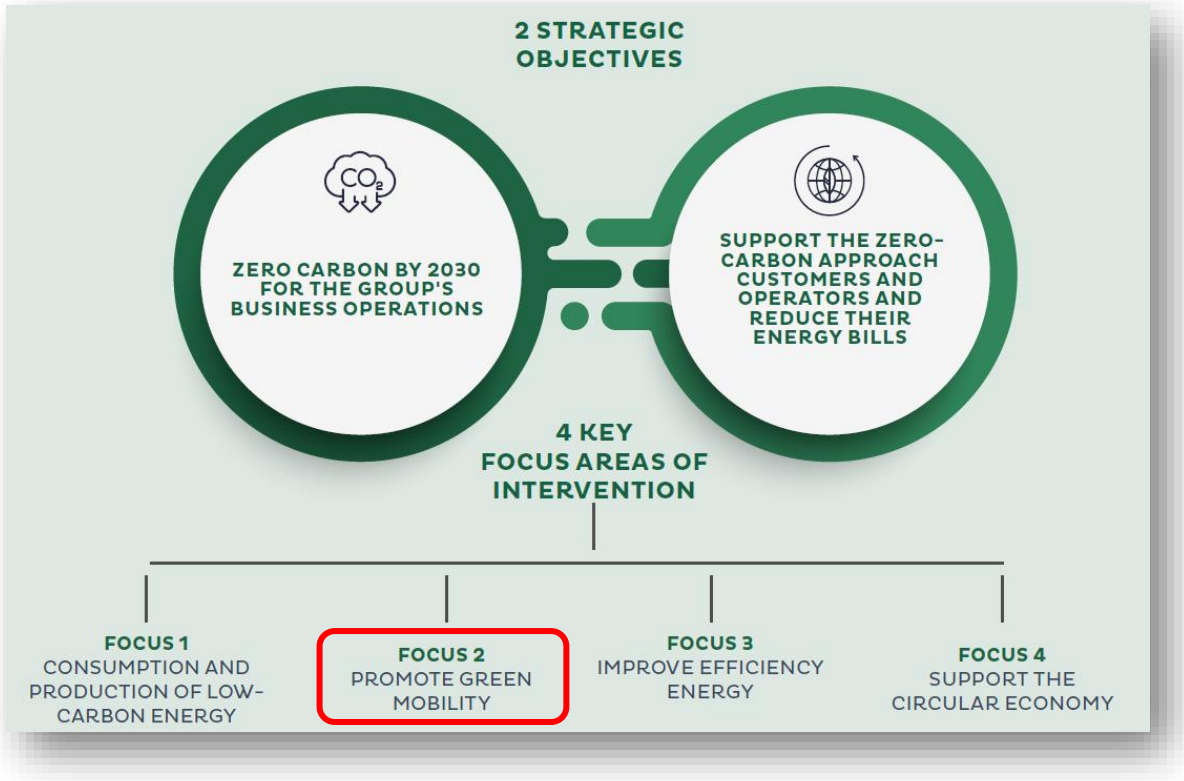
- **90%** of electricity supplied and consumed in Tanger Med area to come from renewable sources by **2030**
- Supply **160 MW** of renewable energy capacity by **2030** – including 50 MW from own production
- Develop quayside connection infrastructures for ships with a capacity of **52 MVA** by **2026**
- Tanger Med is developing a **13 MW floating solar farm on the Oued Rmel dam,** set to reduce CO2 emissions by **14,248 tons** and conserve water. The project will be operational by the second quarter of 2025.

Achievements:

- Photovoltaic power plant on the roof of Tanger Med Port Center with a capacity of **1.3 MW** launched in **April 2024 (937 TCO2 reduction)**
- Deployment of an Onshore Power Supply infrastructure for ships in TC4 (promote significant energy savings, limit noise pollution, and reduce CO2 emissions from ships at berth by **74,000 TCO2 by 2040** after expansion in all TC



CSR & ENERGY TRANSITION



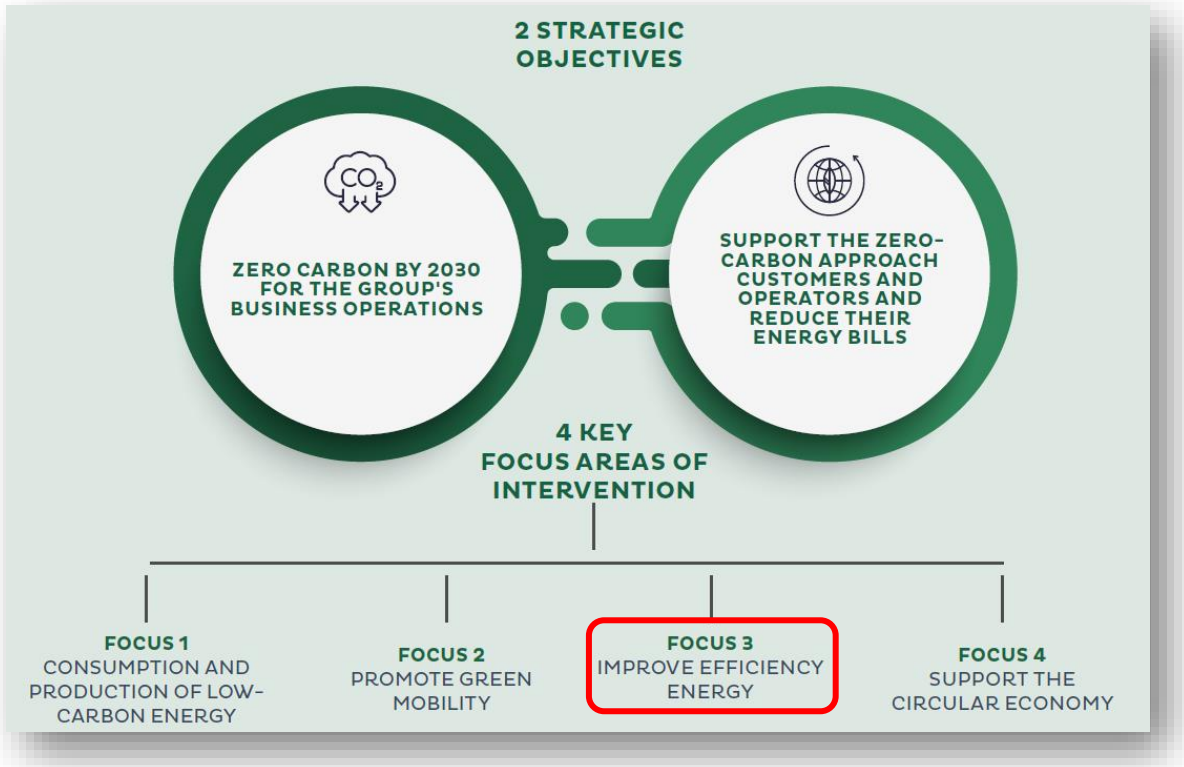
Focus 2:

- Maximizing decarbonization efforts within the mobility sectors within the Tanger Med area
- Meet all operators' needs for green fuels (green electricity/hydrogen or others)
- Convert the fleet of service and operating vehicles to electric and green hydrogen vehicles
- Encouraging terminals to transition their fleets to hybrid or electric-powered vehicles

Achievements:

- Installation of multiple charging stations for electric vehicles and training of employees
- Deployment of **+20 electric service** vehicles
- Financial incentives for employees to purchase hybrid or electric vehicles

CSR & ENERGY TRANSITION



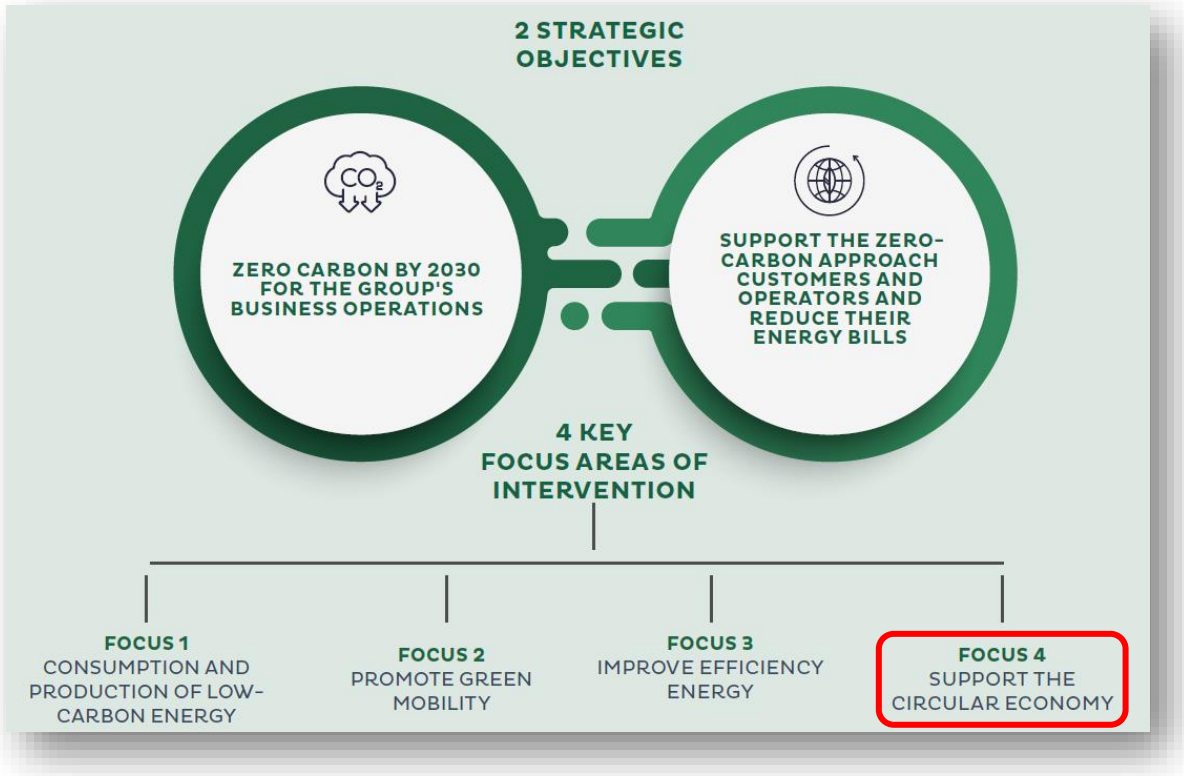
Focus 3:

- Guarantee better control of energy demand by optimizing consumption
- In the medium term, support our customers in implementing an energy management system in line with ISO 50001:2018 standard.
- Ultimately, implementing Smart Grid solutions for the digitization of our operations and the optimization of multi-fluid network management across the Group's perimeter

Achievements:

- **100%** public lighting in Port and Industrial complex is on LED **(5000 light sources)**
  - ➢ **+55% energy saving**
- **Lighting Management System (LMS)** has been installed to control the operation of the lighting system by creating modular settings.

CSR & ENERGY TRANSITION



Focus 4:

- Organize collective management of waste from industrial and port areas
- Recover ordinary and hazardous waste and give it a second life
- Meet the water needs of Tanger Med's perimeter while preserving natural resources and ensuring self-sufficiency in potable water.

Achievements:

- Installation of a treatment system for hydrocarbon laden wastewater
- Commissioning of 4 wastewater treatment plants (WWTP) in the port and industrial zones, with a treatment capacity to date of over 5,000m3 per day
- Installation of a tertiary infrastructure for watering green spaces at the Port Complex and Tanger Automotive City

STRENGTHS (+ STRATEGIES)

Strategic Location:

- A key maritime hub, Tanger Med has excellent access to major shipping lanes connecting Europe, Africa, and Asia
- Ideal for renewable energy distribution and logistics

➢ **Action:** Influence shipping industry and leverage this advantage by positioning the port as a renewable energy export hub, particularly for green hydrogen and offshore wind energy.

Government Support & Policy Alignment:

- Morocco is one of the leading countries in renewable energy adoption, aiming for 52% of its electricity generation to come from renewables by 2030

➢ **Action:** Capitalize on government subsidies and international climate financing to accelerate renewable energy initiatives.

STRENGTHS (+ STRATEGIES)

Existing Renewable Energy Projects:

- **Solar Panels:** Solar installations on port buildings and warehouses contribute to reducing the port's carbon footprint by generating clean electricity

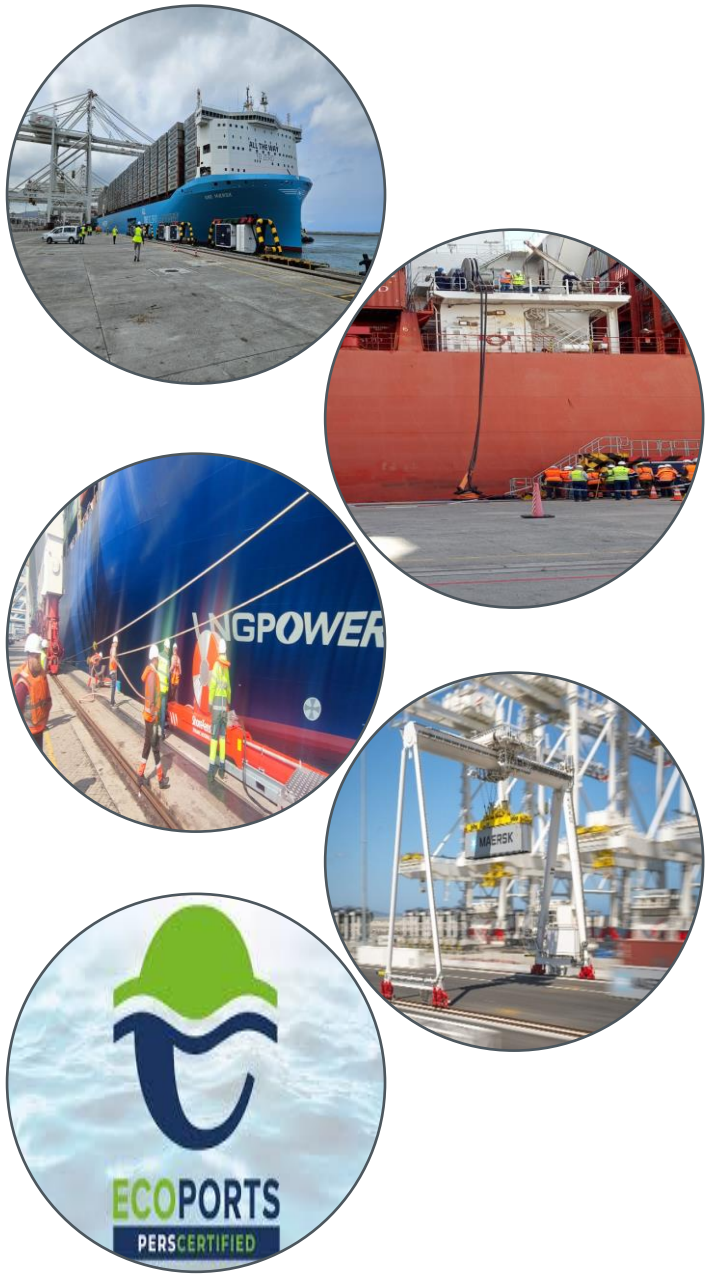
- **Wind Energy:** The port could tap into Morocco's substantial wind energy resources, especially with the nearby Tangier wind farms

➢ **Action:** Expand the use of solar panels across more facilities and integrate them with energy storage systems to ensure continuous green energy supply, even during peak demand.

STRENGTHS (+ STRATEGIES)

<u>Commitment to Decarbonization and energy efficiency:</u>

- **Shore Power Supply (SPS – Cold Ironing):** allow vessels to plug into the local grid while docked
- **Electrified cargo handling equipments:** all container terminals cranes are electric, but for RTGs they are on diesel oil, and we have one terminal having electrical RMGs
- **Reefer cooling technologies (smart grid):** Remote monitoring – Online management
- **CAVOTEC Automoor System:** This automated mooring system reduces the time needed to dock and undock vessels
- **ShoreTension:** an advanced mooring system that provides constant tension on the mooring lines
- **EcoPort Label:** Tanger Med Port has been awarded the EcoPorts label by the European Sea Ports Organisation (ESPO),



STRENGTHS (+ STRATEGIES)

Just-In-Time (JIT) Arrivals & Port Call Optimization:

Data-oriented strategy

Taking the Lead in discussions and actions

Collaborative improvement

Skilled Human Capital

Digital Solutions and Platforms

STRENGTHS (+ STRATEGIES)

Just-In-Time (JIT) Arrivals & Port Call Optimization: Optimizing Communication for Just-In-Time Arrivals/Sailings at Tanger Med Port

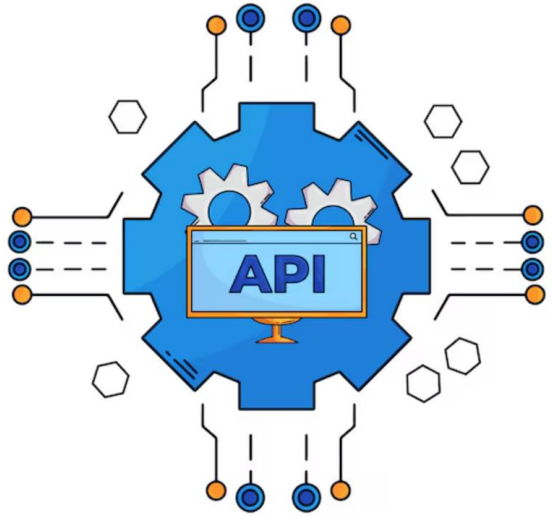
Direct Vessel Communication

Exchange data with the vessel captain if their ECDIS or Navi-Planner is connected

First real-life digital port call with MV KOBE EXPRESS

PCS Data Exchange

Data can be securely exchanged through our PCS with fleet operators or any representative of the shipping company

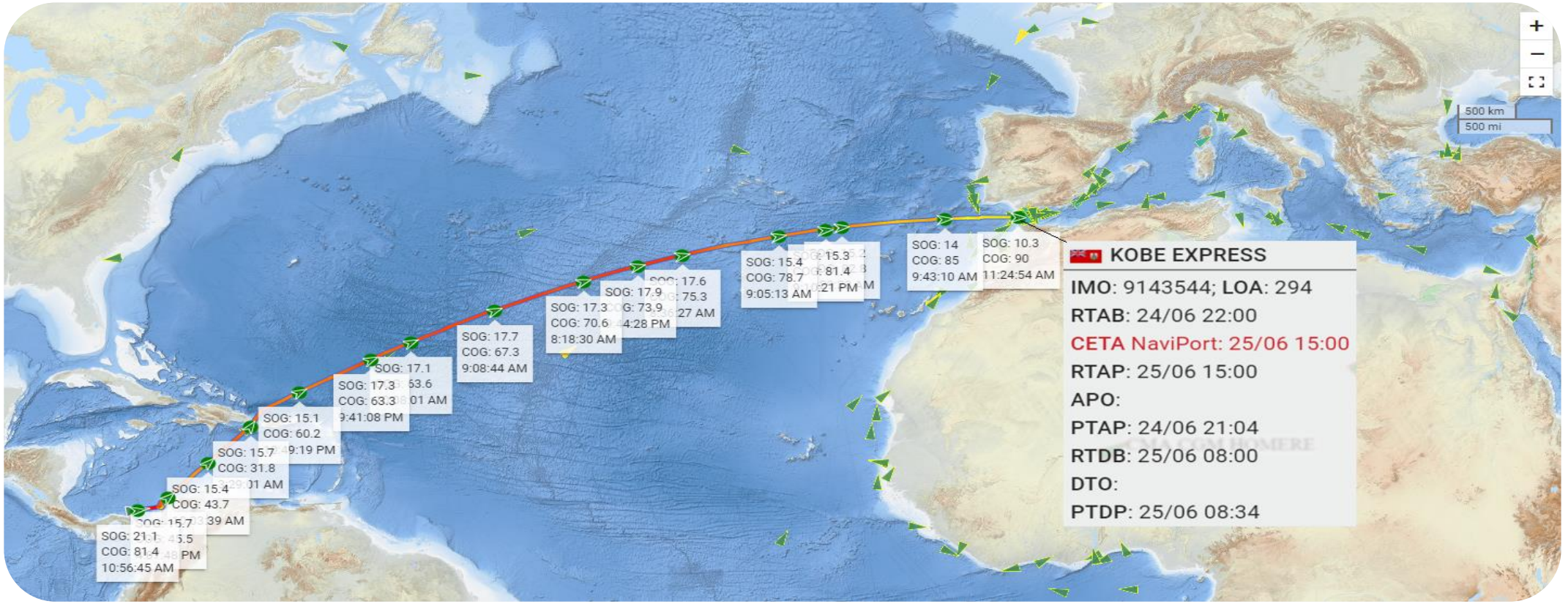


API Integration (In Progress)

API connections will enable seamless data exchange with major carriers

STRENGTHS (+ STRATEGIES)

Just-In-Time (JIT) Arrivals & Port Call Optimization: First real-life digital port call with MV KOBE EXPRESS

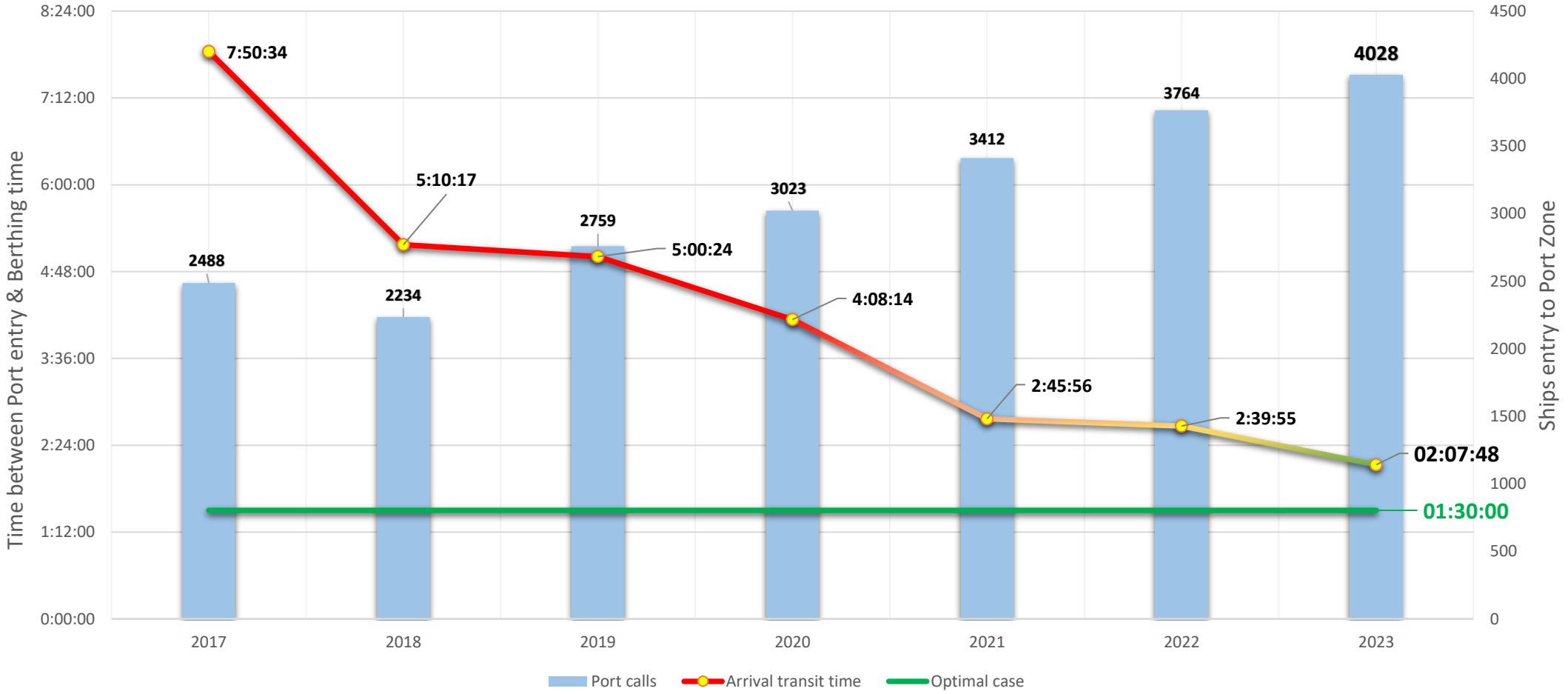


Speed was reduced from 21 knots – 17 – 15 and 11 knots in the last 6 hours

Approx. 26 tons fuel saving (10000 USD) and 75 tons on CO2 emissions cut (15h50min of waiting time avoided).

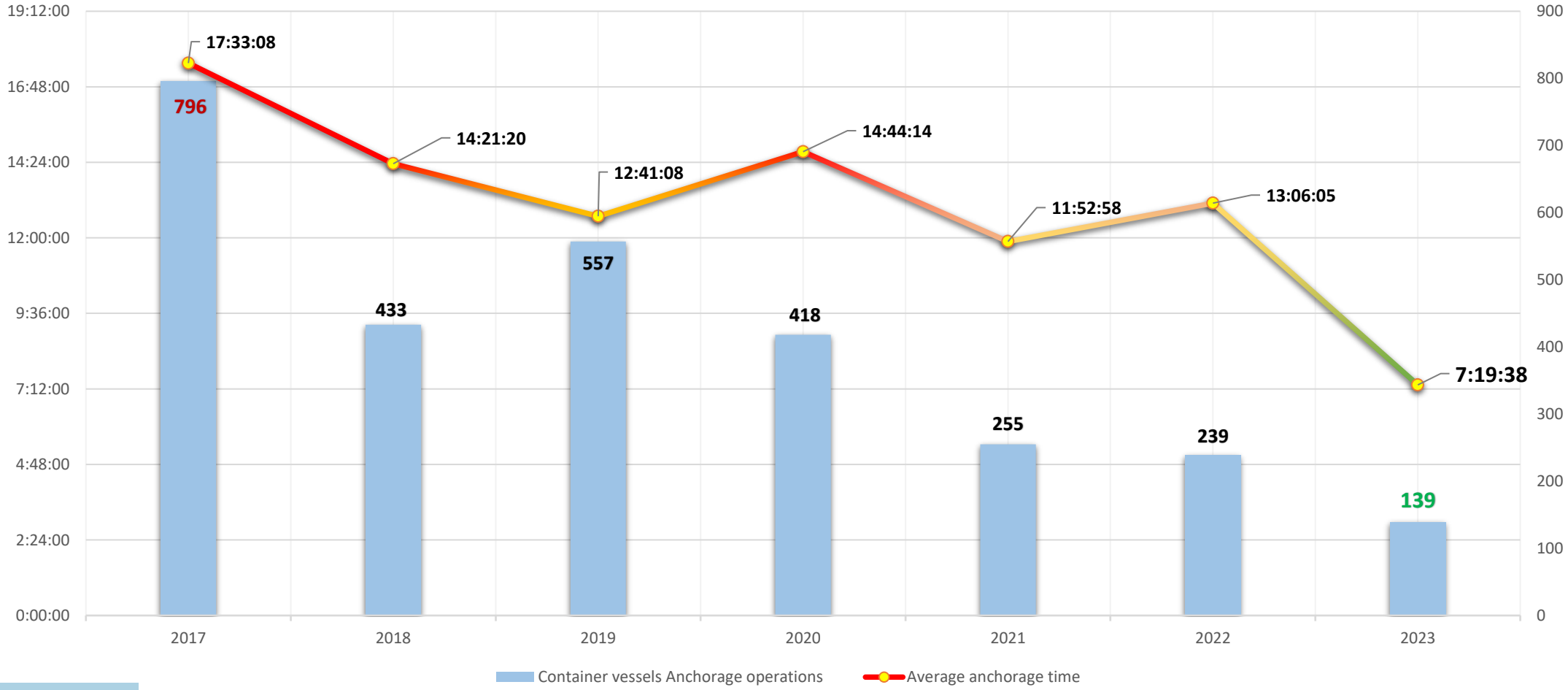
STRENGTHS (+ STRATEGIES)

Just-In-Time (JIT) Arrivals & Port Call Optimization: Reducing Container Ship Waiting Times Through Port Call Optimization



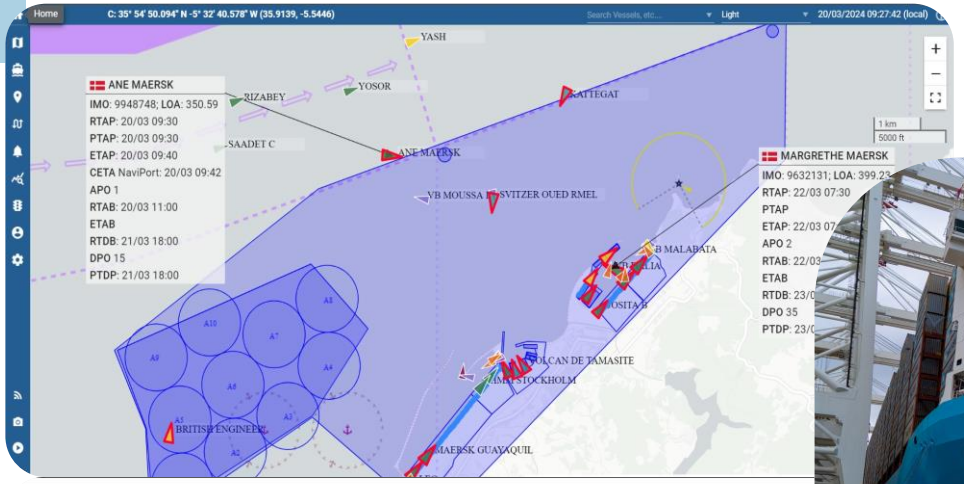
STRENGTHS (+ STRATEGIES)

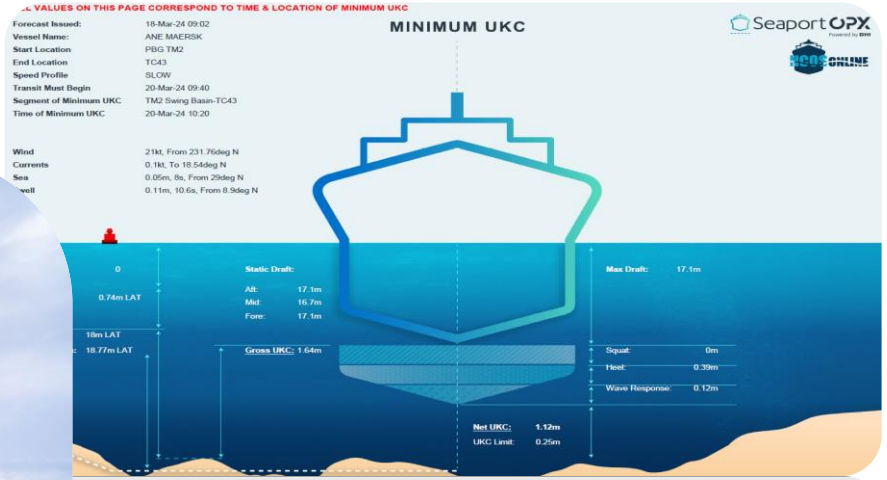
Just-In-Time (JIT) Arrivals & Port Call Optimization: Streamlining Tanger Med Port Calls: Reduced Anchorage Operations and Delays

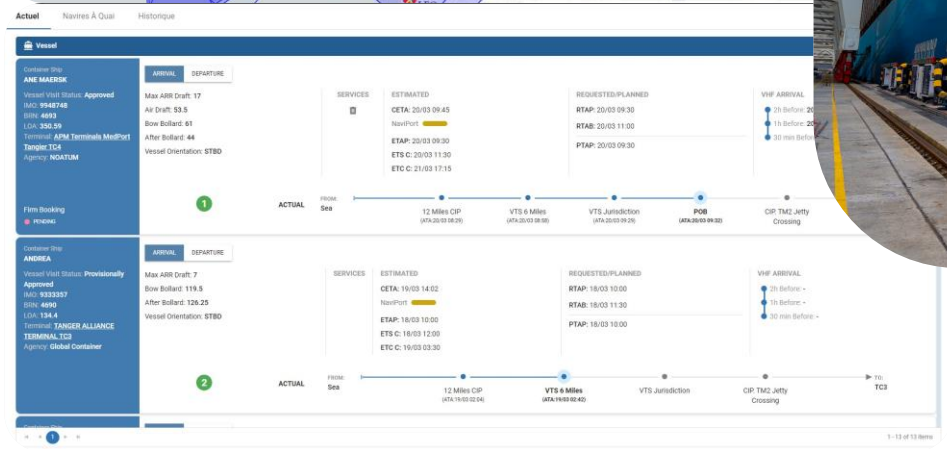


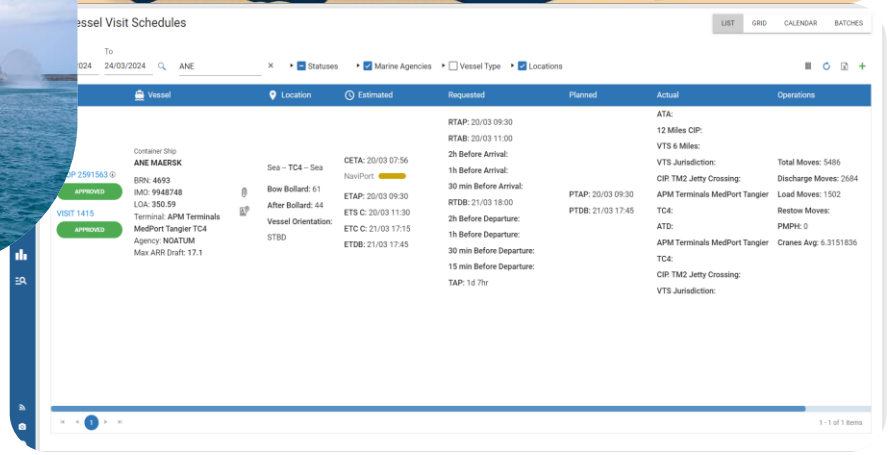
STRENGTHS (+ STRATEGIES)

Just-In-Time (JIT) Arrivals & Port Call Optimization: ANE MAERSK port call : JIT arrival for the largest Methanol powered vessel





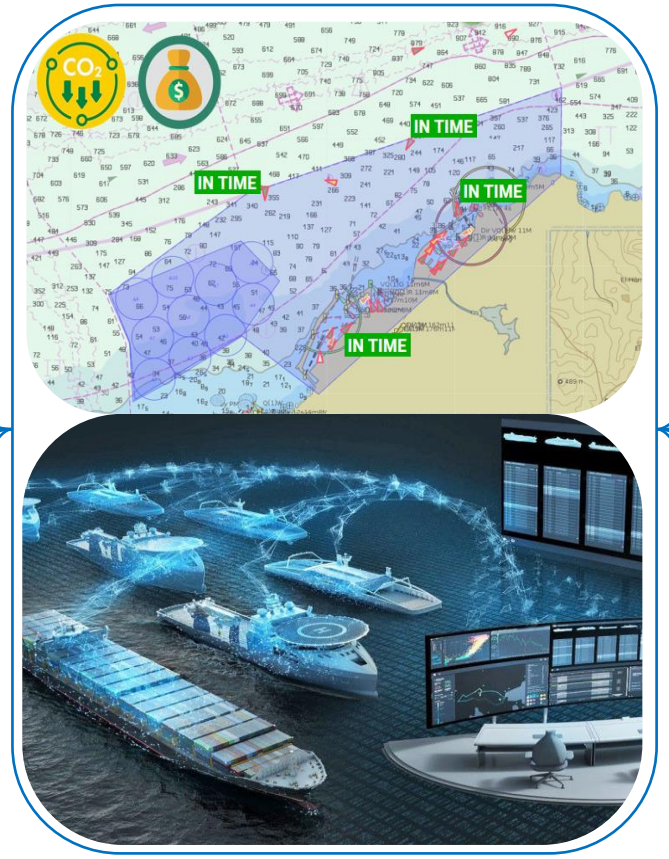




STRENGTHS (+ STRATEGIES)

Just-In-Time (JIT) Arrivals & Port Call Optimization: Expected results

- Enhanced data sharing
- Artificial intelligence
- Smart port
- Influence the shipping industry



- GHG footprint reduction
- Operations efficiency
- Increase competitiveness
- JIT operations

WEAKNESSES (+ MITIGATIONS)

<u>High Capital Costs:</u>

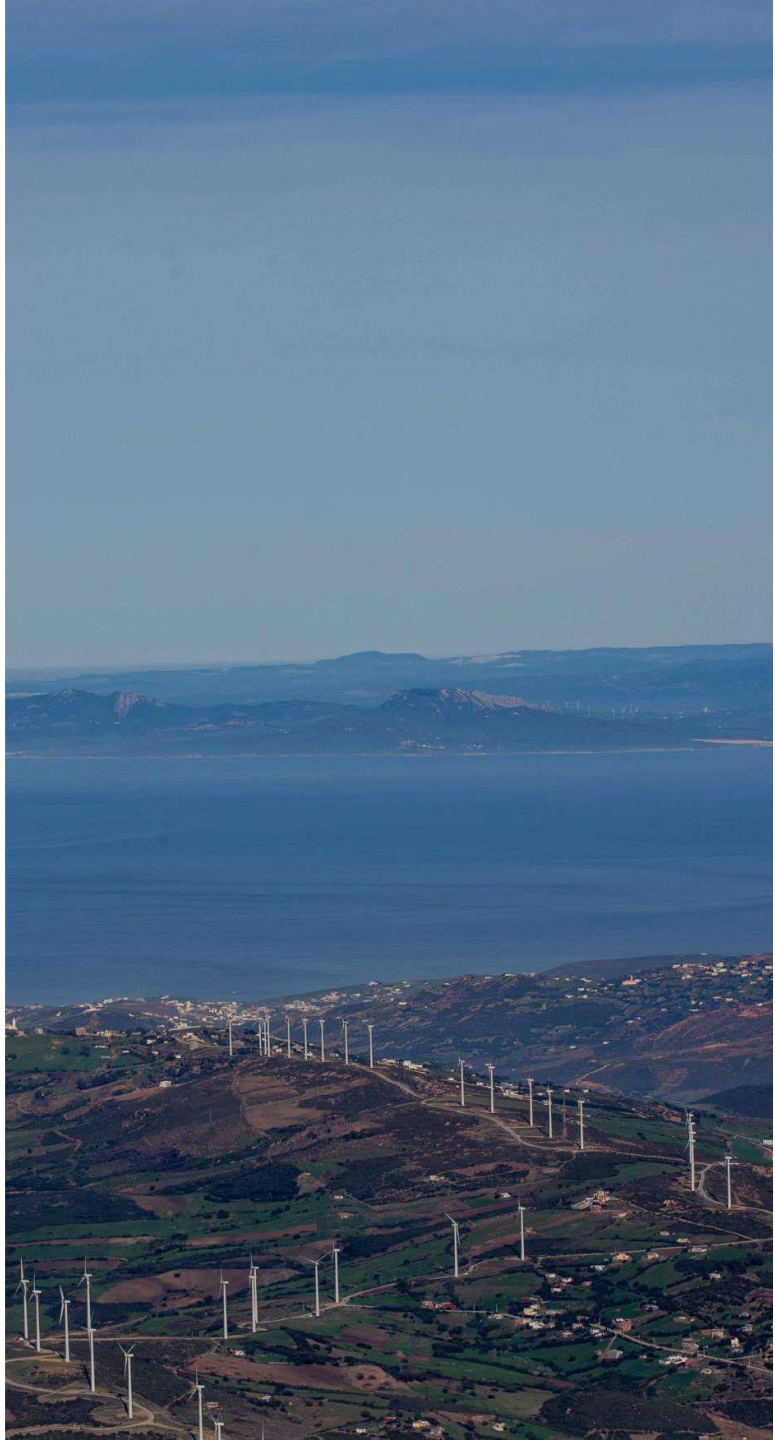
- Renewable energy infrastructure (such as large-scale solar plants, wind farms, and battery storage) requires significant upfront investment

➢ **Mitigation:** Pursue international funding from green energy and climate funds, and engage private-sector partnerships for co-investment

<u>Grid Infrastructure and Integration Issues:</u>

- Balancing intermittent sources like solar and wind with the port's energy demand (require reliable, continuous power for critical operations) may require costly grid upgrades

➢ **Mitigation:** Invest in smart grid technology and energy storage systems that can balance supply and demand fluctuations, ensuring stable energy delivery even when renewable sources are unavailable



WEAKNESSES (+ MITIGATIONS)

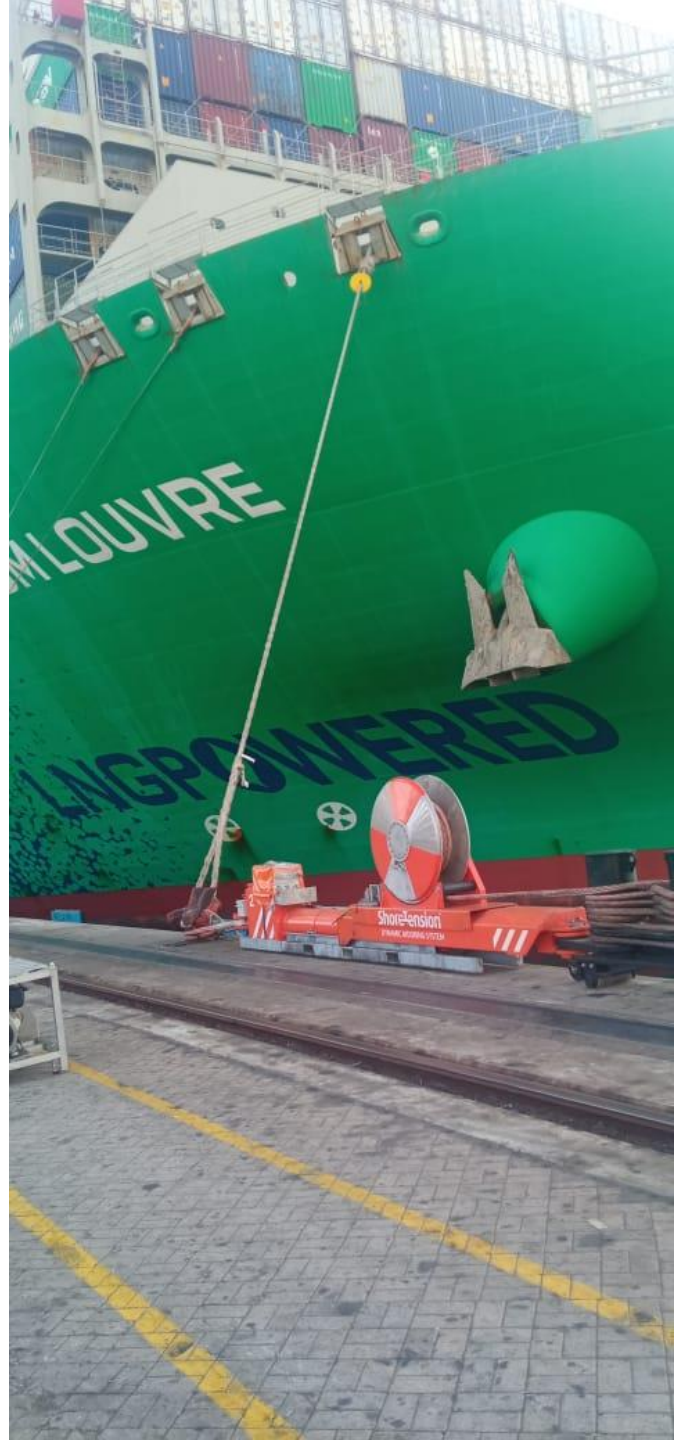
<u>Technological and Operational Knowledge Gap:</u>

- The adoption of cutting-edge systems like CAVOTEC, ShoreTension and SPS requires specialized maintenance, skilled workforce and technical expertise. Not all technologies are mature enough for seamless integration into port operations

➢ **Mitigation:** Implement training programs for port personnel to build expertise in operating and maintaining advanced renewable technologies with collaboration with international experts

<u>Uncertainty in Alternative Fuels:</u>

- The maritime industry is still in the process of evaluating their long-term efficiency and environmental impact. Investing in bunkering facilities for these fuels could be premature. The market has yet to standardize the use of these fuels, which makes large investments risky



OPPORTUNITIES (+ ACTIONS)

Expansion of Renewable Energy Projects:

- **Solar and Wind Potential**: With abundant sunlight and wind resources, Tanger Med has the potential to expand its renewable energy generation, especially through larger solar installations and participation in wind farm projects
- **Floating solar park**: The construction of a floating photovoltaic solar farm on the Oued Rmel dam reservoir is an ongoing project, with a production capacity of 13 MW, the future floating solar park will supply green electricity to Tanger Med port complex as part of the company's decarbonization program. The technology of floating photovoltaic panels avoids water losses through evaporation.
  - Expected to reduce emissions by **14 248 TCO2**

OPPORTUNITIES (+ ACTIONS)

Green Hydrogen Production:

- Morocco is positioning itself as a future hub for green hydrogen production. Tanger Med could become a key player in the supply chain

Technology Innovation:

- The growing digitalization of port operations offers opportunities for enhanced efficiency through AI, IoT, and smart logistics systems + Expand JIT operations

Collaboration and International Partnerships:

- International organizations are focusing on decarbonizing maritime and port operations, presenting opportunities for collaboration

Green Port Certification:

- Achieving this certification could enhance Tanger Med's reputation as a sustainable logistics hub, attracting eco-conscious global partners

THREATS (+ COUNTERMEASURES)

Global Competition:

- Other major ports are advancing rapidly in green technology adoption. Falling behind in implementing renewable solutions could reduce Tanger Med's competitive edge

➢ **Countermeasure:** Focus on creating a distinct competitive advantage by becoming a pioneer in green energy and fully integrating Shore Power systems, a step ahead of most global ports

Economic and Geopolitical Instability:

- Geopolitical tensions or economic downturns can affect trade volumes, investments, and the availability of funding for large-scale energy projects

➢ **Countermeasure:** Diversify the port's revenue streams by tapping into renewable energy markets, and securing long-term contracts

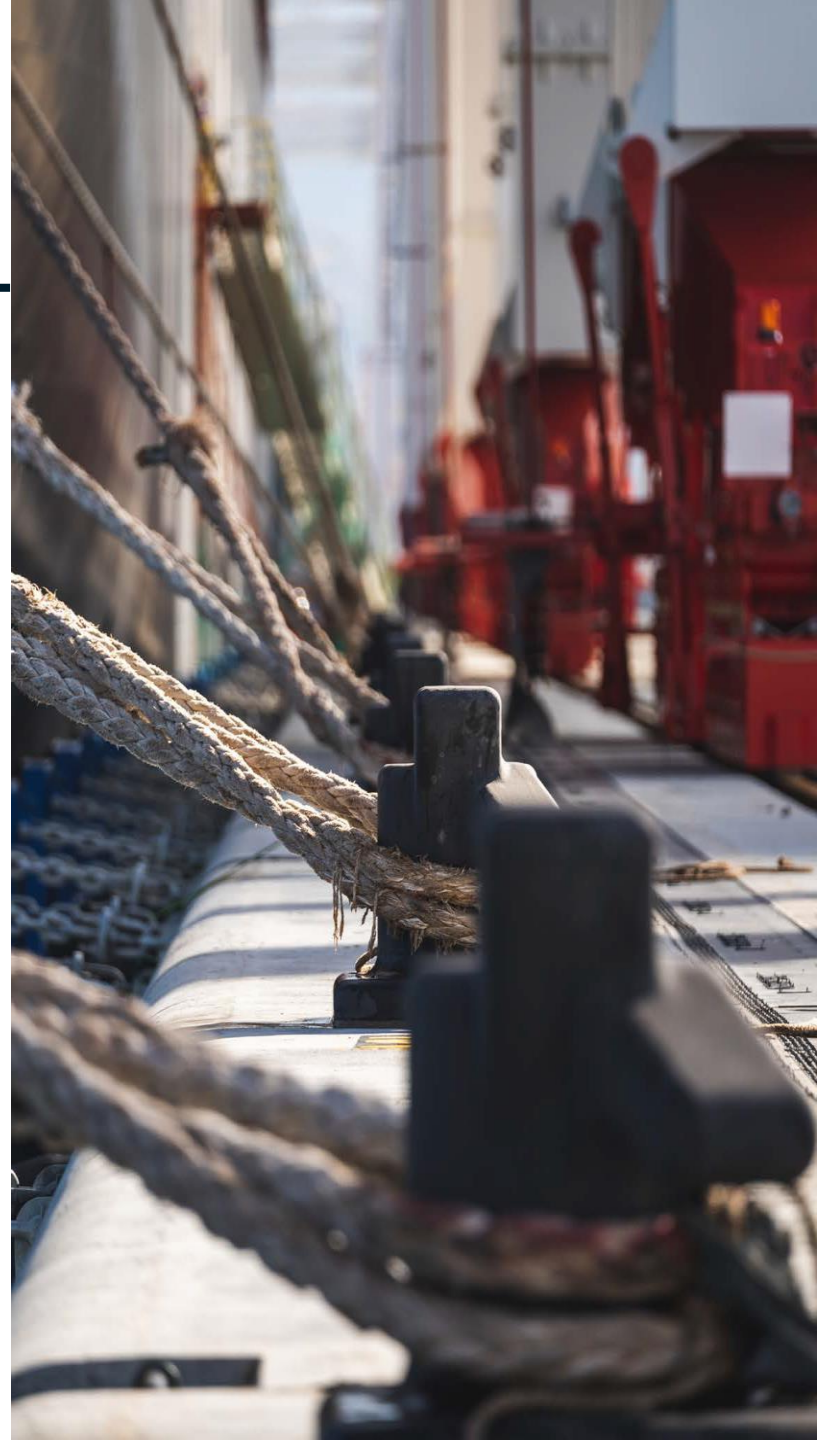
+ EXTERNAL FACTORS AND SUSTAINABILITY

<u>Global Decarbonization Trends:</u>

- International agreements such as the IMO's targets for reducing carbon emissions by 50% by 2050 create a favorable regulatory environment for Tanger Med's investments in renewable energy and efficiency

<u>Climate Resilience and Risk Management:</u>

- As climate change accelerates, ports like Tanger Med must also consider climate adaptation strategies. These include resilience to rising sea levels, extreme weather events, and disruptions in global supply chains. Renewable energy solutions, such as distributed solar and wind, can help mitigate risks associated with energy supply disruptions



CONCLUSION (+ NEXT STEPS)

Summary:

- Tanger Med is well-positioned to lead the way in integrating renewable energy and advancing energy efficiency. With the implementation of systems like SPS, solar panels, and Auto and Dynamic mooring… the port has a solid foundation for becoming a green logistics hub.

Future Outlook and Next Steps:

- Expand solar and wind energy projects and integrate energy storage systems.
- Capitalize on Morocco's green hydrogen strategy, positioning itself as a key player in hydrogen exports.
- Leverage Shore Power and Just-In-Time systems to further reduce emissions.
- Pursue Green Port certification to enhance its international standing and attract eco-conscious clients.
- Collaborate internationally to secure funding and technical expertise for decarbonization and renewable energy initiatives.


MAERSK LINE
Hapag-Lloyd
TANGER MED
MAERSK LINE
LNGPOWERED
C M A C G M
LNGPOWERED

THANK YOU

TANGER MED
PORT AUTHORITY