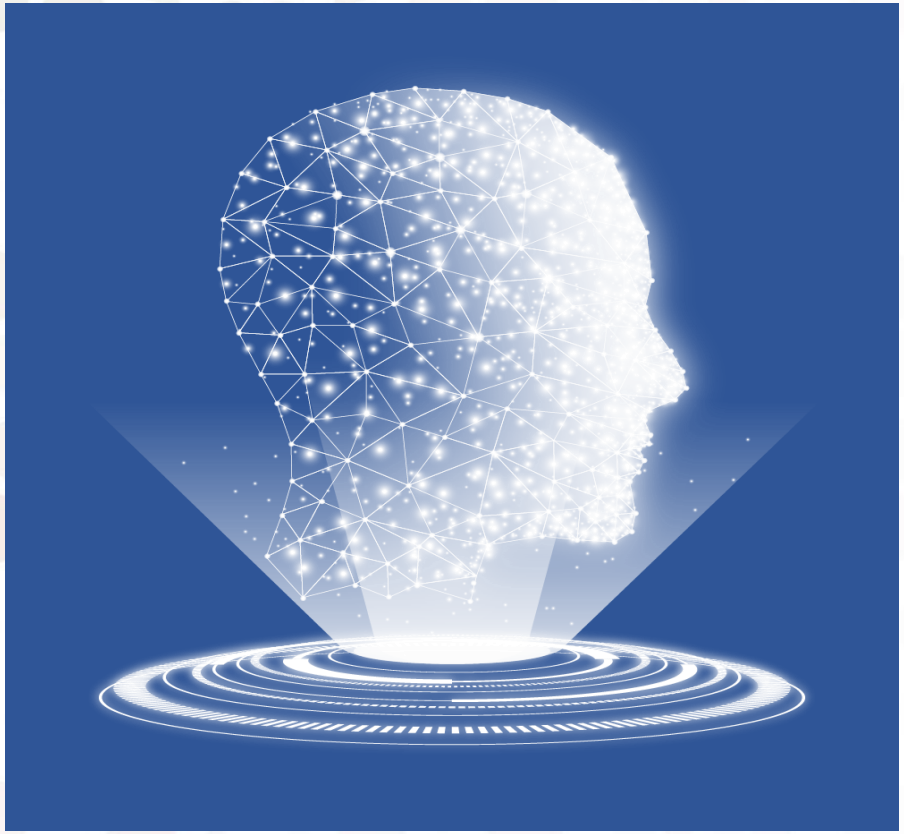
اتحاد إدارات موانئ شمال إفريقيا
Union des Administrations Portuaires du Nord de l'Afrique
North African Port Management Association

Funding sustainable, digital, smart, and efficient ports



Décember 2025

اتحاد إدارات موانئ شمال إفريقيا
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I. Context

II. Digitalization and Sustainability

III. Financing models for sustainable and digital solutions

❑ Union of North African Port Authorities (UAPNA) :

- Created by the United Nations Commission for Africa in June 1974 ;
- Board of Directors chaired by the ANP of Morocco ;
- Members of several continental and international bodies, including the APCP and the IAPH ;
- 07 countries and 12 members.

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❑ Union of North African Port Authorities (UAPNA) :

Management Committee of the Port Authority	N'Fida Port	Office of Ports and Merchant Marine	Ports Authority	Tangier Med Port Authority	National Ports Agency/Presidency
Port of Alexandria	Sudanese Maritime Ports Authority	Autonomous Port of Nouakchott	CECAM	Port Autonome de Nouadhibou	Port facility in Rest Bay

I. Context :

- Globalization of economies and liberalization of international trade (Economic, commercial and financial) :
- The maritime transport sector accounts for more than 80% of global trade volume : A vital necessity for all economies ;
- Ports that are highly capital-intensive and budget-consuming “consumers” of investment ;
- Additional objectives for the port sector :
  - Contribution to land use planning ;
  - Promoting regional development ;
  - Job creation.

I. Context :

❑ Other Challenges :

Digitalization

- ↘ National strategies ;
- ↘ Lessons learned from crisis situations (COVID-19) ;
- ↘ Real benefits.

Sustainability

- ↘ A new decarbonisation strategy for the Maritime region, now targeting carbon neutrality by 2050 ;
- ↘ European regulations imposing several emissions taxation measures, the roll-out of which has already begun ;
- ↘ Contractors who have unveiled voluntary initiatives that exceed regulatory requirements.

International context marked by stricter decarbonisation requirements and awareness of the importance of digitalisation as a tool for progress and performance

Need to modernise and improve the performance of the port sector while respecting environmental considerations

II. Digitalization and Sustainability

❑ Digitalization :

- **<u>Digitalization at the heart of port authorities' priorities and concerns and their modernization strategies :</u>**

  - ↘ **National strategies ;**
  - ↘ **Lessons learned from crisis situations (COVID-19) ;**
  - ↘ **Real benefits.**

II. Digitalization and Sustainability

❑ Digitalization :

▪ Objectives ofdigitalization :

- ↘ Place digital innovation at the heart of ports' digital transformation strategy ;
- ↘ Improve data transparency and availability ;
- ↘ Ensure data security and service continuity, develop the use of and trust in digital technologies ;
- ↘ Automate workflows and freight systems ;
- ↘ Improve maritime traffic management.

→

- ↘ Improvement of national logistics competitiveness (12% of GDP) and the economy (streamlining of transit through ports) ;
- ↘ Acceleration of digitization and simplification of procedures, particularly at ports ;
- ↘ Facilitation of access to information (Competitiveness Observatory).

II. Digitalization and Sustainability

❑ Digitalization :

- **<u>Examples of digitization projects :</u>**

1. Real-time data sharing :

Real-time data exchange between Mediterranean ports for better coordination of activities and integrated management of logistics chains (Just In Time arrival).

2. IoT sensors and smart monitoring (Operations automation) :

Use of technologies such as **the Internet of Things (IoT) and artificial intelligence (AI)** to improve processes.

II. Digitalization and Sustainability

❑ Digitalisation :

- **<u>Examples of digitization projects :</u>**

3. Intelligent flow management :

Optimization of resource allocation, reduction of congestion, and anticipation of potential problems through data analytics.

4. Integrated port community system :

Adoption of common standards to facilitate exchanges and ensure harmonization of port management processes (single window).

II. Digitalization and Sustainability

❑ Digitalisation :

- **Examples of digitization projects :**

4. Integrated port community system: :

- **Institutional structure :**

  A company bringing together all port stakeholders (Port Authority, stevedores, currency exchange office, customs administration, bank, shipowners, freight forwarders, supervisory authority, etc.).

- **The mission :**

  Present an innovative model and use of digitization techniques, and strengthen collective intelligence and competitiveness in collaboration with the various stakeholders in the foreign trade logistics chain.

II. Digitalization and Sustainability

❑ Digitalisation :

- **Examples of digitization projects :**

4. Integrated port community system :

- **The benefits of the digital strategy for Moroccan ports :**

DELETIONS

↘ 40,000 ship documents ;
↘ 6,000 ship detention certificates ;
↘ 72,000 invoices ;
↘ 8,000 dock assignment authorizations.

II. Digitalization and Sustainability

❑ **Sustainability :**

- **Sustainable development reconciles the economy and the environment :**

Priority areas for action

↘ **Emissions reduction ;**

↘ **Efficient logistics and operations ;**

↘ **Clean and renewable energy ;**

Vision: a green, smart, and competitive port

II. Digitalisation et Durabilité

❑ Sustainability :

- **Sustainable development reconciles the economy and the environment :**

Green port practices

1. Consumption and production of carbon-free energy ;
2. Improved energy efficiency ;
3. Support for the circular economy ;
4. Promotion of green mobility.

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1. Consumption and production of carbon-free energy :

Since December 2024, the Port of Tangier Med has been powered entirely by green energy thanks to PPAs with national developers.

Renewable energy self-production projects to supplement PPA purchases

1.3 MW rooftop photovoltaic system TMPC

- The port complex has commissioned a 1.3 MWp photovoltaic station with an annual production of 1.95 GWh, installed on the roof of the Tanger Med Port Centre (TMPC) building, which houses the port community's offices and the ferry terminal.

1 MW photovoltaic system on the SAS import hangars

- The photovoltaic solar park is currently undergoing detailed technical planning. It will be located at the unloading facilities of the import management platform at the Port of Tangier Med by the end of 2026.

13 MW floating photovoltaic power plant at the Oued Rmel dam

- The floating solar photovoltaic park at the Oued Rmel dam reservoir near the Tanger Med port complex is currently under construction and is scheduled to come online in 2025;
- Covering an area of 8 hectares and with a production capacity of 13 MWp, it will enable an estimated annual production of 20 GWh.

15 MW wind power in the port logistics area

- This project is **in the final stages of technical structuring for the launch** of tenders to turbine manufacturers ;
- Construction is scheduled to begin in the fourth quarter of 2025, subject to obtaining authorisation from the Ministry of Energy.

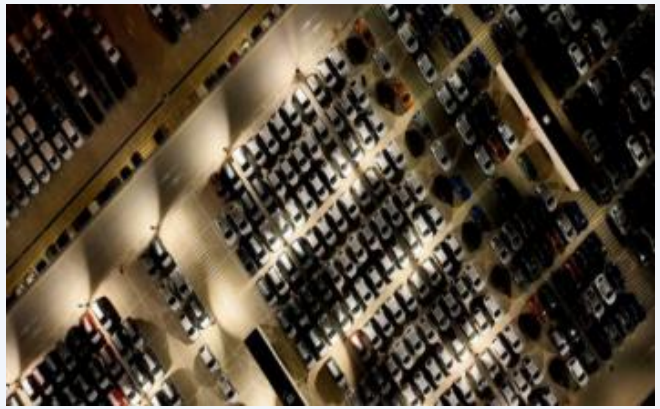
2. Improved energy efficiency :

Lighting Master Plan

Replacement of conventional lighting solutions within the Group

- Based on photometric studies and audits of the various networks, the Group has established its Lighting Development Master Plan (SDAL) with the aim of ensuring energy efficiency ;
- Since the programme began, all lighting points in industrial areas have been replaced by alternative LED sources, resulting in lighting savings of 58%.

- The replacement of all high-pressure sodium (HPS) lights with LED lights has also been completed within the port complex, resulting in a 65% saving on lighting ;
- The energy efficiency resulting from this programm is further enhanced by the Lighting Management System (LMS), which controls the operation of the lighting system by adjusting or putting the light output into standby mode. The associated remote management system also optimizes maintenance and performance indicators for public lighting networks.



100 %

Lighting fixtures at the port complex replaced with LEDs

100 %

Lighting in industrial areas replaced by LEDs

3. Support for the circular economy :

Waste sorting and recovery

Construction work on a sorting and recovery centre in the Tanger Tech zone

- Construction work on a sorting and recovery centre in the Tangier Tech zone will begin in October 2023, with commissioning scheduled for the second quarter of 2025 :
  - Civil engineering, steel framework, electrical and HVAC work is currently being finalised (deadline December 2024) ;
  - Supply and installation of equipment underway, to be completed in March 2025.

Wastewater treatment and recovery

Wastewater treatment at the Port of Tangier Med

- The total volume of water treated in 2023 reached 88,9875 m³ ;
- Commissioning and first watering in April 2023 ;
- The volume of water reused for watering green spaces reached 18,678 m³.

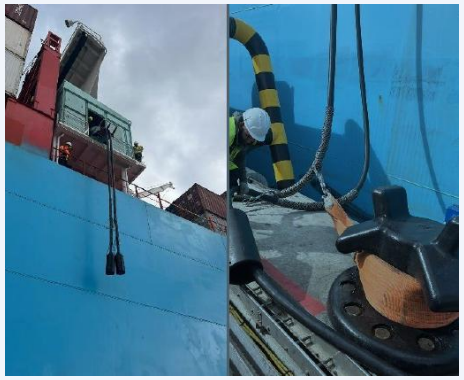
Wastewater treatment for the TAC industrial zone

- The volume treated in 2023 reached 538,123 m³ ;
- Commissioning and first watering in April 2023 ;
- The treated water was reused for watering green spaces in the TAC zone and the town of Chrafate.

4. Promotion of green mobility :

Power supply to ships at berth

Project 1: TC4 terminal pilot phase



- Infrastructure installation work on 800 linear metres of quay at Terminal TC4 completed, with a conversion station capable of supplying one mega-ship (7.5 MVA) or two medium-sized ships (2 x 4 MVA).

Project 2: rollout to all terminals

- Launch of detailed technical studies for the widespread implementation of the Onshore Power Supply system across all container terminals by 2029.

Mobilité renouvelable

Project 1: Electric mobility

- Deployment of a fleet of 34 electric service vehicles at the port and industrial areas ;
- Installation of 13 electric charging stations ;
- Electric buses currently being introduced at the passenger and ro-ro port

Project 2: Hydrogen-powered port tractors

- Pilot project currently being developed for four hydrogen-powered lorries, including a refuelling station and green hydrogen supply.

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II. Financing models for sustainable and digital solutions :

- Green financing aims to support projects that contribute to ecological transition and the fight against climate change ;
- Sustainability and digital financing is a concept that aims to support projects that contribute to the achievement of sustainable development goals (SDGs) and digital transition ;
- This type of financing is essential to support economic growth, poverty reduction, and environmental protection.

II. Financing models for sustainable and digital solutions :

❑ **Specific features of sustainability and digital financing :**

- ↘ **Multiple objectives : Sustainability and digital financing aims to achieve several objectives, including poverty reduction, environmental protection, and economic growth promotion :**
- ↘ **Integrated approach : This type of financing requires an integrated approach that takes into account the economic, social, and environmental aspects of projects ;**
- ↘ **Innovation and technology : Sustainability and digital financing encourages innovation and the use of technology to support sustainable development projects.**

II. Financing models for sustainable and digital solutions :

- **Implementation challenges :**
  - ↘ **Lack of funding : Financing sustainability and digitalization requires significant investment, but financial resources are often limited :**
    - **Government transport sector funding ;**
    - **Self-financing from port revenue streams ;**
    - **International loans & development grants ;**
    - **Public-private partnerships (PPP) ;**
    - **Green finance & carbon credit opportunities.**

II. Financing models for sustainable and digital solutions :

- **Implementation challenges :**

  - **Project complexity : Sustainable development and digital transition projects are often complex and require specific skills and resources ;**

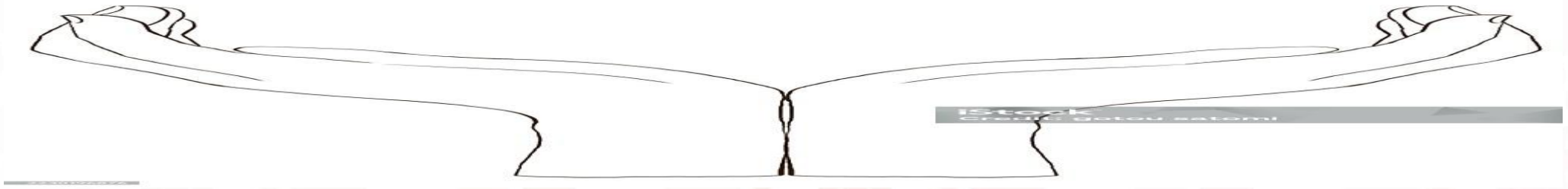
  - **Risks and uncertainties : Sustainable development and digital transition projects are often exposed to risks and uncertainties, such as climate change and technological developments.**

Developing capacities, relaxing and easing conditions, and promoting cooperation across the board

Conclusion…

SUSTAINABILITY

DIGITALIZATION
INNOVATION



Funding