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Proposed Strategy for Algerian ports, to achieve energy transition

I. Ports development in Algeria.

II. Methodology for the Audit of Algerian ports.

III. Port energy transition, sustainable development and digitalization of activities.

III.1 Digitalization

III.2 Decarbonization.

Algeria has a 1600 km long coastline. Its geographical location, closest to the axis of one of the world's main shipping routes, also reinforces its position as a strategic zone for international maritime transport and a main access to Africa.

Algeria's state-owned port system comprises 10 ports of general interest including two oil ports, managed by port directorates whose coordination and efficiency are the responsibility of the Holding SERPORT group, an organization dependent on the Ministry of Transport, which is responsible for implementing the government's port policy.

I. Ports development in Algeria.

1.Extension-Development of container terminal -Oran port

Entreprise de réalisation	Groupement MEDITRAM/CHEC
Coût des travaux	12 Milliards de DA (Concours définitif de l'Etat) 02 Milliards de DA (EP Oran sur fonds propres)
Capacité de traitement (EVP)	1 Million d'EVP
Longueur des quais	635 Ml
Nombre de quais	02
Tirant d'eau	-14
Terre-plein	23,4 Ha

Equipment:

- **07 Gantry cranes (RTG): in progress**
- **03 Gantry cranes (QC): in progress**

2. Construction of an Ore Quay- Arzew Port

Entreprise de réalisation	Groupement COSIDER TP/CHEC
Coût des travaux	20,378 Milliard DA (EP Arzew)
Capacité (tonnes)	+ 160 000 Tonnes
Longueur des quais	360 Ml
Nombre de quais	01
Tirant d'eau	- 20 M
Date d'achèvement des travaux	Juin 2021

3.Container terminal -Djen Djen Port

Entreprise de réalisation	Daewoo Engineering et construction Co.LTD
Coût des travaux (AP)	25 Milliards DA (concours temporaire de l'Etat)
Capacité de traitement (EVP)	02 Millions d'EVP
Longueur des quais	1 545 Ml
Nombre de quais	03
Tirant d'eau	-14 à -17 M
Terre-pleins	76 Ha
Taux d'avancement des travaux	95 %.

4.Construction of an ore jetty- Djen Djen Port

Bureau d'études	LEM
Capacité traitement navire (tonnes)	150 000 Tonnes
Longueur des quais	400 Ml
Tirant d'eau	-18
Date prévisionnelle de lancement	En cours

5. Construction of an ore quay- Annaba Port- Integrated Phosphate Project

Bureau d'études	LEM
Capacité (tonnes)	100 000 Tonnes
Longueur des quais	1 600 Ml
Tirant d'eau	-16
Date de lancement de l'Appel d'offres	En cours

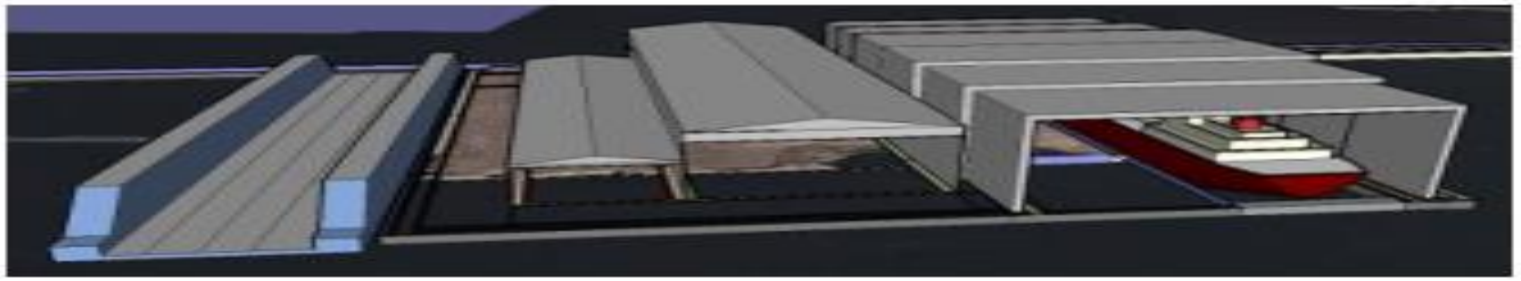
6.Oil Port Extension-Skikda Port

Entreprise de réalisation	China Harbour Engineering Company Ltd
Coût des travaux	53 Milliards DA (SONATRACH)
Capacité (tonnes)	250 000 Tonnes (pétroliers) et 220 000 m3 GNL
Longueur des quais	P4 : 500 Ml M3 : 830 Ml Quai à divers : 630 Ml
Nombre de quais	03
Tirant d'eau	P4 : -23 M3 : -14,5 Quai à divers : -16
Taux d'avancement des travaux	83%
Date prévisionnelle d'achèvement des travaux	Décembre 2022

7.Ship repair Arzew- Port

The port of Arzew has launched the construction of Mole 5, which will provide a concession for shipbuilding and ship repair, comprising 03 quays and an open area of 05 hectares and acquisition of a 20000 T Floating Dock.

The preferred form of partnership is to set up joint projects that may involve shipbuilding, ship repair or both activities combined.



Other related activities developments

1. Modernization of port servicing and handling facilities

Continue the effort to equip ports with servicing, handling and information equipment, which has been undertaken by all ports over the last decade, in order to make them more competitive.

2. Development of the Port Information System (APCS)

The revival and modernization of port activities require, among other actions, the establishment of a port information exchange platform, the "Guichet unique portuaire", a system widely used in most ports around the world.

3. Improving port connectivity

In order to reduce the dwell time of goods in ports and to facilitate the removal of goods, it is imperative to improve port connectivity by connecting ports to the national rail and motorway network.

4.. Create specialized facilities for the storage of hazardous goods.

Implement current regulations (Executive Decree no. 19-157 of April 30, 2019, laying down the rules and conditions for the transport of hazardous goods by sea, as well as their stay and transit in ports).

5. Port energy transition and sustainable development.

6. Digitalization of port activities

Background

There are major global trends that represent both a challenge and an opportunity for maritime flows in the Western Mediterranean. These trends mainly concern:

-Sustainable development and energy transition;

- Digital transformation;

- Relocation and regionalization processes;

- Resilience to disruption;

At global level, the scope of GHG reduction is set by the IMO, which adopted an Initial Strategy for the Reduction of GHG Emissions from Ships in 2018.

Since the strategy's adoption, sessions of the IMO's Marine Environment Protection Committee (MEPC) have focused on examining short-, medium- and long-term measures to achieve its objectives.

Among the measures with the greatest impact for the Mediterranean is the agreement reached at the 78th session of the MEPC (June 10, 2022) to designate the Mediterranean Sea as an emission control area for sulfur oxides and particulate matter (Med Sox ECA).

This agreement was adopted at the 79th session of the MEPC (December 12-16, 2022) and is to be mandatory for ships from 2025.

The sustainability and energy transition requirements needed in the maritime domain in the Western Mediterranean are also defined by decisions taken at EU level. In this regard, in 2019 the European Commission (EC) launched the European Green Pact, a set of policy initiatives with the aim of achieving EU climate neutrality by 2050. While this legislation is only binding on EU countries, it has implications for neighboring countries.

Among these initiatives is the Objective 55 package (Fit for 55), which comprises a set of proposals aimed at aligning EU legislation with its climate objectives, in the fields of climate, energy and transport, in order to reduce net emissions by at least 55% by 2030 compared with 1990 values.

In summary, the trend towards more sustainable transport will have repercussions for shipping. The global reduction in emissions has and will have repercussions on ships (engines, technology), fuels (refueling, alternative fuels) and port requirements (electrification).

Digital transformation

IMO's Facilitation Committee (FAL 46), meeting from May 9 to 13, 2022, has committed to requiring port authorities worldwide to implement and use the Maritime Single Window from January 1, 2024.

II. Methodology for the Audit of Algerian ports.

Audit of Algeria ports (Audit of SERPORT Group subsidiaries)

Entreprise Port d'Alger	Entreprise Port de Bejaia	Entreprise Port d'Oran	Entreprise Port de Skikda	Entreprise Port d'Annaba	Entreprise Port de Djendjen
Entreprise Port d'Arzew	Entreprise Port de Ghazaouet	Entreprise Port de Mostaganem	Entreprise Port de Tenes	Société de Gestion des Ports de Pêche	EPE SCS
	ACS	AILC	SIL	GICEP*	

Scope of the mission:

Steering functions | **Operational function** | **Support functions**

Team Organization Chart

III. Port energy transition, sustainable development and digitalization of activities.

The main constate is that Algerian ports are currently at a low level in terms of digitization and sustainable development, and need to update and innovate in order to accompany all the investments made by the public authorities, to make them increasingly competitive.

we propose a SWOT analysis (Strengths-Weaknesses-Opportunities-Threats analysis), which is an ideal tool for making a reliable diagnosis of the port system in relation to a certain project on which we wish to take a strategic decision, in this case digitalization and sustainable development, in order to draw up a concrete action plan in this regard.

To resume the context, the role of ports has changed radically, from its traditional function of linking sea and land through loading and unloading operations, to an essential part of global logistics networks that manage the flow of goods and provide value-added logistics services efficiently and effectively. These ports must also operate in a safe and environmentally-friendly manner.

Ports evolve through digitization and pass through the following phases:

1. the connected port phase. This is the state in which port operations have reached a high level of automation, replacing human intervention. The fundamental technology is sensorization.

2. The intelligent port phase. It is built around a digital platform that captures information from sensors and networks, processes it, displays it visually, helps make decisions and even takes action; all these actions occur in real time. We are talking essentially about big data and machine learning.

3. The Port 4.0 phase includes the flow of information with the outside world. Thanks to this process, the intelligence of the intelligent port is added to the functionality of the port and its role as a node in supply, energy and information networks

all these transformation processes fundamentally require 6 factors for success:

USE OF TECHNOLOGYDIGITAL

COMPETENCE USER

CAPACITY BUILDING

METHODOLOGICAL APPLICATION

PROCESS REVIEW

MODEL CHANGE

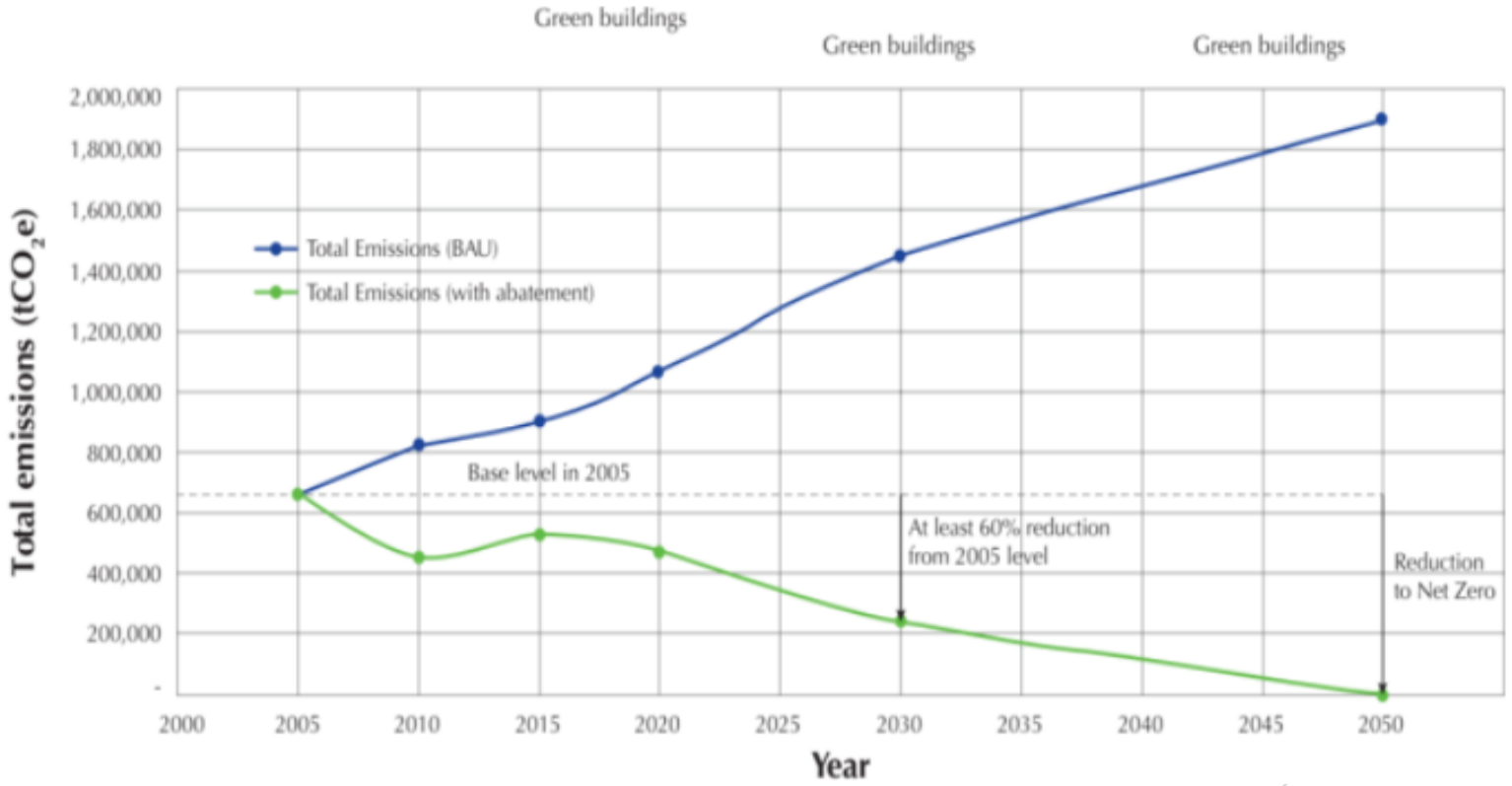
The methodology adopted is based on the diagram below

Strength	**Opportunities**
S.1 Be a reference in the sector S.2 Consolidating Algerian ports as connectors for port activity S.3 Decarbonizing ports S.4 Open data S.5 State-of-the-art logistics practices and high solution capacity S.6 Reduced operating and maintenance costs S.7 Increased Security	O.1 New business sectors in developing markets O.2 Technological maturity O.3 Job creation opportunities O.4 Port-city synergies O.5 Efficient and predictive supply chain O.6 Integration in the international supply chain O.7 Transparency
Weakness	**Threats**
W.1 High development and implementation costs for new technologies W2 Human capital: manual workers are under the direct influence of the process automation inherent in digitization W.3 Vulnerabilities or regression errors: Security and corporate integrity in the realization of the 4.0 concept W4 Lack of strategic planning W.5 Effects of change on operations. W.6 Digital system control and monitoring W.7 Problem of application heterogeneity	T.1 Political and institutional factors T.2 Poor integration of other port sector players T.3 Changes in legislation and regulations T.4 Systems vulnerable to cyber threats T.5 Asymmetry with other modes of transport T.6 International Financial uncertainty

IV. Port Decarbonization Strategy

Regulating emissions from international shipping requires a global approach, IMO and in order to ensure a level playing field that does not discriminate against any flag or port state, in 2018, adopted the initial strategy, which sets the following goal:

- Reduce CO2 emissions per transport job, on average in international maritime transport and by ricochet the port sector, by at least 40% by 2030 continuing efforts to reach 70% by 2050, compared to 2008; and as soon as possible reduce total annual GHG emissions by at least 50% by 2050 compared to 2008, while continuing efforts to phase them out.



Beyond emissions from the direct boundaries of port enclosures, operators must commit to reducing emissions from port operations. To put it more clearly, and insofar as space allows, this means consolidating all the operations of, say, a container terminal onto a single site. This will eliminate inter-terminal transport (by truck and barge). As part of this initiative, companies that are synergistic in their activities should be grouped together, enabling more efficient flows of goods between the port and industry.

A simple example: in recent years, Algeria's cement industry has gone from being an importer to an exporter, so if we physically group together aggregate and cement warehouses and concrete batching plants, the integrated ecosystem will rationalize the supply chain and reduce the number of truck movements, thus enabling controlled planning of ship rotations. This same strategy can be applied to steel and clinker products.

Energy efficiency gains through digitization

In addition to adopting cleaner energy solutions and alternatives, port terminals are also embracing technology and digitization to support their decarbonization efforts, as illustrated by the following examples.

Intelligent forklifts

Intelligent forklifts use sensors and telematics systems, as well as on-board diagnostics. These digital tools help drivers to adopt environmentally-friendly driving habits by avoiding sudden braking and excessive acceleration, thus reducing fuel consumption.

Autonomous forklifts whose route, speed and acceleration are optimized by AI, to improve the energy efficiency of its forklift fleet. The adoption of autonomous technology, combined with electrification, is expected to reduce emissions per container movement by 50%, compared with diesel vehicles.

Intelligent networks

Smart grid management and intelligent multi-energy systems will enable our port terminals to manage their overall energy consumption, through effective control of the energy efficiency of port handling equipment, terminal buildings and other port facilities. Energy efficiency gains resulting from the deployment of these systems could reduce emissions, energy consumption and the costs of port operations.

Port service vessels

In the wake of sustainable development, a reduction in absolute emissions from the national fleet of harbor craft is required through the adoption of low-carbon energy solutions, such as blended biofuels, LNG, methanol, hybrid diesel-electric propulsion and all-electric propulsion.

Port craft provide a range of essential marine services within the port, including the delivery of ship supplies and fuel, as well as towing, piloting and launching services.

By way of illustration, why not research, design, build and operate an all-electric harbor mooring boat in one of Algeria's ports by 2024 and a pilot boat by 2025.

Areas of interest have been identified such as:

(i) The development of national standards for shore charging (cold ironing) infrastructure for fully electrically charged harbor craft;

(ii) existing gaps in the current network infrastructure for shore charging;

(iii) the technological cost of fully electric harbor craft and on-board systems.

(iv) Future Marine Fuels, Bunkering Standards and Infrastructure

Attracting passing ships to the Algerian coast depends on the availability of services, particularly those relating to bunkering and refueling.

Given these resources in terms of energy products, Algeria can aspire to assert itself as a world-class bunkering center in the Mediterranean basin, and has the capabilities for the transition to multi-fuel bunkering to support the future of international shipping, providing low- and zero-carbon marine fuels, including biofuels, methanol, ammonia and potentially hydrogen, while enabling green technologies such as carbon capture, storage and utilization. Algeria's strategic positioning is key to providing low- and zero-carbon fuel solutions to meet the future energy needs of the global shipping industry.

Thank you