Green port development Strategies for Sustainability of African ports

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Abstract

- The work addressed emerging green port techniques applied as sustainable port development strategies.
- The focus of the paper being on how to apply green technologies to advance the emerging ports of West Africa
- A balance was struck on how to inculcate green technology rules in port concession agreements
- Sustainability and security management were also juxtaposed
- Sustainability and operational efficiency and responsiveness were finally assessed.

The World Ports Sustainability Program (WPSP)

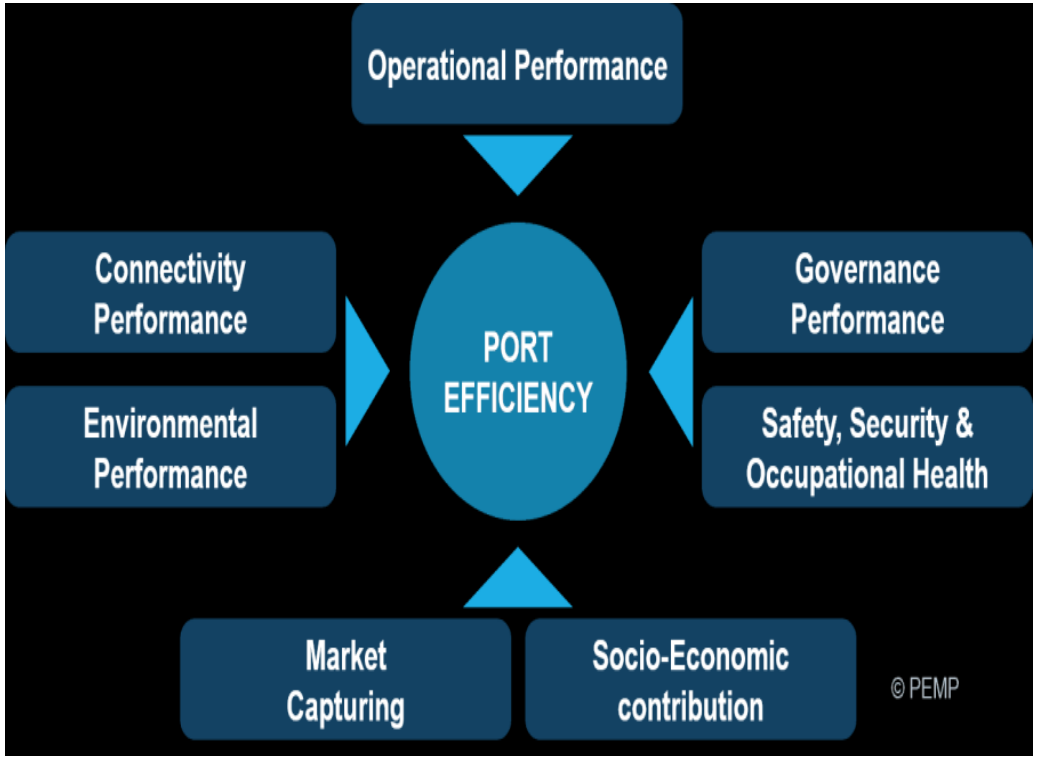
- The World Ports Sustainability Program (WPSP) was launched in 2018 to contribute to the sustainable development of world ports in line with the United Nations (UN) Sustainability Agenda and its 17 Sustainable Development Goals (SDGs). The International Association of Ports and Harbors (IAPH) leads the Program in partnership with some of the world's major port industry-related organizations.
- The program aims to empower port community actors worldwide to engage with business, governmental and societal stakeholders in creating sustainable added value for the local communities and wider regions in which their ports are embedded.

Sustainable Development Goals

- On 1 January 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development - adopted by world leaders in September 2015 at a historic UN Summit - officially came into force.WPSP implements the 17 goals as one via five approaches viz:
- RESILIENT INFRASTRUCTURE
- CLIMATE AND ENERGY
- COMMUNITY OUTREACH & PORT CITY DIALOGUE
- SAFETY AND SECURITY
- GOVERNANCE AND ETHICS

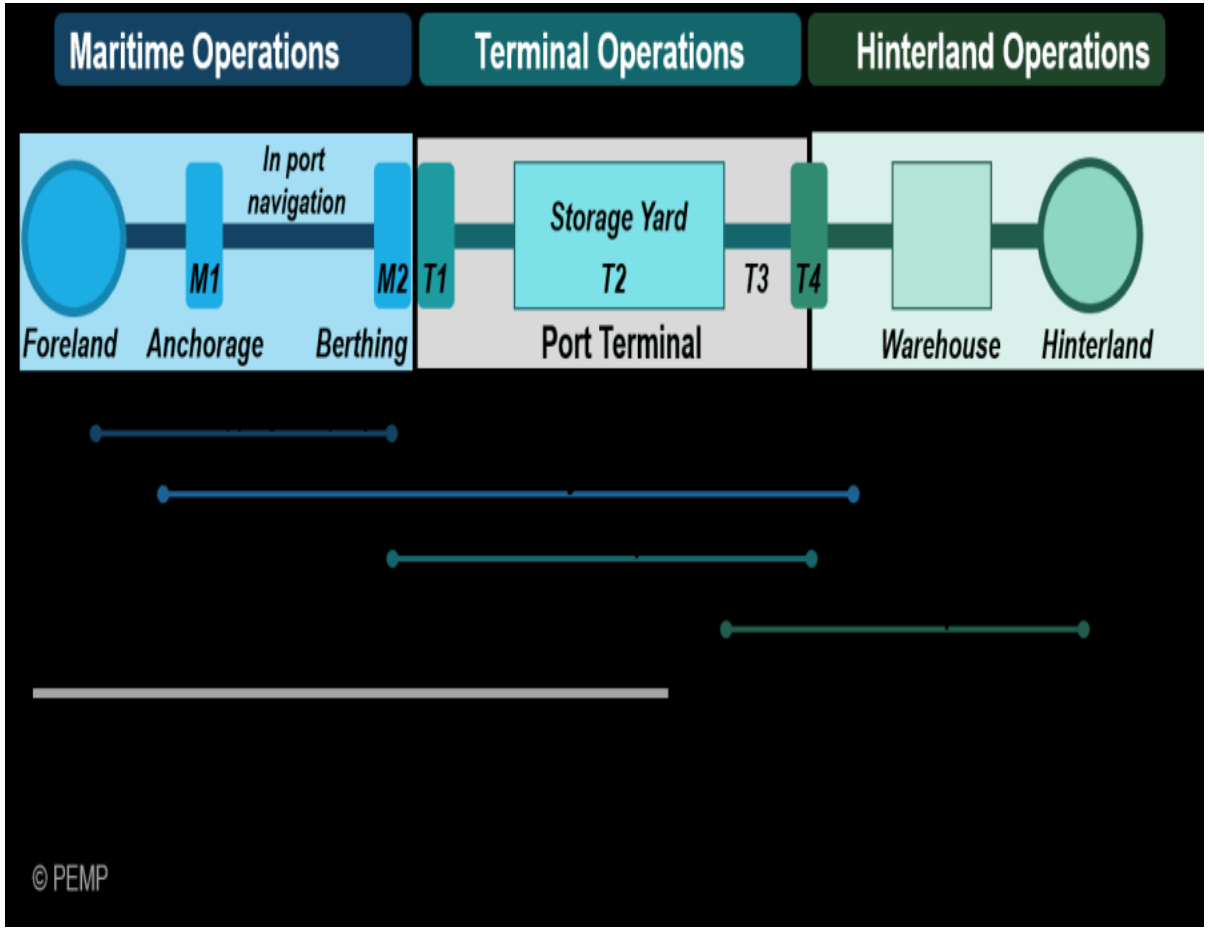
WPSP Proposals from across the globe

- The number of port projects that were submitted to WPSP more than doubled in 2019 with 84 project submissions in comparison to the 36 projects submitted in 2018. The WPSP Portfolio currently accounts for 120 projects developed by 71 ports from 38 countries all over the globe. In terms of geographical representation, European port projects dominate with 72 entries, followed by Asia (32), America (22), Oceania (15) and Africa (1)



RESILIENT INFRASTRUCTURE

- The theme ‘Resilient Infrastructure’ aims at anticipating, both physically and digitally, demands of maritime transport and landside logistics, at being resilient to changes in climate and weather conditions whilst at the same time developing in harmony with local communities, nature and heritage.
- Almost one third of the port projects in the WPSP Portfolio relates to ‘Resilient Infrastructure’. Two thirds of these projects apply digital solutions in order to optimize the sustainability of both port operations and processes as well as of the logistics and supply chain. Port community systems and data exchange systems between various stakeholders are dominant here, while other digital solutions focus on environmental monitoring and management of operations.



Port Community Single windows

- The Abu Dhabi Ports Single Window Portal (mPCS) was first developed in 2014 and is now operated and enhanced by Abu Dhabi Ports subsidiary MAQTA Gateway LLC. The portal is currently operational in five ports and 54 private jetties. Integrated with twenty shipping lines, it covers more than hundred services from seaside to hinterland. It is the first solution in the Middle East to achieve PCS-to-PCS integration, and is connected with three single windows, and eleven ports in China, Belgium and Spain. By the end of 2018, the platform was estimated to have saved the entire community a total of 76,800 man-days, 3.75 million physical trips, 27.3 tons of CO2 emissions, and AED 421.6 million (USD $115 million).

A Port Community system

- A Port community system
- is a neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the competitive position of the sea and air ports' communities.
- • optimizes, manages and automates port and logistics processes through a single submission of data and connecting transport and logistics chains

Benefits of Port Community systems

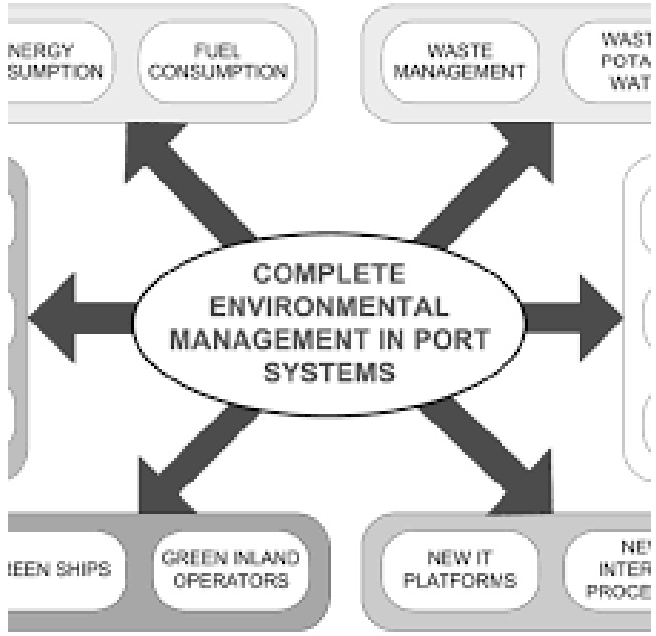
- The core PCS benefits for all parties involved are higher efficiency and speed regarding port processes, particularly through automation and the reduction of paperwork. In this way, PCSs contribute to sustainable transport logistics and support the ambitions to meet global carbon reduction requirements.
- Source: International Port Community Systems Association (IPCSA)

Chain- Port

- Chain PORT is an international partnership between the world's leading ports. Members share knowledge, learn from one another, co-develop innovations and highlight common topics of interest. The aim, through solid debate on the effects of the digital revolution, is to optimally apply technology using existing infrastructure, and ensure future investments secure long-term payback. The ports of Hamburg and Los Angeles spearhead Chain PORT in close cooperation with partnering ports of Antwerp, Barcelona, Busan, Felixstowe, Indonesia, Montreal, Panama, Rotterdam, Shanghai, Shenzhen and Singapore. The initiative is supported by the Global Institute of Logistics.

CLIMATE AND ENERGY

- Port of Amsterdam – Integrated Green Energy Solutions
- In developing circular economy initiatives, port authorities work together with their industrial clusters to generate their own energy and give new economic purpose to waste products. One highly innovative example can be found with the construction of a plant in the Port of Amsterdam transforming plastic to diesel, with the aim of processing 35,000 tons of plastic into 30 million liters of fuel annually. This has the potential to result in a reduction of approximately 57,270 tons of CO2 emissions, as the fuel produced emits 80% less CO2 compared to regular diesel.



Port Call Optimization

- Port call optimization helps reducing greenhouse gas emissions from shipping, next to producing efficiency and safety gains. The International Harbor Masters Association (IHMA) and IAPH endorse and promote the work of the International Taskforce on Port Call Optimization, which aims at improving quality and availability of master and event data which will deliver benefits to ports, shipping lines, terminals, service providers and society

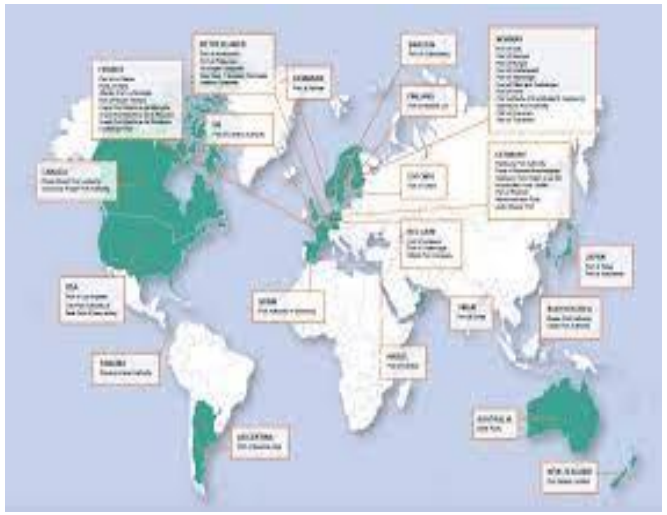
Just in Time arrival of Ships

- One of the focus areas of the Alliance is Just-In-Time (JIT) arrival of ships. The Alliance is holding JIT trials and has developed a practical guide to support implementation of JIT. Until now, the Global Industry Alliance has operated under the IMO GloMEEP program, and is connected to the work of the International Taskforce on Port Call Optimization. Moving ahead, further work on port call optimization will become part of the IMO's GreenVoyage-2050 project in collaboration with the government of Norway

Incentive schemes - Environmental Ship Index (ESI)

- Ports can encourage vessels to become more environmentally friendly by applying incentives to best performing vessels. Established by IAPH back in 2011, the Environmental Ship Index (ESI) is the main global index for the provision of port incentives to cleaner vessels. ESI identifies seagoing ships that perform better in reducing air emissions than required by the current emission standards of the International Maritime Organization.
- The ESI formula evaluates the amount of nitrogen oxide (NOx) and sulphur oxide (SOx) that is emitted by a ship. The calculation also rewards vessels equipped to use available onshore power, and which demonstrate fuel efficiency improvements over time, reducing carbon dioxide (CO_2) and particulate matter (PM) emissions. Score ranges from 0 for a ship meeting environmental performance regulations in force to 100 for a ship which emits no SOX and no NOX and reports or monitors data to establish its energy efficiency; in other words a ship with a score of 0 points is actually in conformity with the applicable requirements and the ship with 100 points is amongst the best-performing vessels currently at sea .

Operators earn the ESI incentive by using cleaner technology and fuel that reduce emissions. ESI assigns clean ship ratings to vessels and ports can provide incentives to reward top performers.



Environmental Ship Index ESI

Scores & Incentives

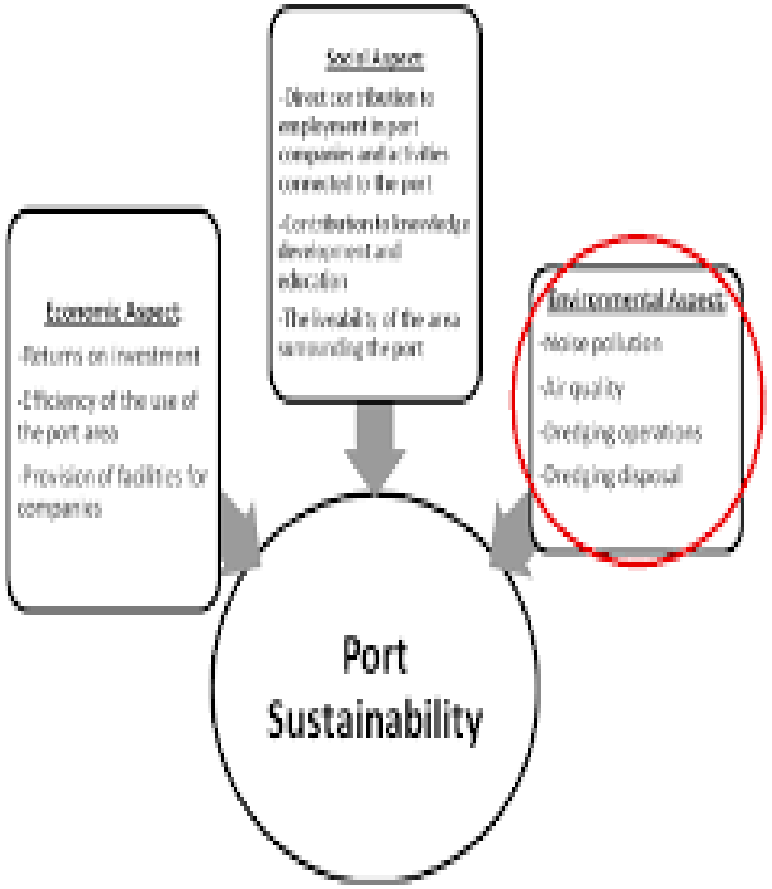
- Vessel data can be entered in any quarter
- No registration fees / free of charge
- Vessel score calculated by ESI system every six months
- Port uses score to determine incentives earned
- Incentives paid at port's discretion

Onshore Power Supply

- The provision of onshore power supply (OPS) to ships at berth, for them to connect to the grid and turn-off their engines, has long been identified as an effective solution to reduce air pollution in ports and overall GHG emissions from vessels.

COMMUNITY OUTREACH & PORT CITY DIALOGUE

- Ports are granted and maintain their license to operate and to grow by their local communities. Sustainable ports effectively address the social and environmental impact of port operations and strive towards continuously improving the way they work. Sustainable port development projects need port community stakeholder involvement right from the start and until completion. Furthermore, port community actors can actively engage urban stakeholders by offering them innovative, mutually-beneficial projects that help make their city more attractive and resilient ; WPSP



Eco Ports

- Eco Ports offers two main tools for port environmental management: The Self Diagnosis Methodology (SDM) and the Port Environmental Review System (PERS). The EcoPorts Self Diagnosis Methodology (SDM) provides the means for ports to self-evaluate their environmental management and allows them to compare their performance against the sector benchmark. The EcoPorts Port Environmental Review System (PERS) is the only port sector specific environmental management standard and is independently certified.

EMAS is an audit process completed in 10 steps and projected to be repeated every 2 years. The application commences with the contact with the competent body. Competent bodies are local and authorized institutions that provide technical support and advice on the way to EMAS.

ESPO Award on Societal integration

- In 2009, the European Sea Ports Organization (ESPO) established the annual ESPO Award on Societal Integration of Ports.
- The Award promotes efforts made by different European ports to enhance the port-city relations through innovative projects. An independent jury of international experts selects a winner on an annual basis. More than 160 port projects have been submitted to compete for the ESPO Award on societal integration of ports since it was established in 2009.

SAFETY AND SECURITY

- As a fine example of community response to security threats, the Port Information Network (PIN) Project has brought companies located and working within the port area of 130 km^2 together to jointly report on any suspicious activities. Coordinated by the Port Authority, PIN enables member companies to report situations quickly and simultaneously, sharing and receiving selected messages in real time about events in their immediate vicinity. Joining PIN is free of charge and more than 450 port companies joined PIN from its inception.
- Developed by Port of Antwerp

Kenya Ports Authority – Tunahusika Corporate Social Investment program

- In Africa, the Kenya Ports Authority has allocated a percentage of its net earnings to its Tunashusika Corporate Social Investment Program. This program aims at funding and supporting school infrastructure in the many surrounding coastal communities where its present and future employees come from. The fund also works with local counties in the construction of healthcare facilities and hosting onsite medical camps.

Global Survey on Port Governance

- A global survey on port governance was launched at the end of 2019, with the ambition to analyse current structures and functions of port governance around the globe and to lay the foundations for discussions of future port governance models. The study has been developed by professors Thanos Pallis and Gordon Wilmsmeier along with a research team at the Universidad de Los Andes, Colombia and University of the Aegean, Greece.

UNCTAD and Port Governance

- The port performance scorecard identifies 26 indicators, collected and classified into six main categories; finance, human resources, gender, vessel operations, cargo operations and environment. In its 2019 publication ‘Review of Maritime Transport (RMT)’, the United Nations Conference for Trade and Development (UNCTAD) provides some very relevant port governance figures from the scorecard. This section provides a snapshot of selected data from RMT on gender, finance and human resources.

Maritime Anti-Corruption network

- To date, MACN has collected over 28,000 reports of corruption in ports. Through a recent partnership with the Ministry of Foreign Affairs of Denmark, MACN will be developing and launching the first ever Global Port Integrity Index to scale up its collective action activities in West Africa. The Global Port Integrity Index will provide an overview and comparison of illicit demands in ports around the world. It will be based on the unique first-hand data gathered from captains calling ports around the world through MACN's Anonymous Incident Reporting Mechanism.

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