# ENERGY TRANSITION & PORTS IN AFRICA

**Sustainable Smart Ports for Africa**
**United Nations Conference on Trade and Development (UNCTAD)**

**Strategies, progress and challenges – a perspective from Mauritius & PMAESA**
**Regional Online Webinar , 7 Dec 2023**

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# AGENDA

- Energy transition and ports in Africa – Background & the context
- The role of ports in the energy transition
- Opportunities for ports in the energy transition
- Challenges for ports in the energy transition
- Pathway to a Greenport - a case study of Port Louis Harbour, Mauritius


# BACKGROUND

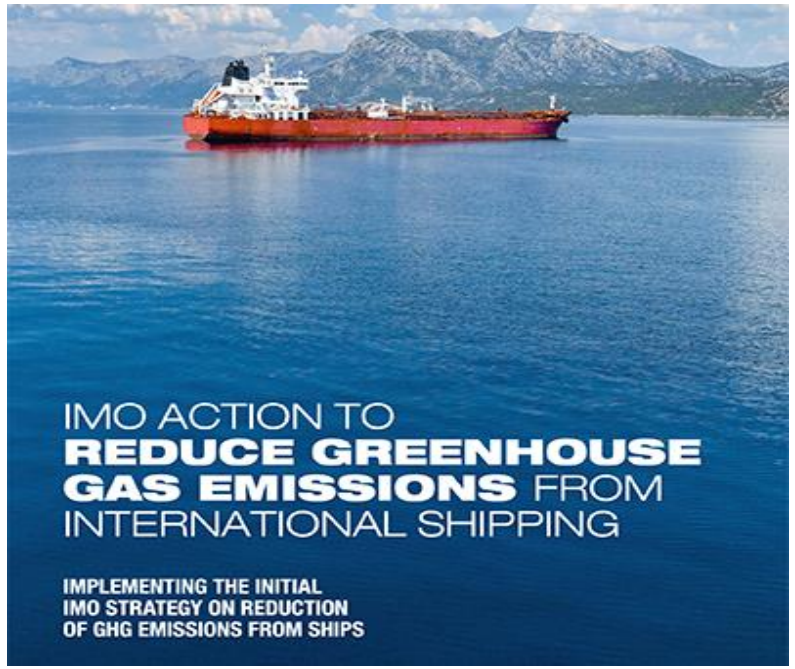
African leaders have made clear their commitment to attaining inclusive and sustainable economic growth and development in the **Agenda 2063**: **the Africa We Want.**

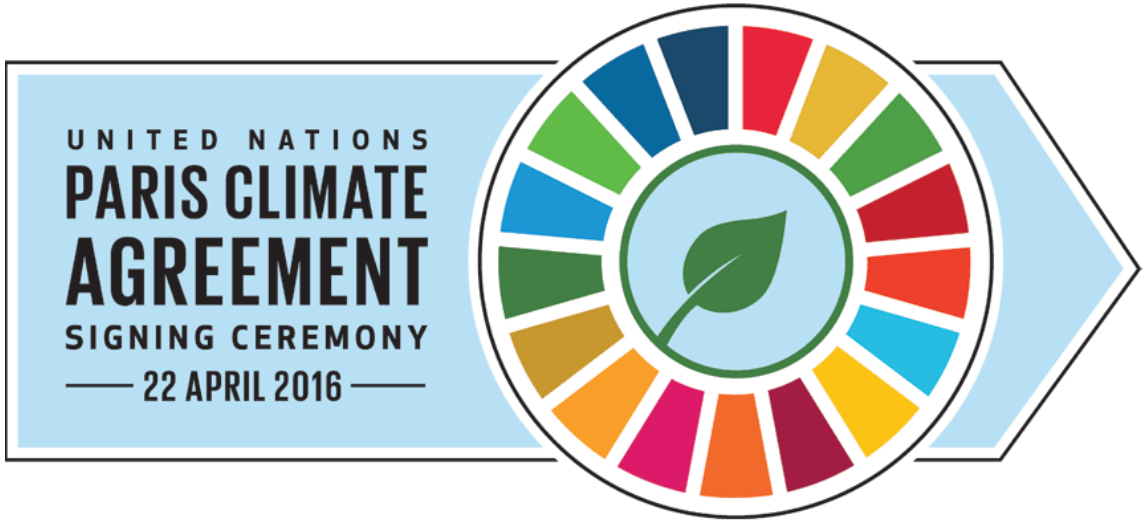
Aware of the stakes involved in access to energy and a just energy transition, policy makers in the field of transport have decided to make the Greening of Ports & Shipping as well as a digitalized, efficient and competitive maritime industry in Africa an important continental agenda.

This presentation will discuss the opportunities and challenges of the energy transition for ports in Africa.


# THE REGIONAL CONTEXT

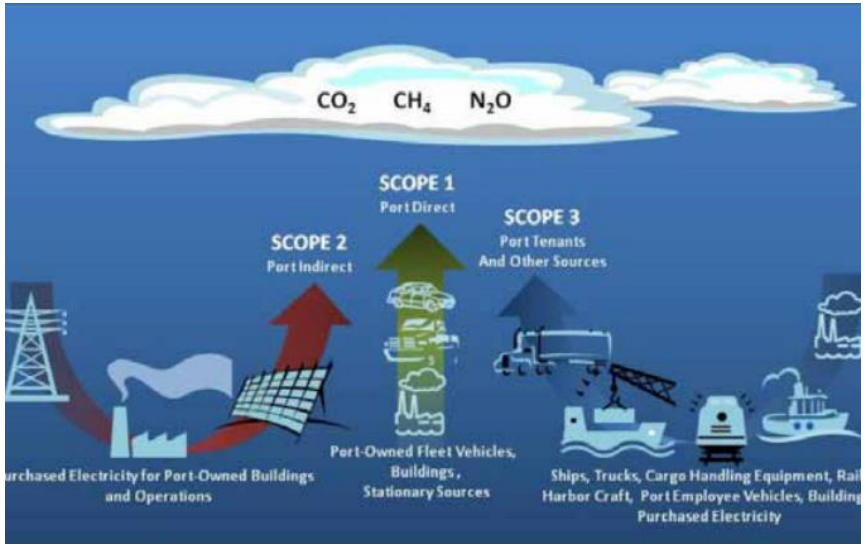
- Africa's contribution to $CO_2$ emissions is by far the lowest, at only 3-4% of global emissions
- Africa is a continent with vast untapped energy resources (UNFCC, 2022)
- Intra-African trade can be boosted by about 33% and reduce the continent trade deficit by 51% with entry into force of African Continental Free Trade Area (AfCFTA). Likewise, cargo volume would increase from 51 million to 132 million tons with the implementation of the AfCFTA.
- Regional associations like Indian Ocean Commission (IOC), Port Management Association of Eastern and Southern Africa (PMAESA), Port Management Association of Western and Central Africa (PMAWCA) and the African Union Commission through the recently established African Green Ports Forum (AGPF) are working towards the greening of ports and shipping.




# THE INTERNATIONAL CONTEXT

- Global efforts to reduce GHG emissions from shipping - international action by IMO to achieve climate neutrality by 2050
- International shipping accounts for about 3% of global energy related $CO_2$ emissions or around 1 billion tons of $CO_2$
- Paris Agreement - limit global warming to well below 2 $^0$C, preferably to 1.5 $^0$C, compared to preindustrial levels
- States to submit National Determined Contributions identifying national climate action (ports)
- Highly ambitious strategy while meeting the objectives of the Paris Agreement
- In 2023, carbon emissions from international shipping were 20 % higher than ten years earlier [UNCTAD]




# A FEW FACTS ABOUT PORT DECARBONISATION

- Ports are energy intensive and a frontier for pollution with various anthropogenic inputs owing to their consumption of fossil fuels and centric for industries emissions e.g. power plants, tenants, refineries, etc.
- 5% of shipping GHG emissions are in port areas, which accounts for 50% of port-related emissions in some ports (up to 5 times of port's emissions)
- Land transport (trucks) emissions in ports, is up to double the amount of port emissions



# KEY DRIVERS FOR EMISSIONS REDUCTION IN PORTS

- Contribution to the United Nations Sustainable Development Goals
- Compliance with regulations [UNFCC, Paris Agreement, IMO, regional and national]
- Promotion of green image of port & ensure better market positions, more specifically for cruise tourism
- Improvement in air quality & climate change
- Energy security by reducing reliance on fossil fuels
- Reduction in operating costs by using energy efficient technologies and renewable energy sources

Introduction

# THE ENERGY TRANSITION AND PORTS IN AFRICA

# INTRODUCTION

## Africa

- A continent with vast energy resources, including oil, gas, coal, and renewable energy sources such as solar, wind, hydropower and geothermal.
- Uneven distribution, lack access to reliable and affordable energy.
- Energy transition is the process of moving away from fossil fuels towards cleaner, more sustainable energy sources.
- Driven by a number of factors, including climate change, resource scarcity, and air pollution.
- Ports play a critical role in the energy transition by providing the infrastructure needed to import and export renewable energy sources.

**Ports as gateways to renewable energy**

# THE ROLE OF PORTS IN THE ENERGY TRANSITION

# PORTS AS GATEWAYS TO RENEWABLE ENERGY

Ports can play a critical role in the energy transition by providing the infrastructure needed to import and export renewable energy sources. This includes:-

- Building and operating offshore wind farms
- Developing onshore renewable energy projects
- Constructing and operating renewable energy storage facilities
- Providing logistical support for the renewable energy industry

**A new era of prosperity for African ports**

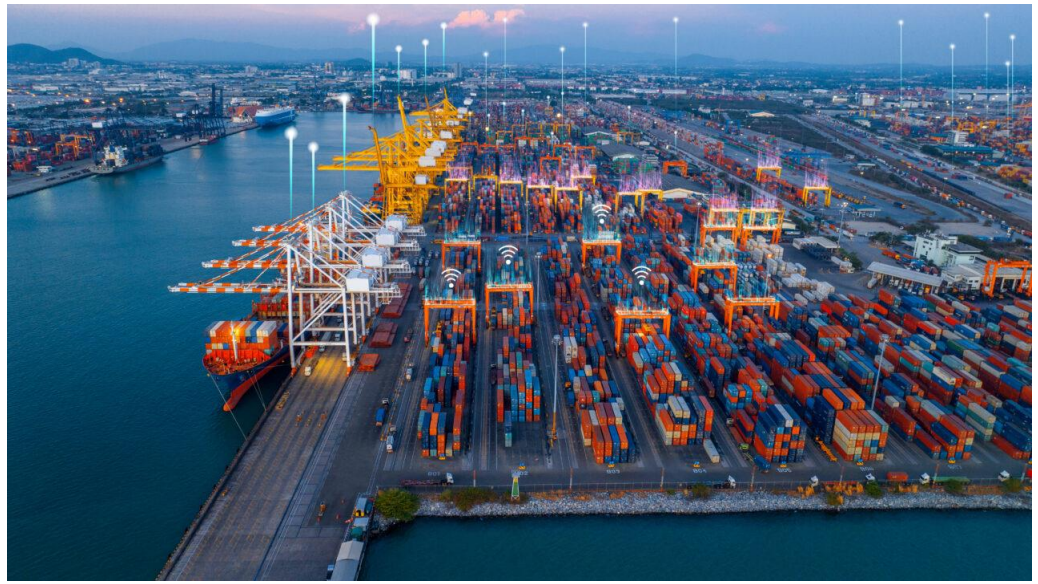
# OPPORTUNITIES FOR PORTS IN THE ENERGY TRANSITION

# A NEW ERA OF PROSPERITY FOR AFRICAN PORTS

## Opportunities for Ports

Ports can play a key role in the development of renewable energy projects.

- Increased revenue from the import and export of renewable energy sources
- New job creation in the renewable energy industry
- Improved air quality and reduced greenhouse gas emissions
- Enhanced energy security and resilience
- They can also provide infrastructure for the storage and transportation of renewable energy
- In addition, ports can adopt energy-efficient technologies to reduce their own emissions.



**Navigating the uncharted waters of the energy transition**

# CHALLENGES FOR PORTS IN THE ENERGY TRANSITION

# NAVIGATING THE UNCHARTED WATERS OF THE ENERGY TRANSITION

## Challenges

- High cost of renewable energy technologies
- Variability of renewable energy sources
- Need for government support and policies
- Lack of access to finance for renewable energy projects
- Ports need to develop the skills and expertise to operate and maintain renewable energy technologies.

Walk the talk

# CASE STUDIES

# CASE 1 – STUDY ON PORT ENERGY EFFICIENCY AND RENEWABLE ENERGY [PEERE]

## Green Port Initiatives (GPI)

- GPI started in 2013 – EU Technical Cooperation Facility funded the study on PEERE
- Terms of Reference for the appointment of Consulting Firm prepared by the MPA/AFD - international tendering conducted under aegis of EU
- 3 deliverables from the study, namely:
    1) Energy Audit Report
    2) Energy Efficiency Management Plan Report
    3) Renewable Energy Potential Assessment Report
- Efforts on sustainability have been pursued since then

# CASE 1 – STUDY ON PORT ENERGY EFFICIENCY AND RENEWABLE ENERGY [PEERE] CONTD'

## Key drivers for clean energy transition

- Main driver behind the clean energy transition was the need to reduce reliance on expensive fuel oil & overcome economic crisis.
- To that goal must now be added the reduction of CO2 emissions from power generation.
- GHG emissions produced by human activities are driving climate change.
- Decarbonization of the power sector using renewable energy is a key requirement in the fight against climate change. Global power, still reliant on fossil fuels, is the largest emitter of carbon dioxide

# CASE 1 – STUDY ON PORT ENERGY EFFICIENCY AND RENEWABLE ENERGY [PEERE] CONTD'

## Decarbonisation of the power sector

- At the national level, Government has furthered its energy transition ambition by increasing the target of renewables in the electricity mix to 60% by 2030 with the current share standing at 24% in 2022.
- Phasing out of the use of coal in electricity generation by 2030
- Increase of 10% energy efficiency by 2030 (with 2019 as base year)
- Role of utility provider to improve the grid absorption capacity to accept intermittent RE

# CASE 1 – STUDY ON PORT ENERGY EFFICIENCY AND RENEWABLE ENERGY [PEERE] CONTD'

## Framework for energy sector in Mauritius

- Energy efficiency Act 2011
- Utility Regulatory Act 2021
- Mauritius Renewable Energy Agency Act 2015
- Electricity Act and Central Electricity Board Act
- Long Term Energy Strategy and Action Plan
- Roadmap 2030 for the Electricity Sector 2o22
- 10 Year Electric Vehicle Integration Roadmap for Mauritius
- Nationally Determined Contribution (NDC, 2021)

# CASE 2 – GRID CONNECTED ROOFTOP SOLAR PV PROJECT

## Progress achieved

### The project

- Installation of Solar PV panels at 3 sites in the port with a cumulated installed capacity of 408 kW [Workshop -40 kW, APB Building 169 kW, Shed 3 – 199 kW]

### The objective

- Reduce Greenhouse Gas (GHG) emissions and reduce operating costs

### How to go about?

- Installation of solar panels
- Export all energy produced to CEB grid in compliance with Grid Code

### The investment

- USD 1M

### Benefits of the Solar PV

- Reduction of approx. 680 tons
- Annual energy production ~ 715,000 kWh and reduction of electricity bills by 65% at the sites

### Impact of project

- Reduce dependency on fossil fuels and promote Green Port Concept

### Expected date of completion

- December 2024

# CASE 3 – FEASIBILITY STUDY FOR AN ONSHORE POWER SUPPLY [OPS] FOR CRUISE SHIPS

## Progress achieved

### The project

Feasibility Study for a Shore Power Supply System for Cruise ships at Port Louis Harbour

Partners Involved (Indian Ocean Commission, World Bank, CEB)

### The objective

Reduction of emissions by ships at berth

### How to go about?

Power connection to CEB power grid

Local renewable power generation > power delivered by shore power

### The investment

USD 11.5 M

### Benefits of the Shore Power

Annual reduction of approx. 3000 tons of $CO_2$

### Impact of project

Could be the determining factor for a cruise line decision for homeporting in Mauritius or elsewhere

# SUMMARY

The energy transition is a major challenge, but it also presents a number of opportunities for Africa ports.

By embracing the energy transition, African ports can create jobs, reduce emissions and improve their competitiveness.

The ports that are leading the way in the energy transition are showing that it is possible to create a more sustainable and prosperous future for Africa.

# THANK YOU