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IMPACT OF MARINE LITTER: PLASTIC DEBRIS IN AFRICA'S MARINE ENVIRONMENT

**4TH Association of African Maritime
Administration Conference
Sharm El Sheikh, Egypt
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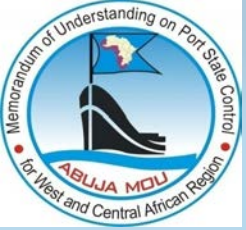
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The Theme – Plastic Debris

- ❑ Customary to speak about the routine Flag State, port State issues at maritime conferences.
- ❑ Commendation to the organizers for the focus on Marine Plastic
- ❑ Theme is justified by a body of evidence on:
 - the increasing impact of marine litter;
 - the alarming threat of plastic trash in Africa's aquatic environment; and
 - the need to develop effective strategies towards mitigating the deteriorating environmental scenario.



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Marine Environment

- **Marine environment essential to life on planet earth:**
 - constitutes more than 95% of the earth's total living space;
 - hosts more than 220,000 known species of animals and plants;
 - provides the largest source of oxygen and protein;
 - absorbs about a quarter of our carbon dioxide emissions; and
 - provides livelihoods for billions of people.

- **Even a partial loss of these resources would significantly**
 - threaten human health and existence, and
 - pose huge economic consequence globally (Tom Dillon).

Africa's Marine Environment



AFRICA: A GIANT ISLAND

- ❖ SURROUNDED BY
 - ❖ Atlantic Ocean
 - ❖ Indian Ocean
 - ❖ Mediterranean Sea
 - ❖ Red Sea
- ❖ Large Marine Ecosystems
 - ❖ Guinea Current LME
 - ❖ Benguela Current LME
 - ❖ Canary Current LME
 - ❖ The Agulhas and Somali Current LMEs
 - ❖ The Mediterranean Sea
- ❖ Nutrient rich waters to support enormous aquatic life



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Marine Litter

- ▣ **Global consensus that**
 - ▣ the health of marine ecosystem is on the decline.
 - ▣ ailing marine ecosystem hurt the economy of every nation.
- ▣ **Marine Litter in the form of Marine Plastics Debris is a major contributor to the decline**
- ▣ **Marine Litter or Marine Debris**
 - is anthropogenic waste that is discharged into coastal or marine environments, resulting from the human activities on land or at sea.

Marine Plastic Debris

- ▣ **Majority of Marine Litter Consists of Plastic Debris floating on top and under water.**





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Marine Plastic Debris

- ▣ **CALL FOR ACTION**
 - very critical that governments, global businesses and political leaders recognize the growing threats and urgently act to restore the marine environment to healthy state for economic development of Africa.

- ▣ **AAMA is responding to this call by putting this crisis on the front burner.**

Marine Plastic Debris - A Global Challenge

- ❖ Plastics constitute about 95% of marine litter found on coastlines, sea surface and the ocean floor. - Environmental Law Institute (ELI) for the United Nations Environment Programme (UNEP).
- ❖ An estimated 4.8 million to 12.7 million metric tonnes of plastic entered the ocean from land-based sources in 2010, and about 8 million metric tonnes has entered the oceans each year since then.





Marine Plastic Debris - A Global Challenge

□ Global Plastic Production

- Global plastic production increases each year.
 - production exceeded 300 million tons in 2014.
 - with current trend of 5% production increase per year (Kroeze *et al.*, 2017)

□ Plastic Trash Alarm

- an estimated 5 – 13 million tons of plastic enter the world's oceans every year.
- enough quantity to cover every foot of coastline on planet Earth

□ Plastic Trash is Endemic Problem:

- it doesn't go away: "plastics are forever" (Brian Hutchinson).
- instead, plastic debris simply breaks down into ever-smaller particles, known as **MICROPLASTICS**,
 - environmental impacts of microplastics are still being determined.

Marine Plastic Debris – African Situation

■ Most Polluting Nations

- 83% of the 4.8 – 12.7 million tons of land-based plastic waste in the ocean originates from 20 of the 192 coastal nations (Jambeck *et al.*, 2015).

■ 5 African Countries are in top 20.

- Egypt; Nigeria
- South Africa; Algeria
- Morocco

Studies show that plastic and microplastic (<5mm in size) have become the major pollutant in Africa's lakes, dams and rivers

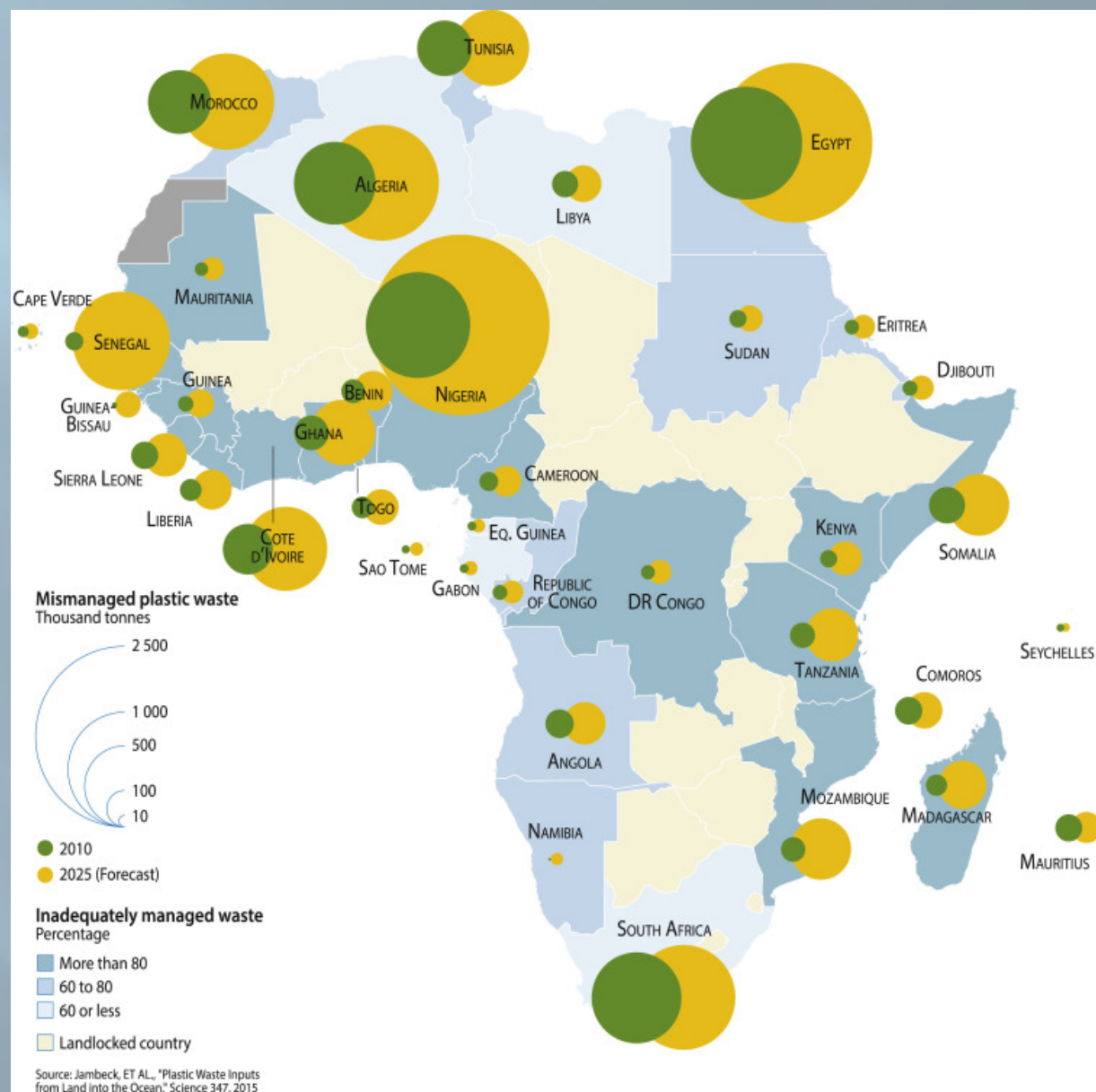


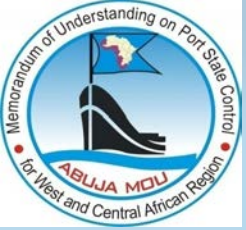
Plastic debris in Lagos Lagoon

Marine Plastic Debris – African Situation

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Mismanaged plastic in Africa as of 2010 (green circles) and waste mismanagement forecast for 2025 given current practices (yellow circles). (Adapted from Jambeck et al., 2017).





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Marine Plastic Debris - Sources



Thousands of plastic bottles and other pieces of plastic litter line the coastline south of Durban after a recent storm – testimony to South Africa's ranking among the top 20 worst marine plastic polluters in the world. Picture: Lisa Guastella (Adapted from Environment (Carnie, 2017))

Marine Plastics Debris: Sources

▣ Land-based sources

- most of the plastics in our oceans originate from land-based sources (UNEP, 2016).
- unregulated dumping of plastic wastes directly into the oceans.



A man sorting a sea of plastic bottles at one of the Waste hubs in Lagos, Nigeria. Most plastic litter from cities ends in oceans. (Adopted from Africa Renewal May – July 2017).

Marine Plastics Debris: Sources

▣ Riverine sources

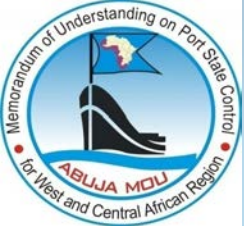
- It is estimated that between 1.15m and 2.41m metric tons of plastic trash currently flow from rivers into the oceans every year.
- The top 20 polluting rivers were mostly located in Asia and account for 67% of the global total (Lebreton *et. al.*, 2017).
- ▣ 3 of the top polluting Rivers are in Nigeria and Cameroon
 - Nigeria
 - ▣ Imo River
 - ▣ Qua Iboe River
 - Nigeria/Cameroon
 - ▣ Cross River



Marine Plastic Debris - Sources



Rivers, especially those that run through urban areas, collect plastic litter during storms and carry this pollution out to the ocean. Credit: [Judgefloro](#). (Adapted from Griffin et al, 2018)

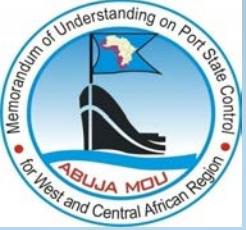


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Marine Plastic Debris - Sources

□ Classification of Plastic Debris in African Waters

TYPE OF PLASTIC DEBRIS		
MACROPLASTIC PARTS (<2.5cm)		MICROPLASTICS (<5mm)
Lost bottle caps Plastic fragments Plastic bags Food and other packaging Fishing floats: Abandoned fishing nets and traps Buoys Plastic films and ballons Rope Boat ghulls Drinking straws Cigarette filters		Microbeads or pellets Capsules Microfibers used in fabrics Fragments of larger plastic parts



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Impact of Marine Plastic Debris

- ▣ **Multiple Impacts:**

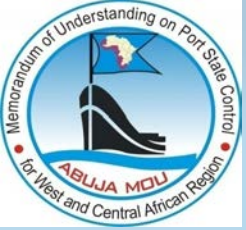
- ▣ **Potential Toxicity** of plastics and their effects on the health of

- marine organisms, and
 - people who consume seafood
- is now of serious concern.

- ▣ **Economic Loss:** shipping, fishing, aquaculture, tourism and recreation are directly affected by plastic pollution.

- Marine plastic pollution is estimated to cause at least US \$13 billion annually in economic losses.

- ▣ **Cost of Cleanup:** runs into tens of millions of dollars (Eco-Business).



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Impact of Marine Plastic Debris

- **Environmental Impact on aquatic ecosystems:**
 - entanglement and/or starvation of marine species, and
 - stagnation of waterways
- **Spreading of diseases**
 - (vector)
- **Impact on tourism through**
 - littered shores and/or
 - blocked waterways
- **Impact on Sea food & other resources**
 - depletion of commercial fish and shellfish stock.

Impact of Marine Plastic Debris

100,000 marine mammals and turtles and 1 million sea birds are killed by marine plastic pollution annually - *Surfers against sewage*

What is visible floating on the surface accounts for only 5% of all the plastic litter dumped into the sea. According to Ocean Conservancy, a U.S environmental non-profit, the other 95% is beneath the surface where it strangles underwater creatures and wrecks aquatic ecosystem.



Debris found in the stomach of a fish in Portugal. Photograph: Paulo Oliveira/Alamy

Impact of Marine Plastic Debris

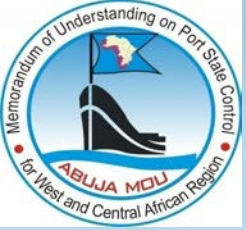
Starvation of species due to ingestion of large amount of plastic mistaken for food

Plastic absorbs and bioaccumulate toxic chemicals which in turn affect aquatic life.

Entanglement and injury caused from plastic rubbish and abandoned fishing gear

Indirect impact across the food chain as a result of bio magnification of plastic related pollution via the ingestion of plastic contaminated species

Absorption into the human body can potentially disrupt cellular process and degrade tissues.



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Impact of Marine Plastic Debris

TOURISM

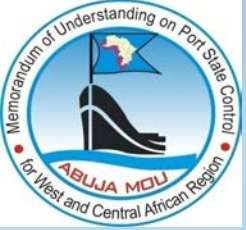
Huge cost involved in waste management and coastal cleanup

Reduced aesthetic appeal leading to loss of revenue from tourism

Maintenance of public drainage system connecting to rivers and ocean which has been blocked by plastic litters



Plastic debris in Lagos Lagoon



Marine Environment Governance

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▣ THE BLUE ECONOMY

- ▣ Is an emerging concept which encourages better stewardship of our marine or “blue” resources.
- ▣ It is the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of the ocean ecosystem (WORLD BANK).
- ▣ Growing interest in the blue economy and awareness of the scale of the environmental and economic impact of marine litters on the African marine environment require new policies and governance structures.



Current Marine Debris Activities in Africa

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- ▣ **Conferences, Networks and Programmes**
 - African Marine Waste Network
 - NESREA Demonstration Waste Control Project (Nigeria)
 - KwaZulu Natal Marine Waste Network (South Africa)
 - Marine and Coastal Educators Network

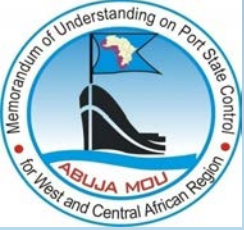
- ▣ **Declaration for Solution on Marine Litter: South Africa Actions**
 - **SIGNATORIES TO THE DECLARATION**
 - ▣ Plastics / SA – 2011
 - ▣ Packaging / SA – 2015
 - ▣ Ghana – 2016

- ▣ **The Cape Town Conference 1998** adopted an African Action Plan and African Strategy for the Development and Protection of the Coastal and Marine Environment in Sub- Saharan African. – An ongoing *GEF project*

Marine Environment Governance: Global Regime and Support

**International,
Continental,
Regional
Instruments**





Environmental Governance: Global Regime and Support

- ▣ **International Instruments and Organizations**
 - The International Maritime Organization (IMO)
 - The United Nations Environmental Programme (UNEP)
 - International Oceanographic Commission of United Nations Educational, Scientific and Cultural Organisation (IOC-UNESCO)
 - Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)
 - International Union for Conservation of Nature (IUNC)
- ▣ **The World Bank funds marine litter projects through the Global Environmental Facility (GEF).**
 - The GEF has 183 participating countries of which 39 are donor countries.
 - Coastal States in Africa should tap into the GEF programme to tackle marine litter and plastic trash.

Environmental Governance: Challenges



Increase in the production of plastic products and materials remains the most important challenge in dealing with plastic litter

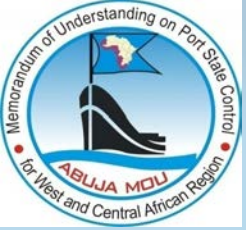
Other militating factors:

Lack of enforceable domestic legislation for control of marine plastic litter

Lack of proper waste disposal system

Inadequate/untapped recycling culture

Lack of proper awareness on proper disposal of plastic waste.



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Marine Environment Governance

- ▣ **Collaboration between Key Players:**
 - ▣ **Cannot relying solely on**
 - **State actors, and**
 - **International organizations**
 - ▣ **Collaborative efforts from multiple sectoral action players, including**
 - ▣ **Plastic related industries**
 - ▣ **Non-governmental environmental organizations**
 - ▣ **International Development Agencies, and**
 - ▣ **The Academia, Research and Development (R&D) Institutions.**

Combating the Problem

ACTION PLAN

SHORT-TERM

- Improve Waste Management Practice
- Source Sorting of Waste Collection
- Good Landfill Management
- Create Recycling Opportunities
- Plastic Bag Bans (where necessary)
- Mitigation and Awareness Campaigns

LONG-TERM

- Move Towards Circular Economy (reduce, reuse, recycle, redesign, recover – through Stakeholder Education/Awareness Raising).
- Behavioural change (consumers and producers) e.g.
 - Reduce single use plastics.
 - Phase out non-recoverable Plastics.
 - Alternative materials, such biodegradable plastics or textiles.
- Embrace related United Nations (UN) Sustainable Development Goals (SDG 12.4; 12.5 and 14.2).



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Combating the Problem

ACTION PLAN 2

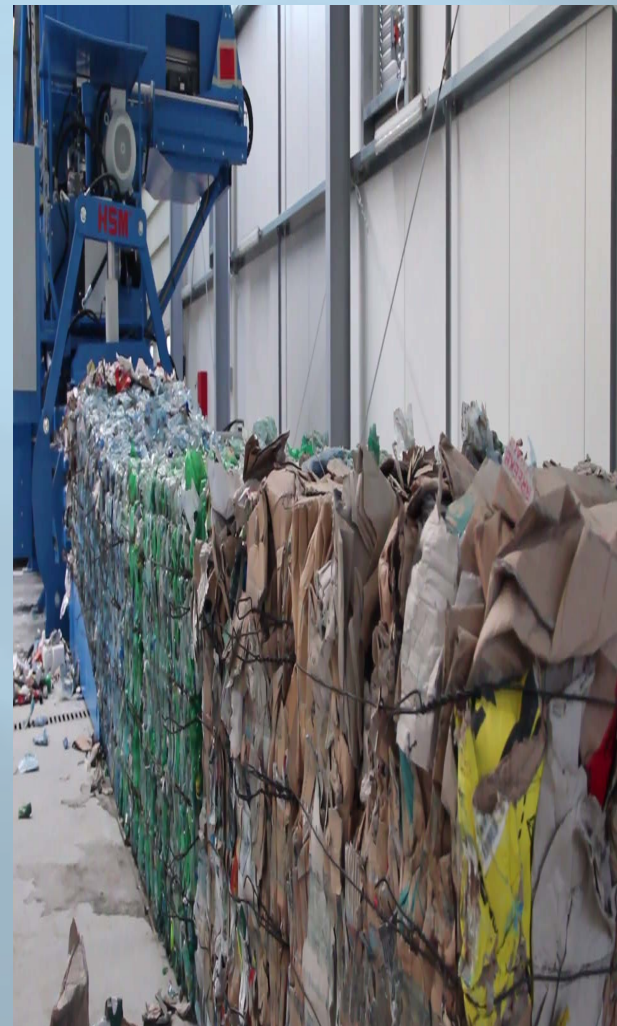
SHORT-TERM

- Beach Clean-ups (regular exercise by NGOs, Governments and industry)
- Empower existing national, regional and international environmental governance mechanisms to enhance monitoring and enforcement activities.

LONG-TERM

- Work with the scientific community and Research and Development (R&D) institutions to better understand and evaluate the scope and solutions to impacts of plastic trash in Africa's marine environment.
- Active promotion of comprehensive techno-scientific based policies on marine litter.
- Environmental Governance: political and corporate partners offer strong support to promote enforcement of existing laws that prevent marine litter.

Combating the Problem



1

Ban/reduction of plastic usage: the Rwanda example (2008, Rwanda banned use of plastic bag). Restrictions exist in Uganda, Cameroon, Kenya, etc.

2

Improving waste disposal, collection and management practice in Africa: The Beijing experience (where recyclable plastics are accepted in exchange for public transport fare credit)

3

Development and implementation of laws to ban or reduce production of single-use plastic trash items commonly found in marine litter

4

Elimination of source of waste - regulation of non-recoverable items such as plastic microbeads in personal care and cosmetics products

5

Recycling marine plastic waste for commercial use. However, only less than 14% of all plastic is recyclable



Continental Cooperation - Regional MoUs on Port State Control

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- ❑ **Regional Memorandum of Understandings on Port State Control - Cooperative Agreement with the IMO**
- ❑ **Africa is surrounded by 3 Regional MoUs:**
 - Mediterranean MoU, Abuja MoU and Indian MoU
- ❑ **Abuja MoU's mission is to develop a system of harmonized port State control inspection procedure for the region aimed at the reduction and eventual elimination of substandard shipping, prevention of marine pollution and improvement of the living and working conditions of seafarers aboard ships.**



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Continental Cooperation – Regional MoUs on Port State Control

- ▣ **Port State Control**
- ▣ Port state control is the inspection of foreign ships visiting the port of another country. The purpose of the inspection is to determine the compliance level of the ships with relevant international conventions and codes governing maritime safety, marine pollution and the living and working conditions of seafarers on board ships.
- ▣ We propose a meeting of all the Regional MoUs in Africa under the auspices of the African Union Commission to agree on prioritization of action plans.

Conclusion

- ▣ **No quick fixes**
- ▣ **The New Vision/New Policy must be:**
 - No plastic litter entering the aquatic environment
 - Plastics are too valuable to be trashed away as litter
 - Enhance the plastic value chain as a win-win position
 - Resolve governance challenges over marine debris for ease of implementation, enforcement and monitoring
 - Handshake on continental strategies and monitoring.



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Thank you for listening

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