African Plastics Initiative Workshop

Balancing Social, Economic, and Ecological Goals in addressing Plastic Pollution in different Environmental Compartments

September 14, 2022

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Presentation Outline

The Plastic Pollution Problem in different Environmental Compartments – Global and African Contexts

Social Goals for addressing Plastic Pollution

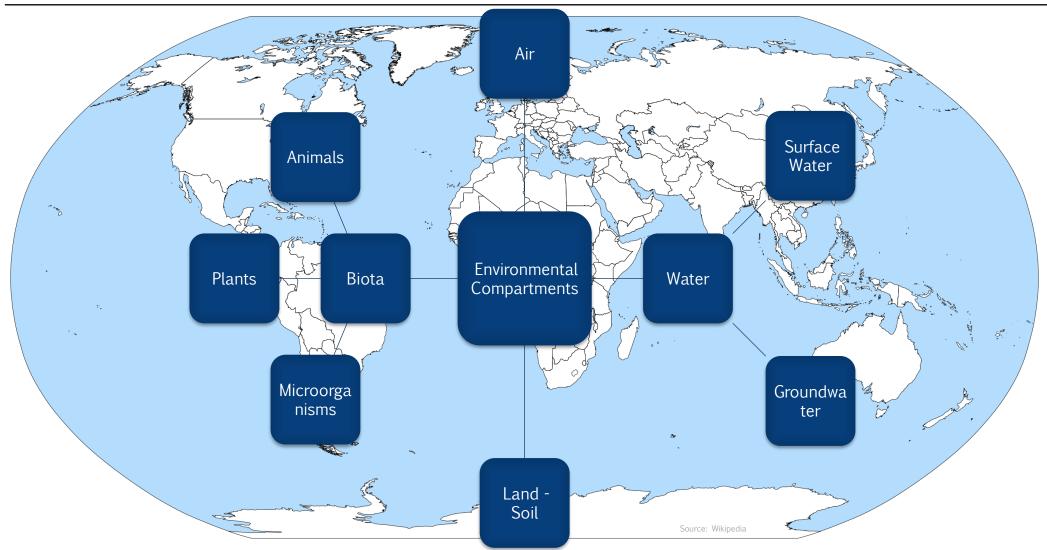
Economic Goals for addressing Plastic Pollution

Ecological Goals for addressing Plastic Pollution

Social-Economic-Ecological Goals Nexus/Balance to address Plastic Pollution

Challenges and Solutions – Way Forward for Africa

The Plastic Pollution Problem in Environmental Compartments – Global and African Contexts



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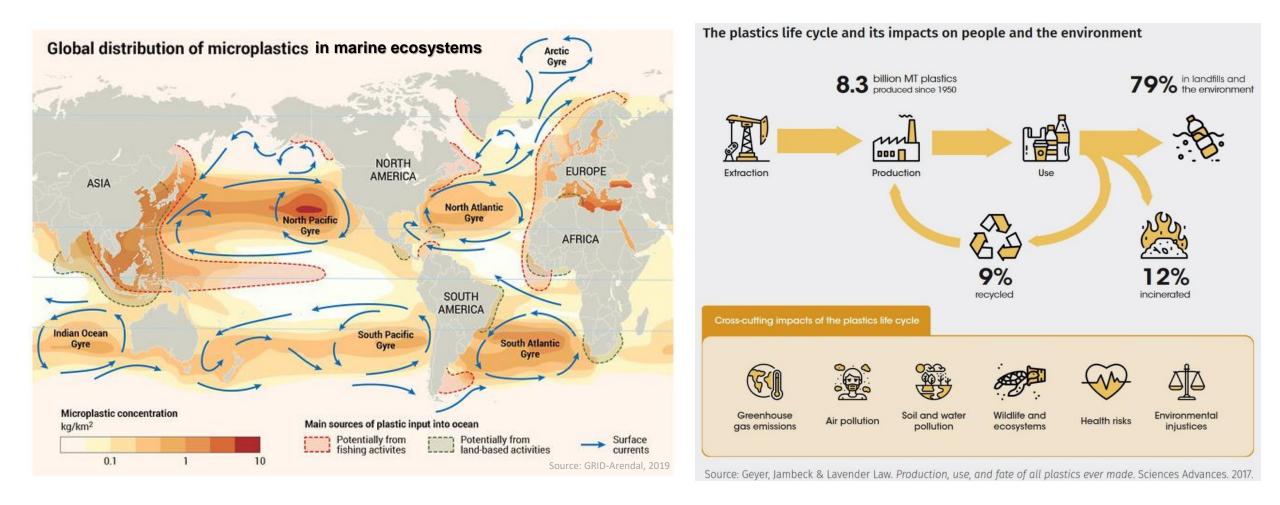
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The Plastic Pollution Problem in Environmental Compartments – Global and African Contexts, Cont'd

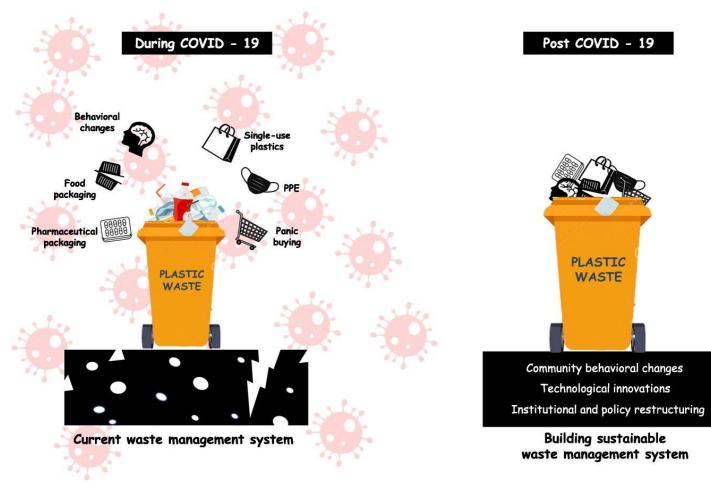


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The Plastic Pollution Problem in Environmental Compartments – Global and African Contexts, Cont'd



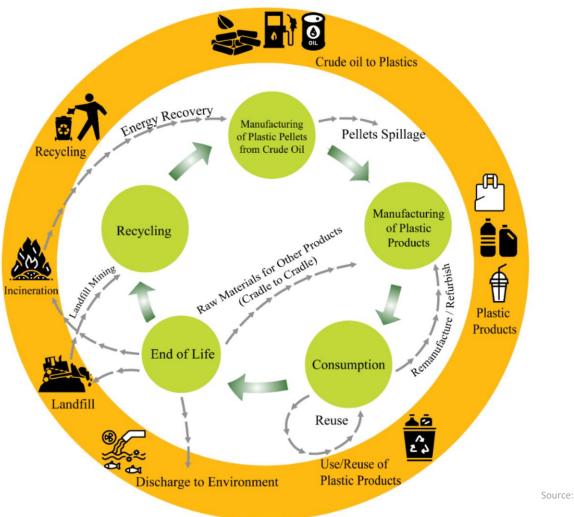
Social Goals for addressing Plastic Pollution



Source: Vanapalli et al. (2021)

Economic Goals for addressing Plastic Pollution

Lifecycle assessment and circular economy of plastic products



Source: Kumar et al. (2021)

Ecological Goals for addressing Plastic Pollution

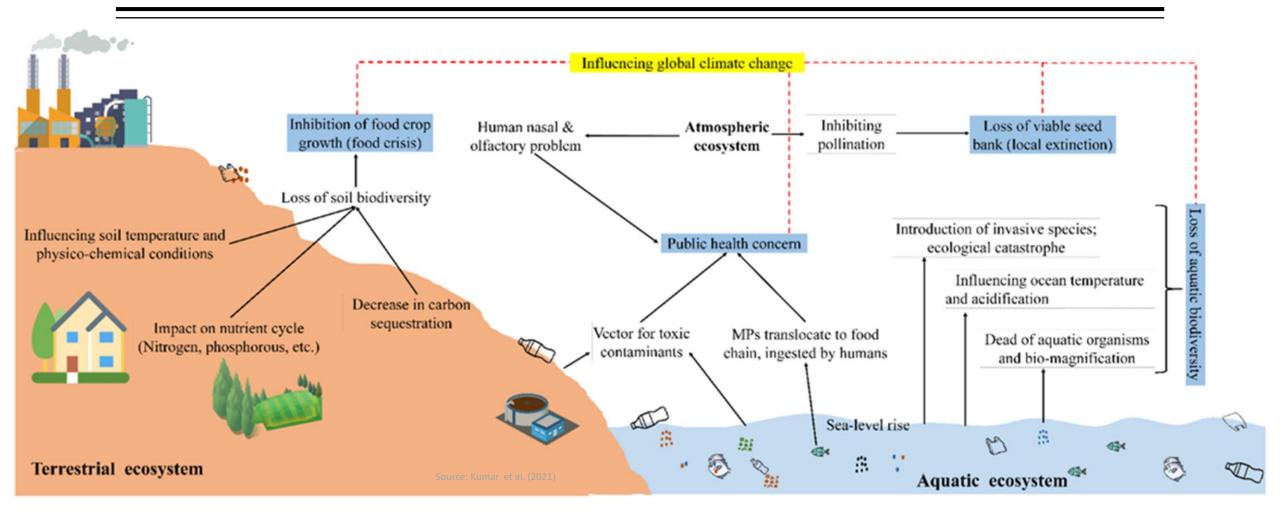


Illustration of MPs and NPs affecting various ecosystem services and climate change on terrestrial, aquatic, and atmospheric ecosystems

Social-Economic-Ecological Goals Nexus for addressing Plastic Pollution

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Plastic

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14 UPE BELL

13 ACTION

Transfer of environmentally sound technologies, related capacity building and financial investments will help to eradicate the issues of plastic pollutions in developing nations

Need for global institution which look after plastic issues and which promotes the culture or norms of sustainable reuse-recycling in all countries

Irresponsible disposal of plastic waste is affecting the terrestrial ecosystems, affecting mammals, agricultural soils, and protected areas

Plastic debris along with micro and nano plastics are of great concerns for the aquatic ecosystems

Throughout the life cycle of plastics, Greenhouse gases get emitted from production, transportation, and disposal

Unsustainable plastic production and irresponsible disposal is the major cause od plastic pollution

Irresponsible plastic waste disposal is choking the infrastructures of cities where the proper management facilities are lacking

Global trade of plastic waste need to re-defined as the transfer of plastic pollutions to poorer countries. To reduce unequal distribution of environmental cost

Innovations required to manage plastic wastes for physical and chemical recycling, and to develop sustainable alternative such as bio-plastics. Such that plastic remains in circular economy or end of product life does not create the environmental issues Plastic pollution is impacting ecosystem services of water bodies and negatively impacting the economic opportunities of poorer communities, especially people depended on the coastal activities

Plastic pollution particularly microplastic potential threat to sustainable food production system, and food security

Ingestion of microplastics in humans through air, seafood, packaged water, salts, personal care products, etc. and potential health concerns posed by (micro)plastics

> Public awareness can be an alternative approach to avoid single-use plastics, and thereby, formal and informal training will impact largely for recycling and life cycle assessment of plastics

Gender-based role and attitude towards plastics management in household activities, as well as public spaces, needs to be recognized and addresses effective interventions and strengthen accountability mechanisms through public awareness and training program

Microplastics found in supplied drinking water, groundwater and package water is the matter of concern to achieve clean water for all

Plastic waste incinerated for energy conversion however this contribute to emission of GHGs and air pollutants which are not a clean form of energy. Recent development of pyrolysis of plastic waste to fluid fuels is much cleaner

Management of plastic waste either through physical or chemical recycling or conversion to fuel will provide a great opportunity for employment while solving the plastic pollution and opportunities for decent economic growth

Source: Kumar et al. (2021)

Perspectives on interlinkages and relationships between plastics pollution, management, and each SDG.

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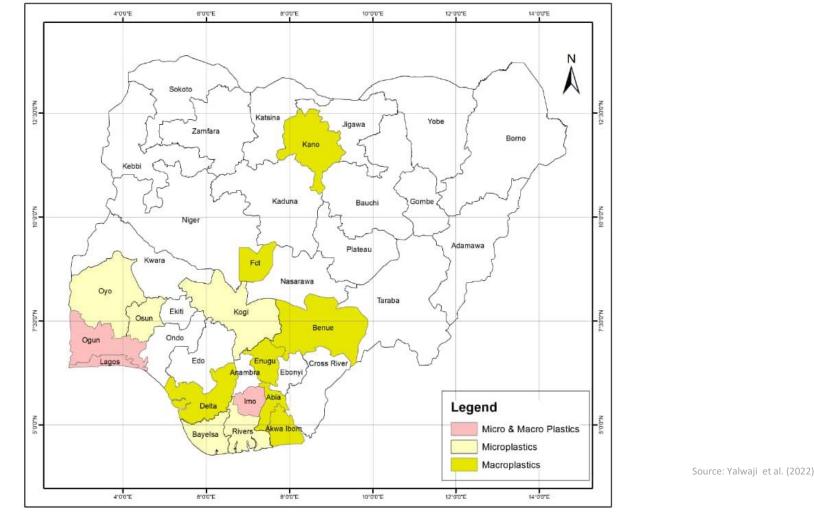
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Social-Economic-Ecological Goals Nexus for addressing Plastic Pollution, Cont'd

Plastic Ban Policy in different countries

S.No.	Country	Year	Ban Policy
1	Rwanda	2008	Ban on the sale and import of synthetic microbeads
2	US	2015	Ban on cosmetic products containing plastic microbeads
3	France	2016	Ban on the distribution of light weight plastic bags in supermarkets
4	Canada	2015	Microbeads regulation to prohibit the manufacture, sale, and import of personal care products containing microbeads
5	Denmark	2016	Ban on products containing microbeads
6	Bangladesh	2002	Ban on LDPE bags
7	China	2008	Total plastic bags ban (<25 µm)
8	India	2002	Ban on ultra-thin plastics bags (<50 µm)
9	Canada	2019	Ban on natural health products and non-prescription drugs containing microbeads
10	UK	2016	Ban on cosmetic products containing microbeads
11	California	2015	Ban on the use of plastic and microbeads in personal care products by 2020
12	Italy	2020	Ban on the marketing products such as cosmetics containing microbeads
13	India	2017	Ban on disposable plastics in Delhi and NCR
14	Australia	2009	Ban on distribution and sale of plastic shopping bags of less than 35 micron Source: Kumar et al. (2021)
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Challenges and Solutions – Way Forward for Africa



Distribution of environmental plastic pollution studies across Nigerian states

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Research Gaps/Priority Settings and Ratings on Plastic Pollution in Nigeria

Category	Research Gaps	References
Micro- and macroplastic data	Scantly studied and reported, sketchy data. $n = 12$ (microplastic), $n = 12$ (macroplastic), both $n = 2$. $n = 26$ cumulative	
Nano- and mesoplastics	Occurrence in environmental matrices not studied in Nigeria except for one (1) record of mesoplastic	This study
Biological effects	Not fully studied (n = 4), Reported effects were from laboratory studies. No observed effects from field studies. Ingestion by terrestrial animals not reported. Effects at population, community and ecosystem levels not yet studied.	
Study distribution	Occurrences in most Nigerian states are not reported. The few data were reported from 15 states only. There is only one (1) study on microplastic from the Northern part (Kogi State) of Nigeria.	
Environmental matrices	Occurrence of plastic particles in the air, soil, drinking (bottle, sachet, tap and ground) water, food (apart from salt), humans, other biota are not yet studied.	
Risk Assessment	No information on Risk assessment studies	
Microplastic	Gap on the fate of microplastics in Nigerian terrestrial environments	Alimi et al., 2020
Plastic Ban bill	Does not address larger issues of plastic pollution and environmental management. Not yet passed into Law, Limited consultation, no national campaign	Nwafor and Walker, 2020 Adam et al., 2020;
Volume of Plastic waste	Zero to few records on use of plastic materials, collection, recycling and	Duru et al., 2019
generated	disposal	
Plastic Management Policy	Lack of National policy on plastic waste management Source: Yalwaji et al. (2022)	Egun and Evbayiro, 2020
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Source: https://www.mvmediation.org/blog/conflict-resolution-ideas-day-44

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