African Plastics Initiative Workshop

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

September 14, 2022

Temitope O. Sogbanmu, PhD, MNYA

Environmental Toxicologist | VP, Nigerian Young Academy | Affiliate, The African Academy of Sciences | UN SDGs, 6, 11, 13, 14 Advocate | Evidence for Policy Advocate

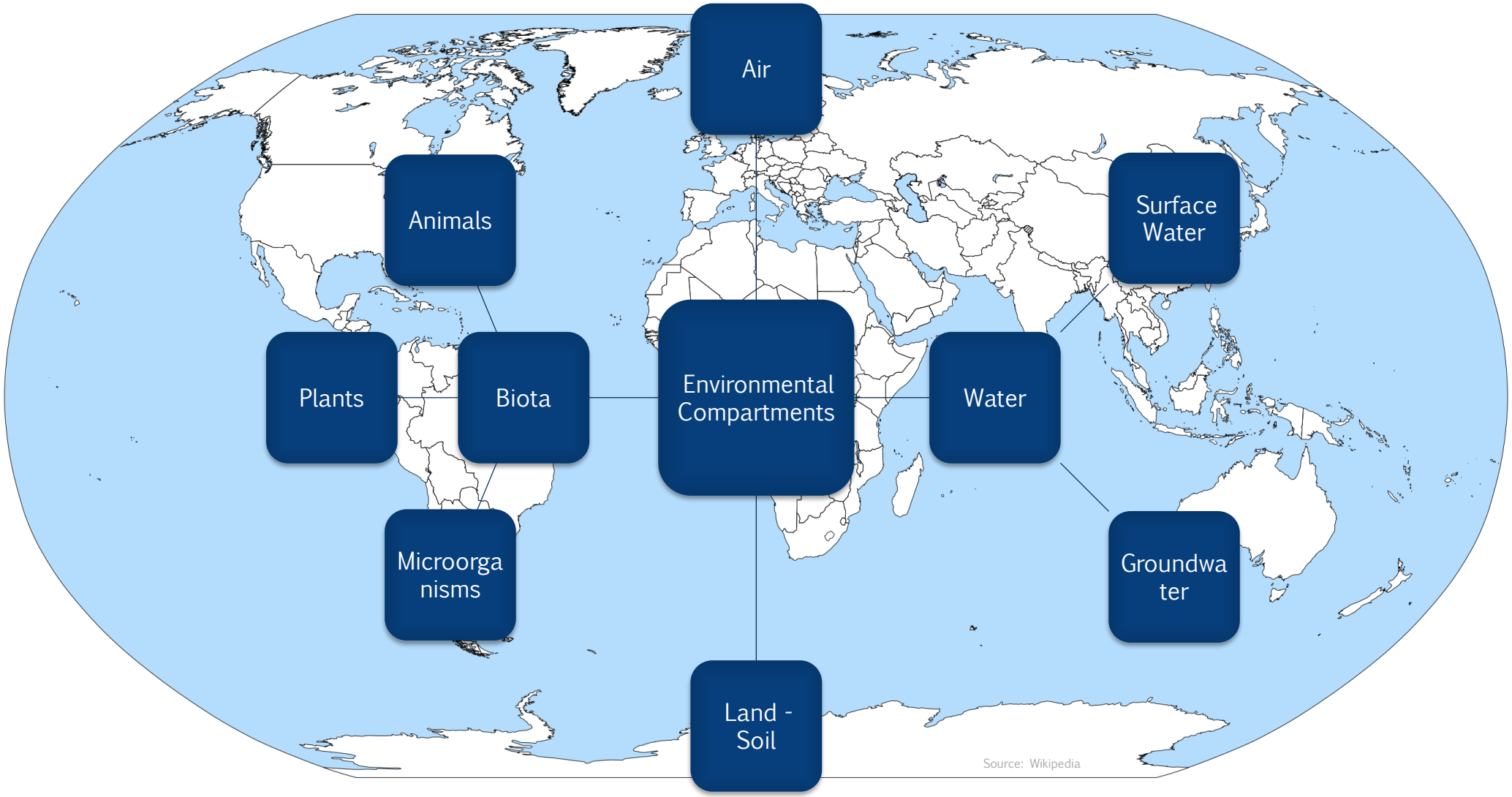
Affiliation: Ecotoxicology and Conservation Unit, Department of Zoology, Faculty of Science, University of Lagos, Akoka, Lagos, Nigeria

Email: tsogbanmu@unilag.edu.ng| Website: www.tosogbanmu.wordpress.com | Twitter: @SogbanmuTO | LinkedIn: @Temitope Sogbanmu, PhD

Presentation Outline

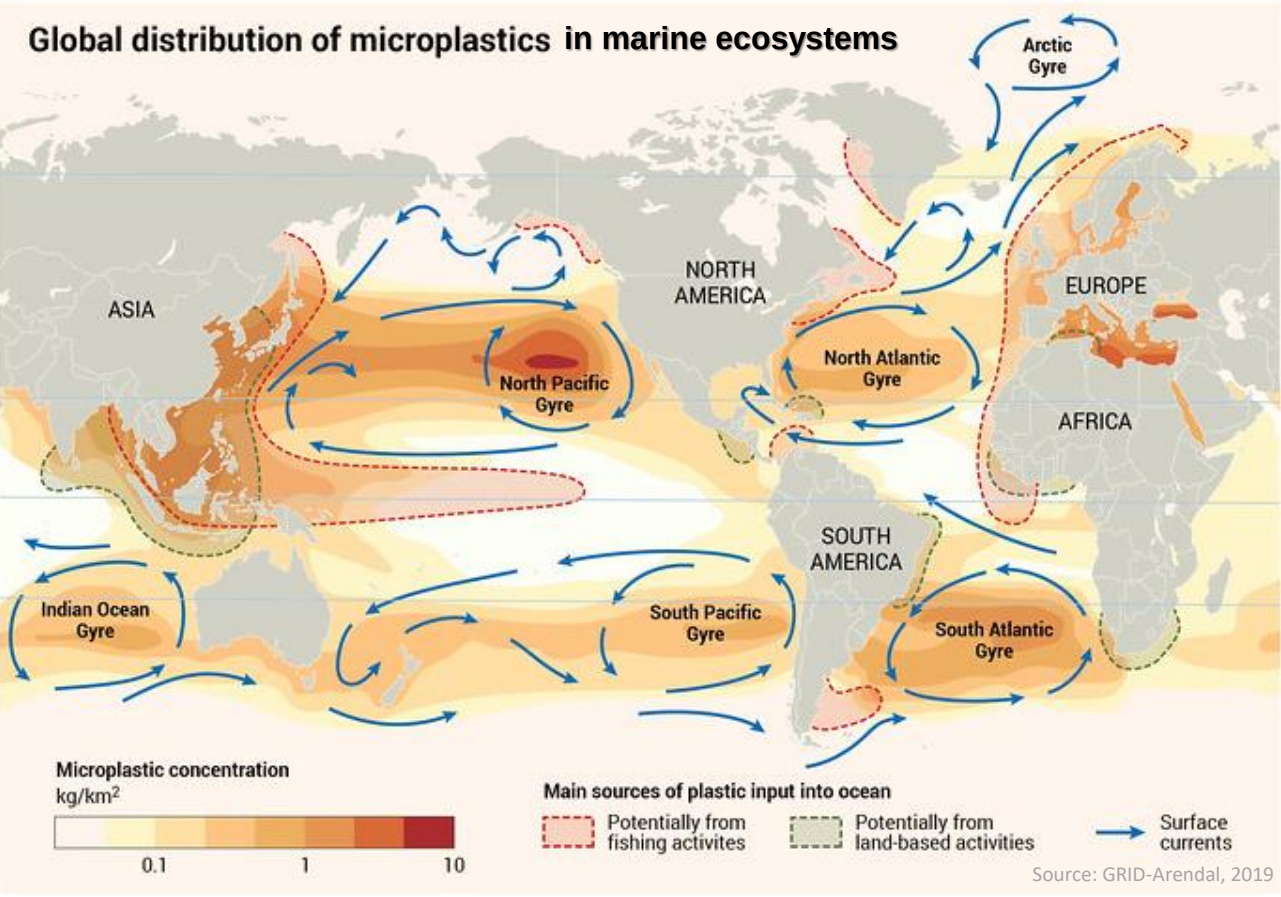
- The Plastic Pollution Problem in different Environmental Compartments – Global and African Contexts
- Social Goals for addressing Plastic Pollution
- Economic Goals for addressing Plastic Pollution
- Ecological Goals for addressing Plastic Pollution
- Social-Economic-Ecological Goals Nexus/Balance to address Plastic Pollution
- Challenges and Solutions – Way Forward for Africa

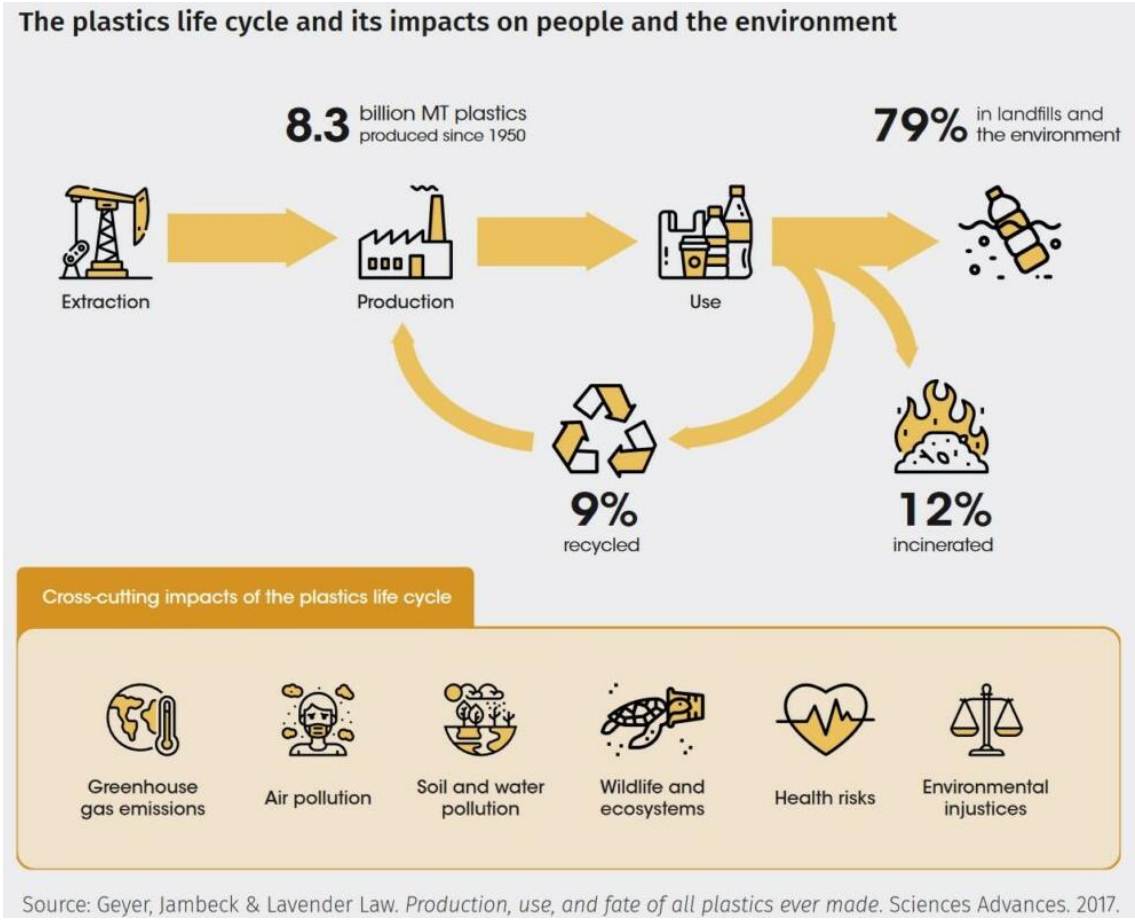
The Plastic Pollution Problem in Environmental Compartments – Global and African Contexts



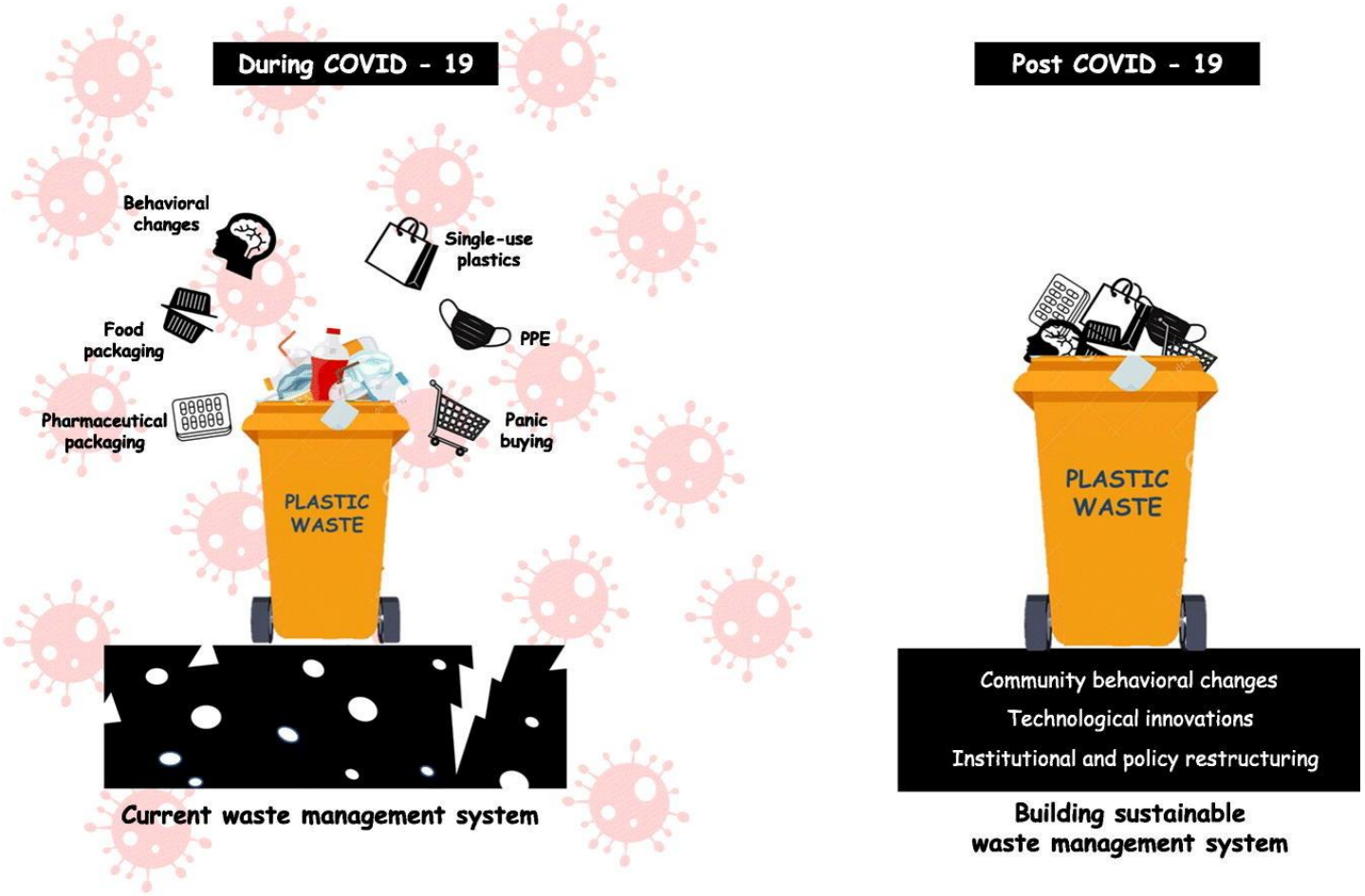
The Plastic Pollution Problem in Environmental Compartments – Global and African Contexts, Cont'd

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





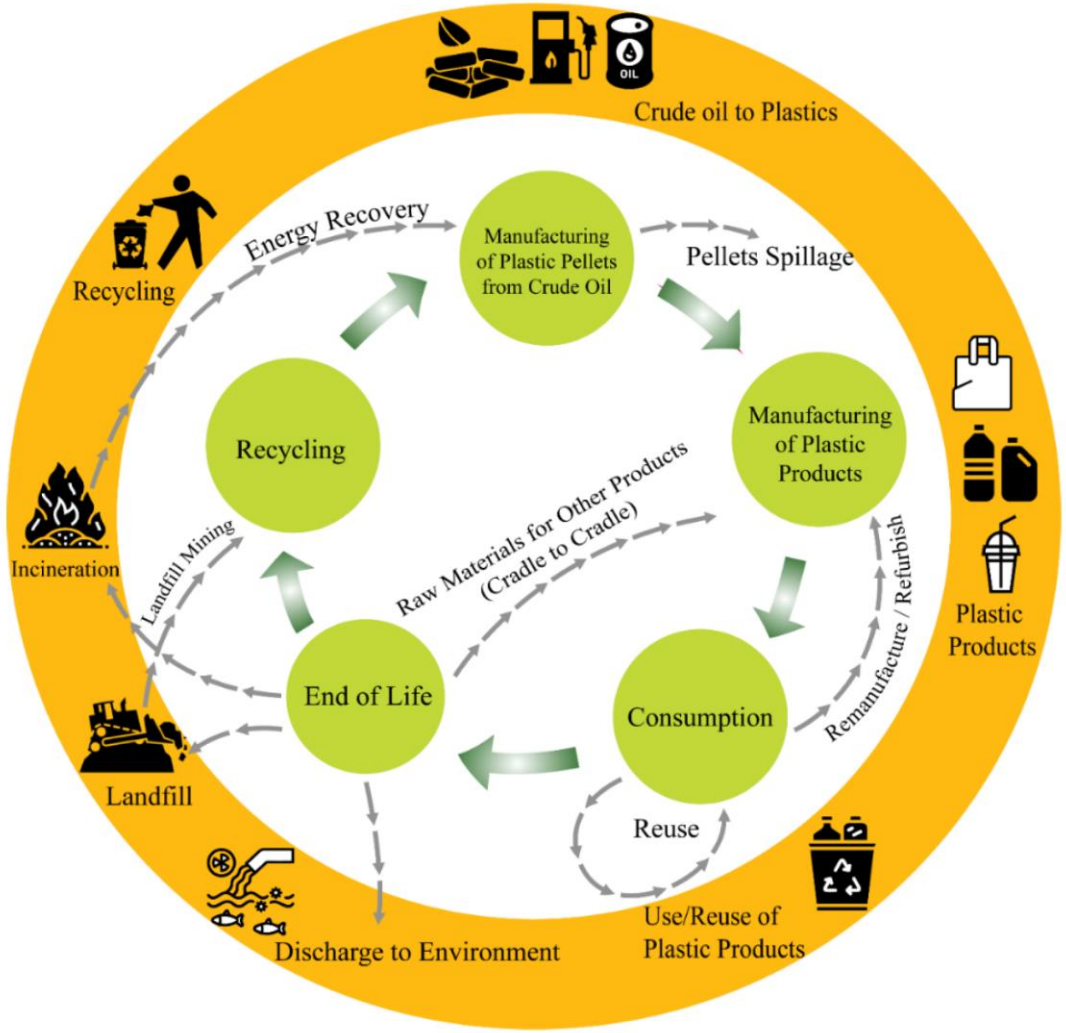
Social Goals for addressing Plastic Pollution



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

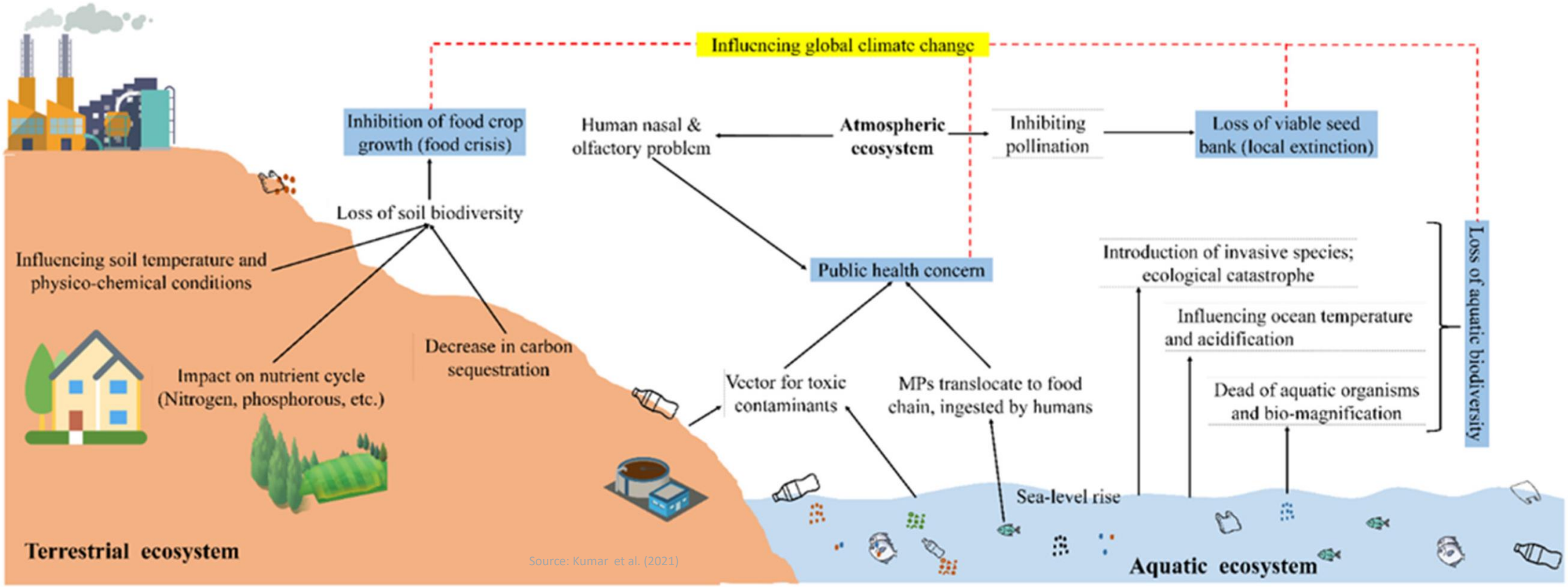


Illustration of MPs and NPs affecting various ecosystem services and climate change on terrestrial, aquatic, and atmospheric ecosystems

Social-Economic-Ecological Goals Nexus for addressing Plastic Pollution

Source: Kumar et al. (2021)

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

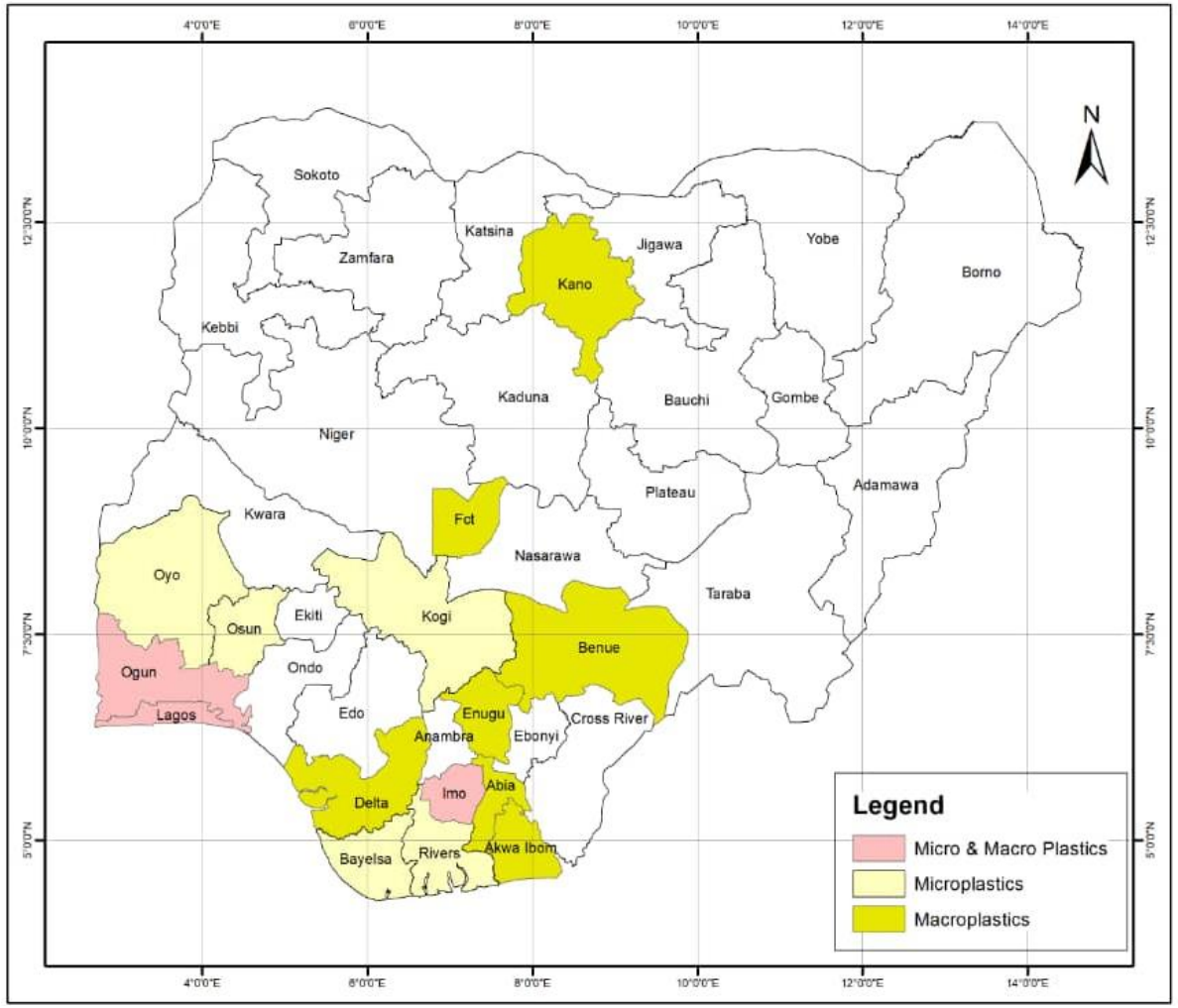
Social-Economic-Ecological Goals Nexus for addressing Plastic Pollution, Cont'd

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)

Challenges and Solutions – Way Forward for Africa



Source: Yalwaji et al. (2022)

Distribution of environmental plastic pollution studies across Nigerian states

Challenges and Solutions – Way Forward for Africa

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	This study
Nano- and mesoplastics	Occurrence in environmental matrices not studied in Nigeria except for one (1) record of mesoplastic	
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 generated	Zero to few records on use of plastic materials, collection, recycling and disposal	Duru et al., 2019
Plastic Management Policy	Lack of National policy on plastic waste management	Egun and Evbayiro, 2020

Source: Yalwaji et al. (2022)

References

Kumar, R., Verma, A., Shome, A., Sinha, R., Sinha, S., Jha, P. K., ... & Vara Prasad, P. V. (2021). Impacts of plastic pollution on ecosystem services, sustainable development goals, and need to focus on circular economy and policy interventions. *Sustainability*, *13*(17), 9963.

Vanapalli, K. R., Sharma, H. B., Ranjan, V. P., Samal, B., Bhattacharya, J., Dubey, B. K., & Goel, S. (2021). Challenges and strategies for effective plastic waste management during and post COVID-19 pandemic. *Science of The Total Environment*, *750*, 141514.

Yalwaji, B., John-Nwagwu, H. O., & Sogbanmu, T. O. (2022). Plastic Pollution in the Environment in Nigeria: A Rapid Systematic Review of the Sources, Distribution, Research Gaps and Policy Needs. *Scientific African*, e01220.

Acknowledgement

Project Partners

Lagos State Ministry of Environment and Water Resources

Federal Ministry of Environment

Federal Ministry of Science and Technology

Source: https://commons.wikimedia.org/wiki/File:Thank-you-word-cloud.jpg

Source: https://www.mvmediation.org/blog/conflict-resolution-ideas-day-44