

3. The Disproportionate Impacts of Plastics on Low- and Middle-Income Countries

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Plastic pollution is a global problem, but its impacts are not felt equally. According to the OECD First Global Plastics Outlook, globally, only nine percent of plastic waste is recycled. Fifteen percent is collected for recycling but forty percent of that is disposed of as residues. Another nineteen percent is incinerated, fifty percent ends up in landfill, and twenty-two percent evades waste management systems and goes into uncontrolled dumpsites, is burned in open pits, or ends up in terrestrial or aquatic environments, especially in poorer countries.¹

Issue of unmanaged and mismanaged plastic waste is especially acute in developing countries, where the infrastructure for collection, reuse, and recycling is often insufficient or lacking.² Plastic crisis is now exacerbated by growing imports of plastic waste from the high-income countries (HICs). Low- and Middle-Income Countries (LMICs) bear the brunt of plastic pollution's social, environmental, and economic consequences.³

Global North-South Divide

Plastic waste emissions are highest across countries in Southern Asia, Sub-Saharan Africa and Southeastern Asia. About sixty-nine percent (or 35.7

¹ See Organisation for Economic Co-operation and Development (OECD), *Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options* (OECD Publishing, 2022).

² See Shelby Browning, Betsy Beymer-Farris, and Jeffrey R. Seay, "Addressing the Challenges Associated with Plastic Waste Disposal and Management in Developing Countries," *Current Opinion in Chemical Engineering* 32 (2021), doi.org/10.1016/j.coche.2021.100682.

³ See World Wide Fund for Nature (WWF), *Who Pays for Plastic Pollution? Enabling Global Equity in the Plastic Value Chain* (World Wide Fund for Nature, 2023).

million tonnes (Mt) per year) of the world's plastic pollution comes from twenty nations, none of which are high income countries. India burns roughly 5.8 Mt of plastic each year and releases another 3.5 Mt of plastics into the environment (land, air, water) as debris. Cumulatively, India contributes to 9.3 Mt of plastic pollution in the world annually, Nigeria (3.5 Mt), Indonesia (3.4 Mt), and China (2.8 Mt).⁴ Despite the Global North having higher plastic waste generation rates than countries in the South, not a single high income country is “ranked in the top ninety polluters, because most have 100% collection coverage and controlled disposal.”⁵

Social, Environmental, and Economic Consequences

Plastic pollution creates negative social, environmental and economic impact. It hurts livelihoods dependent on natural resources causing unemployment. It is estimated that eighty percent of plastics, including single-use products like earbuds, sweet wrappers, straws and coffee cup lids, have little or no value at the end of life. Pollution from this sector alone could greatly impact fisheries that employ over twelve million Africans.⁶

Plastic pollution desecrates cultural and historical sites and violates the right to a healthy environment. Waterways, soil, and air are already polluted with plastic wastes, harming ecosystems and wildlife. Plastic pollution of water bodies is a threat to the establishment of a vibrant blue economy.⁷ Inadequate waste collection and disposal infrastructure lead to

⁴ See Joshua W. Cottom, Ed Cook, and Costas A. Velis, “A Local-to-Global Emissions Inventory of Macroplastic Pollution,” *Nature* 633, no. 8028 (2024): 101–108.

⁵ Cottom, et al., “A Local-to-Global Emissions Inventory of Macroplastic Pollution,” 103.

⁶ See Swati Singh Sambyal, “Five African Countries among Top 20 Highest Contributors to Plastic Marine Debris in the World,” *DownToEarth*, May 22, 2018, www.downtoearth.org.in/news/waste/when-oceans-fill-apart-60629.

⁷ See Sambyal, “Five African Countries Among Top 20 Highest Contributors to Plastic Marine Debris in the World;” Jenna R. Jambeck, Britta Denise Hardesty, Amy L. Brooks, Tessa Friend, Kristian Teleki, Joan Fabres, et al., “Challenges and Emerging Solutions to the Land-Based Plastic Waste Issue in Africa,” *Marine Policy* 96 (2018): 256–263.

plastic litter and open burning. Therefore, plastic production and its open burning contribute to greenhouse gas emissions, exacerbating climate change impacts.

The health impacts of plastics have been of concern. Plastic waste contaminates water sources and promotes the spread of diseases like malaria and cholera and an increased disease burden (e.g., respiratory issues, cancer, etc.).⁸ It has been estimated that the impacts of plastic pollution cost up to one million lives each year in low- and middle-income countries.⁹

Social and Environmental Justice

Social and environmental justice focuses on the equitable distribution of both environmental resources and burdens so that no one group of people bears a disproportionate share of the negative consequences resulting from industrial operations and/or government policies.

The adverse effects of plastic pollution and climate change are widespread but currently felt most keenly in certain geographies and among certain groups and populations least responsible for the pollution who lack the power or resources needed to address these problems.¹⁰ As a result, plastic pollution has been described as a new form of “colonialism.”¹¹ Plastic pollution creates dire inequities for people, the environment, and countries, and prevents individuals and societies from flourishing. Environmental injustices occur at local, national, and global scales, including injustices occurring between the regions of the Global

⁸ See World Wide Fund for Nature, *Who Pays for Plastic Pollution?*

⁹ See Sambyal, “Five African Countries Among Top 20 Highest Contributors to Plastic Marine Debris in the World.”

¹⁰ See Katharine A. Owens and Katie Conlon, “Mopping Up or Turning Off the Tap? Environmental Injustice and the Ethics of Plastic Pollution,” *Frontiers in Marine Science* 8 (2021), doi.org/10.3389/fmars.2021.713385.

¹¹ See Sedat Gündoğdu, ed., *Plastic Waste Trade: A New Colonialist Means of Pollution Transfer* (Springer, 2024).

North and Global South. Global North nations continue dumping waste in both domestic and global ‘pollution havens’ where the cost of doing business is much cheaper, regulation is virtually non-existent, and residents do not hold much formal political power.¹²

Gender Injustice and Impacts on Women Waste Pickers

Of the estimated twenty million waste pickers worldwide, the majority are women from socially and ethnically marginalized communities.¹³ Unjustly, women waste pickers are often “invisible” or disrespected in their societies; they work long hours in unhealthy conditions and earn lower wages compared to men.¹⁴ Limited attention is paid to the occupational health issues and social harms experienced by women waste pickers. Few studies from around the world report significant impacts on women as a result of consistent exposure to toxic plastic and electronic waste (e-waste), many of which contain known endocrine disruptors.¹⁵

¹² See Gündoğdu, *Plastic Waste Trade*; Randika Jayasinghe, “Waste Management in the Global North,” in *The Garbage Crisis: A Global Challenge for Engineers*, ed. R. Jayasinghe, U. Mushtaq, T. A. Smythe, and C. Baillie, Synthesis Lectures on Engineers, Technology, & Society (Springer, 2013), 69–86.

¹³ See Cecilia Allen, “An Inclusive Recovery: The Social, Environmental, & Economic Benefits of Partnering with Informal Recyclers,” *Global Alliance for Incinerator Alternatives* (GAIA) (2021), www.no-burn.org/resources/an-inclusive-recovery-the-social-environmental-economic-benefits-of-partnering-with-informal-recyclers/; Global Alliance of Waste Pickers, “The International Alliance of Waste Pickers Position on Extended Producer Responsibility (EPR)” (2021), epr.globalrec.org/position-on-epr/#:~:text=EPR%20should%20maintain%20or%20establish,formal%20and%20decent%20labor%20conditions.

¹⁴ See Philip J. Landrigan, Hervé Raps, Maureen Cropper, Caroline Bald, Manuel Brunner, Elvia Maya Canonizado, et al., “The Minderoo-Monaco Commission on Plastics and Human Health,” *Annals of Global Health* 89, no. 1 (2023), doi.org/10.5334/aogh.4056.

¹⁵ See Landrigan, et al., “The Minderoo-Monaco Commission on Plastics and Human Health;” Samuel Abalansa, Badr El Mahrar, John Icely, and Alice Newton, “Electronic Waste, an Environmental Problem Exported to Developing Countries: The Good, the Bad, and the Ugly,” *Sustainability* 13, no. 9 (2021), doi.org/10.3390/su13095302; Saqib

Some Drivers of Plastic Pollution in LMICs

Population growth will drive a range of urbanization challenges across Africa's biggest cities, the most pressing of which include availability of clean, safe drinking water and the need to manage the waste footprint amid a limited recycling infrastructure. Due to lack of clean drinking water, single-use sachets are popularly used.¹⁶ For example, in Nigeria, where only about twenty-nine percent of the population uses safely managed clean drinking water,¹⁷ absence of potable drinking water has led to water sachets, heat-sealed plastic sleeves of drinking water, becoming the source of drinking water for millions of Nigerians. Its widespread consumption has led to plastic pollution due to inadequate waste management infrastructure and poor waste disposal behavior. There is an informal waste collection economy, but this favours rigid plastic and disregards low-weight plastic water sachets because waste pickers are paid by weight. The improper management of plastics coupled with infrastructure not growing at the same pace means that only half of plastic waste is currently collected and around ten percent is recycled.¹⁸

Plastic pollution is further exacerbated by the growing middle class in Africa, creating large markets for consumer plastic goods and packaging.¹⁹

Hassan, Aswin Thacharodi, Anshu Priya, R. Meenatchi, Thanushree A. Hegde, R. Thangamani, et al., "Endocrine Disruptors: Unravelling the Link between Chemical Exposure and Women's Reproductive Health," *Environmental Research* 241 (2024), doi.org/10.1016/j.envres.2023.117385.

¹⁶ See United Nations Environmental Programme (UNEP), "The Rarely Told Story of the Widely Used Water Sachets," May 24, 2023, www.unep.org/news-and-stories/story/rarely-told-story-widely-used-water-sachets.

¹⁷ See UN Water, "Nigeria: SDG 6 Snapshot in Nigeria," www.sdg6data.org/en/country-or-area/nigeria.

¹⁸ See Sunil Kumar, Stephen R. Smith, Geoff Fowler, Costas Velis, S. Jyoti Kumar, Shashi Arya, et al., "Challenges and Opportunities Associated with Waste Management in India," *Royal Society Open Science* 4, no. 3 (2017), doi.org/10.1098/rsos.160764.

¹⁹ See Sambyal, "Five African Countries Among Top 20 Highest Contributors to Plastic Marine Debris in the World."

Waste mismanagement is associated with a lack of infrastructure in many African countries.²⁰

Way Forward

Plastic pollution disproportionately affects marginalized communities and communities living in close proximity to plastic production and waste sites, constituting an environmental injustice.²¹ It is important to recognize these vulnerable groups and include them in local decision making.

To address the disproportionate impacts of plastics, there is a need to acknowledge and address societal roles in plastic pollution, reduce the risks, and hold producers accountable. Further, there is a need to encourage community-led initiatives and education, incentivize recycling scheme, just transition and re-skilling of waste pickers. Successful strategies must address the diverse and context-specific technological, social, political, ecological, and economic challenges in each place where they are implemented. Specifically, LMICs needs sustainable solutions, not more plastics. Protecting the environment, health, cultural heritage, and economy of LMICs would require supporting local entrepreneurs to develop sustainable alternatives to plastics.



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²⁰ See Adwoa Coleman, “Water Sachet Packaging Found a Recycle Source in West African Country: Nigeria Needed a Readily Available, Affordable Access to Potable Water,” December 15, 2020, www.packagingstrategies.com/articles/95812-water-sachet-packaging-found-a-recycle-source-in-west-african-country; Kumar, et al., “Challenges and Opportunities Associated with Waste Management in India.”

²¹ See Juliano Calil, Marce Gutiérrez-Graudiņš, Azul Steffanie Munguía, and Christopher Chin, *Neglected: Environmental Justice Impacts of Marine Litter and Plastic Pollution* (United Nations Environment Programme, 2021).

health, plastic pollution, climate change and ethics. Her thirty-year career spans industry, academia, and research. She is an adjunct Associate Professor of Environmental Epidemiology at the Lead City University, Nigeria and an adjunct Researcher at the Nigerian Institute of Medical Research (NIMR). She has been the Principal and Co-Principal Investigator in various impactful projects including the Population-Based Interventions towards Reducing the burden of Hypertension in Nigeria (PoBIRH), the Lagos Air Quality Monitoring Program, and the Nigerian Environmental Epidemiology Accelerated Research (NEEAR) Program. She has been an expert reviewer and member of various international groups such as the *Lancet* Commission on Pollution and Health, the Minderoo-Monaco Commission on Plastics and Human Health, and the World Health Organization Personal Interventions and Risk Communication on Air Pollution. She is a Fellow of the Collegium Ramazzini, Fellow of the International Society for Environmental Epidemiology (ISEE), the inaugural chair of International Society for Environmental Epidemiology (ISEE) Africa chapter and past Councilor for Africa in the ISEE Council. She is a recipient of several national and international awards including the ISEE Rebecca James Baker Memorial Prize.