

ENDING PLASTIC POLLUTION: A GLOBAL Imperative for planetary and human health

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World Environment Day 2025, celebrated on June 5th, brings the global spotlight to one of the most pressing environmental crises of our time: plastic pollution. With the theme "Putting an End to Plastic Pollution," this year's observance underscores the urgency of collective action to address the plastic pandemic that is choking our ecosystems, contaminating food chains, and threatening human health. Hosted by Japan, the event serves as a call to governments, industries, civil society, and individuals to transition toward sustainable alternatives and strengthen global resolve to combat plastic waste.

Plastic, once hailed as a miracle material for its durability and versatility, has become a symbol of environmental degradation. Since the 1950s, more than 9 billion tonnes of plastic have been produced globally, and about 7 billion tonnes have ended up as waste. Shockingly, only around 9% of this has been recycled, while the rest is either incinerated, landfilled, or released into the environment. Every year, more than 400 EARTH ROOT • VOLUME 49 • JUNE 2025 million tonnes of plastic waste are generated, and at least 11 million tonnes leak into the oceans—equivalent to dumping a garbage truck full of plastic into the sea every minute.

The consequences of plastic pollution are farreaching. In marine environments, plastic debris entangles sea turtles, seabirds, and marine mammals. Microplastics, formed by the breakdown of larger plastics, are ingested by fish, shellfish, and eventually by humans. Studies have found microplastics in table salt, honey, drinking water, and even human blood and placenta, raising alarms about potential health effects ranging from hormonal disruption to inflammation and reproductive issues.

On land, plastic waste clogs drains, contributes to urban flooding, and creates breeding grounds for disease vectors like mosquitoes. Open burning of plastic waste—common in lowincome regions—releases toxic gases including dioxins, furans, and polychlorinated biphenyls (PCBs), which are known to cause cancer and respiratory illnesses. In agriculture, plastic

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mulch and packaging pollute soil, disrupt communities. microbial and hinder crop productivity.

Economically, plastic pollution imposes а burden. The United staggering Nations Environment Programme (UNEP) estimates the annual economic costs of plastic pollution to marine ecosystems alone at over \$13 billion. These costs stem from revenue losses in fisheries and tourism, as well as the expenses associated with cleanup efforts. Yet, the true cost may be far higher when human health and climate impacts are considered.

Despite these grim statistics, there is hope. A global movement is gathering momentum to tackle plastic pollution through systemic change, innovation, and behavioral transformation. In 2022, at the UN Environment Assembly in Nairobi, 175 countries agreed to negotiate a legally binding global treaty on plastic pollution, expected to be finalized by 2025. This treaty represents a historic opportunity to create a comprehensive framework covering the full lifecycle of plastics-from production and design to disposal and circular reuse.

Countries like Rwanda, Chile, and India have already made significant strides by banning single-use plastics and encouraging biodegradable alternatives. Japan, as the host of World Environment Day 2025, is investing in circular economy models that promote material reuse and recycling innovations. However, regulations alone will not suffice. Industries must shift toward eco-design principles, minimizing packaging and investing in materials that are truly compostable and safe for the environment. Innovation is also playing a critical role. From bioplastics made from algae and cassava starch to enzyme-based recycling and plastic-eating bacteria, science is offering promising solutions. Startups around the world are exploring ways to turn waste plastic into bricks, textiles, road material, and fuel. Scaling these innovations integrating them into national waste and management systems is crucial.

Individual actions, though often underestimated, are powerful drivers of change. Consumers can make a significant impact by refusing EARTH ROOT • VOLUME 49 • JUNE 2025



unnecessary plastic, carrying reusable bags and bottles, and supporting zero-waste products. Community cleanups, educational campaigns, and pressure on retailers to reduce packaging all contribute to a larger culture of environmental responsibility.

Education and awareness, especially among youth, are vital. School programs, eco-clubs, and digital platforms can instill values of sustainability from an early age. Encouraging creative engagement-through art, innovation challenges, and storytelling-can amplify the message and inspire action across demographics.

As we commemorate World Environment Day under the banner of "Putting an End to Plastic Pollution," the message is clear: the plastic crisis is not just an environmental issue-it is a threat to human rights, health, and the wellbeing of future generations. Ending plastic pollution requires more than just bans or cleanup drives. It demands a complete rethinking of how we produce, consume, and dispose of materials.

We must recognize that plastic is not inherently evil-it is how we manage and misuse it that determines its impact. By investing in sustainable materials, enforcing sound policies, redesigning products, and fostering global cooperation, we can break free from our toxic dependence on plastic.

This World Environment Day is not just a celebration of nature—it is a clarion call to safeguard it. Let this be the year the world unites with unwavering determination to eliminate plastic pollution and pave the way for a cleaner, healthier, and more sustainable planet. 05