Florida High Schools Model United Nations

FHSMUN 46

UNITED NATIONS ENVIRONMENTAL PROGRAMME (UNEP)

A PROTOCOL FOR PHASING OUT PLASTICS

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February 2025

Introduction: A Forever Friend?

The 20th century forged a revolutionary material, engineered to be inexpensive and versatile—achieving any property desired through combining chemical additives. Like mixing magical potions, this innovation could be concocted and cast into compositions lighter and more durable than wood, transparent like glass or opaque like stone, less corrosive than metal yet just as tough, more insulative than rubber, and even more aesthetic thanks to colorful pigments.

This innovation is plastic—accordingly defined by the United Nations as any "polymeric material that may contain other substances to improve performance and/or reduce costs."[1] Although there are multitudes of plastic types categorized by chemical structure, the six most common are High and Low-Density Polyethylene (HDPE & LDPE), used for food packaging film, cleaning product bottles, pipes, and even boats; Polypropylene (PP), used for vehicle parts, furniture, single-use face masks, and medical devices; Polyvinyl chloride (PVC), used for construction, cable insulation, and plumbing; Polyethylene terephthalate (PET), used for polyester fibers in clothes and water bottles—replacing glass; Polyurethane (PUR), used in paints, adhesive, and insulation; and Polystyrene (PS), used for cutlery and cups.[2]

The introduction of plastics—popularized commercially after WW2—brought several advantages to public health: bottles providing clean drinkable water, medical devices like sterile surgical equipment and pill packaging preventing the spread of diseases, food containers reducing food waste by prolonging the lifetime of meats and vegetables, and lightweight materials reducing transportation CO2 emissions.[3] With their myriad of uses and inexpensive production, plastics became a boosting force for many economies, with the global plastic industry estimated to have a revenue of more than USD 600 billion. [4] China generates one-third of the world's plastic production, and the plastic industry provides jobs to more than 1.5 million people in Europe.[5] It is clear how much we rely on plastic, producing an average of " 430 million tonnes of plastic per year," according to the UN.[6] Plastic is everywhere, from the clothes we wear to the satellites we launch and also—wait—to the food we eat?

Unfortunately, life in plastic was not as fantastic as we thought; the durability we praised became a curse: most plastic products outlive their purpose, taking between "20 to 500 years to decompose," thus creating a waste crisis.[7] We became plagued by a new disease that infects regardless of species or habitat—not microbial or viral, but synthetic—slowly killing our planet by rendering our soils infertile, accumulating in oceans like a growing tumor, and crawling into our guts and lungs until we choke. Further complicating the issue, weathering from waves and ultraviolet radiation degrade plastic into brittle states, breaking into microplastics and

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[1] "Plastic Waste | UNDRR," June 7, 2023, https://www.undrr.org/understanding-disaster-risk/terminology/hips/tl0039.
[2] Anthony L. Andrady and Mike A. Neal, "Applications and Societal Benefits of Plastics," Philosophical Transactions of the Royal Society B: Biological Sciences 364, no. 1526 (July 27, 2009): 1977–84, https://doi.org/10.1098/rstb.2008.0304.
[3] Ibid.
[4] "Plastic Market Size, Share, Trends & Growth Report, 2030," accessed January 17, 2025, https://www.grandviewresearch.com/industry-analysis/global-plastics-market.
[5] "Plastics – the Fast Facts 2024 • Plastics Europe."
[6] Yinuo, "Fast Facts - What Is Plastic Pollution?," United Nations Sustainable Development (blog), August 25, 2023, https://www.un.org/sustainabledevelopment/blog/2023/08/explainer-what-is-plastic-pollution/.
[7] United Nations, "In Images: Plastic Is Forever," accessed January 17, 2025, https://www.un.org/en/exhibits/exhibit/in-images-plastic-forever.

nanoplastics (MNPs),[8] which are capable of penetrating cell walls—disrupting the growth and reproduction of organisms—and are difficult to separate from soil and sea-floor sediment once dispersed.[9] With MNPs found everywhere from mountaintops to the Mariana Trench, plastic pollution has sedimented itself onto our fossil records.[10] Many archeologists argue our plastic-piled soil layers differentiate themselves as marking a Plastic Age, or rather the start of the "Anthropocene"—a term coined by Nobel Prize‑winning chemist defining our era as one "in which humans dominate the Earth's surface geology and ecosystems as never before."[11]

Currently, in the Anthropocene, there is an estimated seven billion tonnes of plastic waste—a mass equivalent to 50 Mount Everests—of which those recycled amount to less than 10%.[12] Contributing to the crisis, approximately 40% of yearly plastic production is constituted by single-use plastics,[13] and 36% is manufactured for packaging.[14] While estimates vary based on organizations like Plastics Europe[15] or the Center for International Environmental Law,[16] between 90 and 99% of plastic produced comes from virgin feedstock—fossil fuels—releasing greenhouse gas emissions estimated to generate up to "19% of global greenhouse emissions by 2040" according to the UN.[17] We are all affected by the waste crisis, whether rising temperatures or marine food web disruptions—with 1.6 million square kilometers of plastic amalgamating in the middle of the Ocean as the Great Pacific Garbage Patch[18]—that infiltrate the foods we eat. With significant disagreement, some scientists estimate people consume about 5 grams of NMPs—about a credit card[19]—per week, while others claim this is an overstatement.[20]

Regardless, while everyone is affected by plastic pollution, some countries—particularly low- and middle-income countries (LMICs)—shoulder a disproportionate share of the burden, hinting at the underlying political issue of waste colonialism. Some reports suggest 56 companies—most from developed countries—generate approximately more than 50% of plastic waste,[21] and many of these nations, like Germany and the UK, export swarms of plastic waste to poorer nations—Germany being the biggest exporter in the European Union sending 1 million

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[8] P. G. C. Nayanathara Thathsarani Pilapitiya and Amila Sandaruwan Ratnayake, "The World of Plastic Waste: A Review," Cleaner Materials 11 (March 1, 2024): 100220, https://doi.org/10.1016/j.clema.2024.100220.
[9] Raffaele Porta, "Anthropocene, the Plastic Age and Future Perspectives," FEBS Open Bio 11, no. 4 (April 1, 2021): 948–53, https://doi.org/10.1002/2211-5463.13122.
[10] Damian Carrington and Damian Carrington Environment editor, "After Bronze and Iron, Welcome to the Plastic Age, Say Scientists," The Guardian, September 4, 2019, sec. Environment, https://www.theguardian.com/environment/2019/sep/04/plastic-pollution-fossil-record.
[11] Porta, "Anthropocene, the Plastic Age and Future Perspectives."
[12] "Visual Feature | Beat Plastic Pollution," UNEP, accessed January 18, 2025, http://unep.org/interactive/beat-plastic-pollution/.
[13] Laura Parker, "Plastic Pollution Facts and Information," National Geographic, September 23, 2024, https://www.nationalgeographic.com/environment/article/plastic-pollution.
[14] "Visual Feature | Beat Plastic Pollution."
[15] "Plastics – the Fast Facts 2024 • Plastics Europe," Plastics Europe, accessed January 17, 2025, https://plasticseurope.org/knowledge-hub/plastics-the-fast-facts-2024/.
[16] "Fossil Fuels & Plastic," Center for International Environmental Law (blog), accessed January 18, 2025, https://www.ciel.org/issue/fossil-fuels-plastic/.
[17] "A New Plastics Economy Is Needed to Protect the Climate | UNFCCC," accessed January 18, 2025, https://unfccc.int/news/a-new-plastics-economy-is-needed-to-protect-the-climate.
[18] Frankie Adkins, "Visualising the Great Pacific Garbage Patch," BBC, accessed January 18, 2025, https://www.bbc.com/future/article/20240115-visualising-the-great-pacific-garbage-patch.
[19] Chris Cillizza, "Analysis: We Consume up to a Credit Card's Worth of Plastic *every* Week," CNN, October 31, 2022, https://www.cnn.com/2022/10/31/us/microplastic-credit-card-per-week/index.html.
[20] Martin Pletz, "Ingested Microplastics: Do Humans Eat One Credit Card per Week?," Journal of Hazardous Materials Letters 3 (November 1, 2022): 100071, https://doi.org/10.1016/j.hazl.2022.100071.
[21] Win Cowger et al., "Global Producer Responsibility for Plastic Pollution," *Science Advances* 10, no. 17 (April 24, 2024): eadj8275, https://doi.org/10.1126/sciadv.adj8275.

tonnes per year, and the UK sending 61% of its generated waste.[22] Initially, a lot of this waste was exported to China, but following its 2018 ban on plastic waste imports, high-income countries (HICS) have turned to nations like Turkey, Vietnam, and Malaysia to handle their waste, struggling with fewer regulations and insufficient infrastructure to process or recycle the influx.[23] As a result, LMICs are being flooded by landfills of plastic they didn't even produce.

Therefore, resolving the plastic crisis is of utmost importance to the United Nations Environment Programme (UNEP), as ignoring the byproducts of plastic production will render attempts to achieve the UN's Sustainable Development Goals (SDGs) impossible. The impacts of plastic permeate into all 17 goals sought to be accomplished by 2030, including global access to good health (SDG 3), available clean water (SDG 6), sustainable cities (SDG 11), sustainable consumption (SDG 12), climate change reduction (SDG 13), healthy oceans (SDG 14) and healthy land ecosystems (SDG 15).[24] Ergo, The countries of the UNEP must work together to craft a holistic plan that tackles the replacement of plastic production, reduction of plastic waste, and restriction of waste colonialism.

Plastics of the Past: Global Efforts to Break the Mold

In February of 2017, the UNEP launched the Clean Seas Campaign. With the support of 69 nations, representing 76% of the world's coastline, it became the largest global effort to reduce plastic pollution and marine litter[25]. The campaign consisted of widespread publications across various platforms aimed at increasing international awareness of marine plastic pollution, urging governments to adopt policies to reduce single-use plastics, encouraging businesses to reduce plastic packaging, and inspiring individual consumers to adopt reusable alternatives. In the spirit of Sustainable Development Goal (SDG) 17, Partnership for the Goals, the UNEP collaborated with both public and private sector leaders by allying with the Ellen McArthur Foundation[26] to establish the necessary basis for a global commitment to phasing out plastics. The movement has since rebranded to the #BeatPlasticPollution campaign and has seen notable international success; however, the promise for a lasting, legally binding global commitment has yet to be fulfilled.

Notably, in March of 2022, UN Member States established the Intergovernmental Negotiating Committee (INC), intending to draft a resolution by the end of 2024 that would legally bind member states to their pledge of phasing out plastics[27]. The creation of the INC symbolized a giant step towards the success of SDGs 12-14, but that hope is beginning to dwindle. Despite the five INC sessions that took place over the last two years, the UNEP has been unable to complete the agreement and has decided to continue the discussion in 2025. With

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[22] Ruth Michaelson, "'Waste Colonialism': World Grapples with West's Unwanted Plastic," The Guardian, December 31, 2021, sec. Environment, https://www.theguardian.com/environment/2021/dec/31/waste-colonialism-countries-grapple-with-wests-unwanted-plastic.
[23] Ibid.
[24] "THE 17 GOALS | Sustainable Development," The United Nations, accessed January 18, 2025, https://sdgs.un.org/goals.
[25] "About | Cleanseas." *Www.cleanseas.org*, www.cleanseas.org/about.
[26] UNEP. "Clean Seas Campaign Promotes the Right to a Healthy Environment, Including Plastic-Free Oceans." *UNEP*, 9 June 2021, www.unep.org/news-and-stories/story/clean-seas-campaign-promotes-right-healthy-environment-including-plastic.
[27] ---. "Historic Day in the Campaign to Beat Plastic Pollution: Nations Commit to Develop a Legally Binding Agreement." *UN Environment*, 2 Mar. 2022, www.unep.org/news-and-stories/press-release/historic-day-campaign-beat-plastic-pollution-nations-commit-develop.

the 2030 Agenda deadline rapidly approaching, international commitments like this one must be appropriately met and carried out before the damage becomes irreversible.

Bagging Profits: Opportunities in Sustainable Alternatives

A 2019 report by the World Wildlife Fund found that the lifetime cost of the plastic produced in that year was 3.7 trillion USD—a number that is set to double by 2040[28]. That cost is absurdly high, but the issue is how it is distributed. Over 75% of the global stake in plastic production revenue is held by only 10 nations, with the U.S. and China at the top of the list. Despite this, LMICs bear a total lifetime plastic cost that is 10 times higher than that of their high-income counterparts[29].

One of the leading arguments against phasing out plastics heard from these developed nations is that doing so would significantly disrupt the supply chain and threaten national economic stability. However, recent studies have begun to disprove that logic. It is estimated that replacing just 20% of single-use plastic packaging in the U.S. with reusable alternatives would create 193,000 jobs and the potential for businesses to save up to 10 billion USD[30]. Furthermore, while opting for alternatives to plastic will require an initial investment, when factoring in the costs of addressing future plastic-related healthcare concerns and cleaning up plastic pollution as well as the petroleum that would be saved by reducing plastic production, the choice becomes clear: phasing out plastic is a necessary step for the success of the 2030 Agenda.

A notable example of the benefits of this process can be seen through the efforts of the Swedish furniture company IKEA. IKEA is a multibillion-dollar international corporation that has vowed to completely phase out plastic from consumer packaging by 2028. They began this process in 2016 and, since then, have managed to decrease their supply chain emissions by 24% while simultaneously increasing their revenue by over 30%[31]. IKEA's success proves that eco-friendly initiatives don't have to be viewed as an obligation, a price the world has to pay for the sake of the environment. Instead, they should be seen as an opportunity—a chance to rectify global economic injustices, ensure the conservation of safe drinking water, and earn a profit all at once.

Case Study: Rwanda

One of the countries leading the world in plastic reduction is Rwanda. In 2003, the Rwandan Ministry of Health investigated the effects single-use plastics have on the environment of Rwanda and its people[32]. The investigation found that plastics were causing significant damage to Rwandan biodiversity and agriculture and posing a threat to human health. After the

[28] "The Hidden Cost of Plastic." *Www.wwfdrc.org*, www.wwfdrc.org/?36252/The-hidden-cost-of-plastic.
[29] *Economic Benefits of Phasing out Plastics*.
[30] Ibid.
[31] Riddle, Mary. "Ikea Proves Increased Revenue and Sustainability Go Hand-In-Hand." *Www.triplepundit.com*, 22 Feb. 2024, www.triplepundit.com/story/2024/ikea-cut-emissions-grew-business/795446.
[32] Break Free from Plastic, and GER-Rwanda. Rwanda: A Global Leader in Plastic Pollution Reduction. Berkeley, CA: Global Alliance for Incinerator Alternatives, 2021. Accessed January 20, 2025. https://www.no-burn.org/wp-content/uploads/Rwanda_A-global-leader-in-plastic-pollution-reduction_April-2021.pdf.

investigation results were published, the Rwandan parliament began restricting single-use plastics in the country[33]. In 2004, the parliament published restrictions about the type of plastic bags that could be used in Rwanda. This first ban started with shopping bags less than 60 microns thin[34]. Four years after this first ban, the Rwandan parliament passed law N57/2008, which altogether prohibited the manufacturing, use, and sale of any kind of plastic bag [35]. Then 2019, after more research found that plastics were still showing up in Rwandan ecosystems, the parliament passed law N17/2019[36]. This law prohibits all importation, manufacturing, and use of single-use plastics, including straws, food containers, and bottles. These laws carry heavy penalties for breaking them, including prison time and fines of up to $7211.89 United States Dollars (USD).

Laws are not the only way Rwanda has worked to reduce the effects of plastics in the country. A significant portion of this effort in Rwanda has come from citizen involvement. In 1998, the Rwandan government re-introduced a traditional practice called “Umuganda” as a government program [37]. Umuganda takes place on the last Saturday of each month, and from 8 am until 11 am (three hours), Rwandan citizens aged sixteen to sixty-five participate in community service, including plastic waste cleanup in their waterways, cities, and forests[38]. Umuganda is also a time for the community to come together and discuss how to solve the problems affecting their community—including how to best collect and dispose of the plastics polluting their land.

The Rwandan government and people have been working to keep their country clean since 2003, and their efforts have not weakened over the past twenty-one years. Kigali—the capital of Rwanda—has been declared the cleanest city in Africa, and in general, Rwanda is considered a leader in plastic pollution reduction[39]. Rwanda is not just leading by example, in 2022, Rwanda and Norway launched the UN High Ambition Coalition (HAC) to End Plastic Pollution[40]. This HAC was first created after UN Environment Assembly (UNEA) resolution 5/14 passed in March 2022 to start negotiations for an “international legally binding instrument” to end plastic pollution.

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[33] "Rwanda Plastic Bag Ban." Plastic Oceans. Last modified January 23, 2018. Accessed January 20, 2025. https://plasticoceans.org/rwanda-plastic-bag-ban/#:~:text=In%202008%20the%20East%20African,using%20paper%20as%20an%20alternative.

[34] "Rwanda Plastic Bag Ban." Plastic Oceans. Last modified January 23, 2018. Accessed January 20, 2025. https://plasticoceans.org/rwanda-plastic-bag-ban/#:~:text=In%202008%20the%20East%20African,using%20paper%20as%20an%20alternative.

[35] Relating to the Prohibition of Manufacturing, Importation, Use and Sale of Polythene Bags in Rwanda, A. 57/2008 (Oct. 9, 2008). Accessed January 20, 2025. https://faolex.fao.org/docs/pdf/rwa93800.pdf.

[36] Law Relating to the Prohibition of Manufacturing, Importation, Use and Sale of Plastic Carry Bags and Single-Use Plastic Items, H.R. 17/2019 (Oct. 9, 2019). Accessed January 20, 2025. https://elaw.org/wp-content/uploads/archive/attachments/publicresource/Law_relating_to_the_prohibition_of_manufacturing__importation__use_and_sale_of_plastic_carry_bags.pdf.

[37] "Umuganda." All About Rwanda: Your Online Guide to Rwanda Africa. Accessed January 20, 2025. https://www.allaboutrwanda.com/umuganda.html.

[38] United Nations. "Umuganda: Rwanda's Audacity of Hope to End Plastic Pollution." United Nations Development Programme. Last modified November 15, 2023. Accessed January 20, 2025. https://www.undp.org/blog/umuganda-rwandas-audacity-hope-end-plastic-pollution#:~:text=In%202008%2C%20Rwanda%20became%20one,is%20not%20an%20isolated%20law.

[39] Break Free from Plastic, and GER-Rwanda. Rwanda: A Global Leader in Plastic Pollution Reduction. Berkeley, CA: Global Alliance for Incinerator Alternatives, 2021. Accessed January 20, 2025. https://www.no-burn.org/wp-content/uploads/Rwanda_A-global-leader-in-plastic-pollution-reduction_April-2021.pdf.

[40] GRID-Arendal. High Ambition Coalition to End Plastic Pollution. Last modified 2022. Accessed January 20, 2025. https://apps1.unep.org/resolutions/uploads/high_ambition_coalition_to_end_plastic_pollution_joint_statement_0.pdf.

Plastics and Public Health: A Growing Concern

The increasing production and prevalence of plastics in everyday use have led to a significant increase in environmental pollution and consumption of MNPs. The non-degradable nature of plastic allows MNPs to persist in the environment, contaminating air, water, soil, and, ultimately, the food chain. Various pathways, including soil, water, and air, contribute to MNP contamination in food products like fruits, vegetables, seafood, and packaged foods. These occurrences lead to the consumption and accumulation of MPs in humans, which could cause health detriments in the long run.

The ecological risks of microplastics are well-documented, but their effects on human health are unknown. Recent studies have identified MP contamination in many food items, including seafood, table salt, and drinking water. This has led to concerns about dietary exposure, opening up a pathway to human health risks due to contaminated goods. Currently, the environment is riddled with MP pollution across soil, freshwater, and air, contributing to the leaching of MP sources in food. MPs exist in various food items, which can act as potential sources during the food acquisition process, impacting the estimated human intake of MPs. They also have the potential to translocate and accumulate in the human body. Given the unavoidable lifetime exposure to MPs, there is an urgent need for a better understanding of their sources in food and a comprehensive assessment of human intake.

Ecosystems Under Siege: Plastics in the Natural World

Plastic pollution also has a negative impact on marine organisms through bioaccumulation due to biomagnification of chemicals. Bioaccumulation is the gradual accumulation of harmful materials such as pesticides and chemicals in organisms due to their rate of taking these substances being greater than the rate by which they can eliminate them by metabolism or excretion. Sharks experience biomagnification, or the moving of toxins up the food chain, as organisms of higher trophic levels consume organisms of lower levels that have already ingested chemicals, resulting in bioaccumulation within them. This susceptibility to contamination uptake can be accredited to sharks' long lifespans, high levels on the trophic pyramid, and large, lipid-rich livers. When humans continually pollute the ocean and other bodies of water with Persistent Organic Pollutants (POPs or synthetic/man-made chemicals), which cannot be easily broken down and build up in the fatty tissues of organisms, marine animals from lower trophic levels such as fish and higher trophic levels like sharks all intake contaminants. Additionally, due to their high trophic level, sharks consume the pollutants from the water and the chemicals from the contaminated organisms from lower trophic levels. This causes a large amount of bioaccumulation due to biomagnification to build up within sharks, causing them to release exponentially larger concentrations of toxins when they die. Furthermore, bioaccumulation from Persistent Organic Pollutants doesn't end with an individual once it dies, POPs are also passed onto the organism's offspring, meaning they are born with elevated levels of toxins. This phenomenon can also cause deformities in offspring, including

interfering with their endocrine, immune, and neural systems, reproduction, development, and growth, reducing their chances of survival and decreasing the number of these critically low populations.

Case Study: A Path Forward with #BreakFreeFromPlastic

Although the international community has allowed the plastic crisis to run rampant for far too long, it's essential to recognize and learn from the progress that has been made—work like that of the #BreakFreeFromPlastic (BFFP) movement.

BFFP is an international movement of over 15,000 organizations and individuals seeking to end plastic pollution by emphasizing prevention over response[41]. Their proactive approach to climate advocacy has enabled them to fight petrochemicals successfully, push for corporate accountability, educate the public, and build zero-waste communities for nearly a decade[42]. Most recently, they've concentrated on pressuring nations to keep their promise in 2022: using the INC to draft a legally binding plastics treaty by the end of 2024. In the days leading up to INC-5, BFFP organized marches all across South Korea[43] and delivered a petition signed by nearly three million people demanding a strong plastics treaty[44]. Despite the INC's failure to finalize the treaty during INC-5, BFFP's work demonstrates the scale of public support for climate reform. It makes it clear to the global community that their tradition of empty promises will no longer be allowed to continue.

Conclusion

Over 400 million tonnes of plastic waste are produced worldwide each year, and if the historic trends of plastic production continue, global plastic production will reach over 1,000 million tonnes by 2050[45]. In addition to the overall growth in plastic production, the percentage of single-use plastics produced yearly is growing exponentially; up to 50 percent of the world's yearly plastic is single-use plastics[46]. Since 2002, many countries worldwide have been working to reduce their dependence on single-use plastics and mitigate plastic pollution. However, despite these efforts, plastic pollution is still a growing issue. Over 8 million tonnes of plastic end up in the ocean every year[47]. Bodies of water contaminated with plastic and plastic by-products are

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[41] admin. "About." *Break Free from Plastic*, www.breakfreefromplastic.org/about/.

[42] Ibid.

[43] Break. "At Least 1,500 March in Busan Demanding Cuts in Plastic Production as Global Treaty Talks Reach Final Stage | Break Free from Plastic." *Break Free from Plastic*, 23 Nov. 2024, www.breakfreefromplastic.org/2024/11/23/hundreds-march-in-busan-demanding-cuts-in-plastic-production/. Accessed 22 Jan. 2025.

[44] Hub, Comms. "Greenpeace, WWF, Break Free from Plastic Deliver Almost 3 Million Signatures Demanding Strong Global Plastics Treaty | Break Free from Plastic." *Break Free from Plastic*, 24 Nov. 2024, www.breakfreefromplastic.org/2024/11/24/greenpeace-wwf-break-free-from-plastic-deliver-almost-3-million-signatures-demanding-strong-global-plastics-treaty/.

[45] United Nations. "Beat Plastic Pollution." United Nations Environmental Programme. Accessed January 14, 2025. https://www.unep.org/interactives/beat-plastic-pollution/.

[46] Plastic Oceans International. "Pollution Facts." Plastic Ocean. Accessed January 14, 2025. https://plasticoceans.org/the-facts/#:~:text=Quite%20simply%2C%20humans%20are%20addicted,at%20least%20several%20hundred%20years.

[47] Excell, Carole. "127 Countries Now Regulate Plastic Bags. Why Aren't We Seeing Less Pollution?" World Resources Institute. Last modified March 11, 2019. Accessed January 14, 2025. https://www.wri.org/insights/127-countries-now-regulate-plastic-bags-why-arent-we-seeing-less-pollution

considered major environmental hazards[48]. Once plastics enter waterways, they threaten fish and wildlife. Then, after they enter the food chain, they negatively affect human health—one of the most common plastics in the world is polystyrene (commonly known as styrofoam), polystyrene is very present in packaging and in packaging and food containers, it is also a human carcinogen[49]. It has been linked to multiple different health problems like blindness, poor memory and an impaired nervous system[50]. Polystyrene sitting in landfills releases methane with over twenty times the ozone-destroying strength as CO2 emissions[51]. In addition, polystyrene breaks down into smaller particles than most other plastics, and animals often mistake the particles for food[52]. Despite the well-documented ill-effects of polystyrene, over fourteen billion tonnes of polystyrene are produced yearly, and over five million tonnes of it ends up in the waterways yearly[53]. The worldwide reliance on plastics and the lack of proper pollution prevention has caused incredible environmental damage and poses increasing risks for all living things[54]. The damage caused by plastic pollution is reaching an irreversible tipping point[55], but many of the damages caused by overreliance on plastics can be mitigated.

Over 120 countries have enacted legislation regulating single-use plastics and working towards reducing their dependence on plastics in general[56]. Other countries have created programs working towards reducing the amount of plastic pollution in their state, with some nations even beginning to help neighboring countries reduce their plastic pollution[57]. Some countries have even banned plastic waste exports, creating excess plastic pollution in LMICs[58]. These countries have recognized that single-use plastic bans are insufficient to save our environment. Actions must be taken to reduce international dependence on plastics and the devastating amount of plastic pollution in waterways and on land. Pollution reduction projects like the *"Pacific Ocean Litter Project" (POLP),* founded by Australia[59], the *"GloLitter"* partnerships project founded by Norway, the International Maritime Organization and the Food

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[48] United Nations. "Tackling Marine Debris." United Nations Environmental Programme. Accessed January 14, 2025. https://www.unep.org/regions/north-america/regional-initiatives/tackling-marine-debris.

[49] World Centric. "The perils of polystyrene." World Centric Sustainablity. Accessed January 14, 2025. https://www.worldcentric.com/polystyrene/#:~:text=Polystyrene%2C%20commonly%20referred%20to%20as,as%20a%20likely%20human%20carcinogen.

[50] "The Problem(s) with Expanded Polystyrene (Styrofoam)." Beyond Plastics. Accessed January 14, 2025. https://www.beyondplastics.org/fact-sheets/polystyrene.

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[58] European Union. "Plastic waste shipments." Directorate-General for Environment. Last modified January 1, 2021. Accessed January 23, 2025. https://environment.ec.europa.eu/topics/waste-and-recycling/waste-shipments/plastic-waste-shipments_en#:~:text=Exporting%20hazardous%20plastic%20waste%20(A3210,only%20authorised%20under%20specific%20conditions.

[59] Secretariat of the Pacific Regional Environment Programme. "Pacific Ocean Litter Project." Pacific Ocean Litter Project. Pacific Regional Environment Programme. Last modified 2019. Accessed January 23, 2025. https://www.sprep.org/polp.

and Agriculture Organization[60]; the UN's *"Global Partnership on Plastic Pollution and Marine litter"*[61], and many similar projects have seen success in reducing plastic use and pollution within their operating region. These projects do more than simply physically remove plastics from the world. POLP, for example, is attempting to enact legislation against plastic use and provide easy and reliable alternatives to single-use plastics in all member states[62]. Action towards phasing out plastics is not just about preventing pollution but also about reducing plastic production. In 2022, the UNEA created an INC to write a treaty governing international plastic use[63] with the ambitious deadline of 2024[64]. While the deadline for the INC passed without success, there is still a chance to complete the INC's goal. At the end of INC-5, instead of officially closing the session, the member states extended the meeting and created INC-5.2, which will take place sometime in 2025[65]. Without formally extending the deadline, INC-5.2 will be the last chance for the member states to develop binding legislation for phasing out plastics. Despite the lack of an official treaty between 2022 and 2024, the INC has made significant inroads in creating international plastic-use legislation. The current treaty draft (the Chair's Text[66]) has majority support[67, 68]. Plastic pollution is a problem that affects every corner of the world. Without international cooperation to phase out plastics, no country will ever be completely free from the threats that plastics pose.

Guiding Questions for Research

1. What efforts are being made to limit the impacts of plastic pollution within your country? How can your delegation improve on this?
2. How are proposed resolutions accounting for environmental justice? Who is being included and excluded from the decision-making process? How are environmental and economic burdens being distributed across population groups?
3. How will a transition to plastic alternatives impact your nation's economy? Will this process eliminate jobs or create them?
4. Does your country face any unique problems that could pose challenges when phasing out plastics? Does your country have any unique solutions to plastic problems that the UNEP could benefit from?

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[60] GloLitter. Last modified 2019. Accessed January 23, 2025. https://glolitter.imo.org/.
[61] United Nations. "Global Partnership on Plastic Pollution and Marine Litter." United Nations Environment Programme. Last modified 2012. Accessed January 23, 2025. https://www.unep.org/explore-topics/oceans-seas/global-partnership-plastic-pollution-and-marine-litter.
[62] Secretariat of the Pacific Regional Environment Programme. "Pacific Ocean Litter Project." Pacific Ocean Litter Project. Pacific Regional Environment Programme. Last modified 2019. Accessed January 23, 2025. https://www.sprep.org/polp.
[63] United Nations. "Intergovernmental Negotiating Committee on Plastic Pollution." United Nations Environment Programme. Last modified March 2022. Accessed January 23, 2025. https://www.unep.org/inc-plastic-pollution.
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[65] "UN Plastics Treaty Talks in Busan (INC-5) End With No Agreement, But Plan For INC-5.2." Plastic Pollution Coalition. Last modified December 5, 2024. Accessed January 23, 2025. https://www.plasticpollutioncoalition.org/blog/2024/12/5/plastics-treaty-talks-end-with-no-agreement.
[66] "Chair's Text." Working paper, Intergovernmental Negotiating Committee, December 1, 2024. Accessed January 23, 2025. https://wedocs.unep.org/bitstream/handle/20.500.11822/46710/Chairs_Text.pdf?ref=csofutures.com.
[67] Michel, Melodie. "Global Plastics Treaty talks to resume in 2025 after INC-5 ends in deadlock." CSO Futures. Last modified December 2, 2024. Accessed January 23, 2025. https://www.csofutures.com/news/global-plastics-treaty-talks-to-resume-in-2025-after-inc-5-ends-in-deadlock/.
[68] Simon, Erin, Kevin Keane, and Sheila Bonini. "Plastic Pollution: UN treaty talks and corporate action." Interview by Seth Larson. World Wildlife Fund. Last modified December 10, 2024. Accessed January 23, 2025. https://www.worldwildlife.org/blogs/nature-breaking/posts/plastic-pollution-un-treaty-talks-and-corporate-action.

5. How can nations collaborate to identify and mitigate the primary pathways (air, soil, water) through which plastics contaminate the environment?

Guiding Questions for Debate

1. Should plastic reform be implemented immediately, emphasizing the urgent need to address the plastic crisis, or should this process be carried out gradually, prioritizing the economic stability of sovereign nations?
2. How can countries with limited funds keep up with the rest of the world when phasing out plastics? How can reform be implemented to alleviate the additional burden of mismanaged plastic waste and plastic waste dumping on LMICs?
3. How can the UNEP work with NGOs and the private sector to reduce plastic dependency and waste?
4. How should the international community prioritize research and funding to better understand the health impacts of microplastics on vulnerable populations?
5. What strategies can be implemented to educate and engage the public about the ecological consequences of plastic pollution and bioaccumulation?

A Message From The Authors

Delegates,

We're thrilled to see so many students forming part of the UNEP this year; not only because we find the environment interesting, but even more so because we'd like to keep it. With fires spreading across Los Angeles, snow falling in Florida, and unprecedented levels of air pollution in India, it's clear that now—more than ever—it's imperative that young people like yourself take an interest in tending to our environment.

The phasing out of plastics is a topic that, in one way or another, impacts all 17 of the Sustainable Development Goals, so if we hope to even come close to achieving the 2030 Agenda, we need action *now*. In this committee, we'd like to see civilized, but passionate, debates that reflect country policy and discuss all the complexities of the plastic crisis. We want to hear why plastic reform has been largely unsuccessful and how we can change that. We want solutions that address wildlife, food contamination, discrepancies in who bears the economic burden, and more. In short, we want you all to emulate our cycle theme and Transform Global Collaboration for Sustainable & Equitable Development.

Wishing you the best of luck,
The UNEP Team

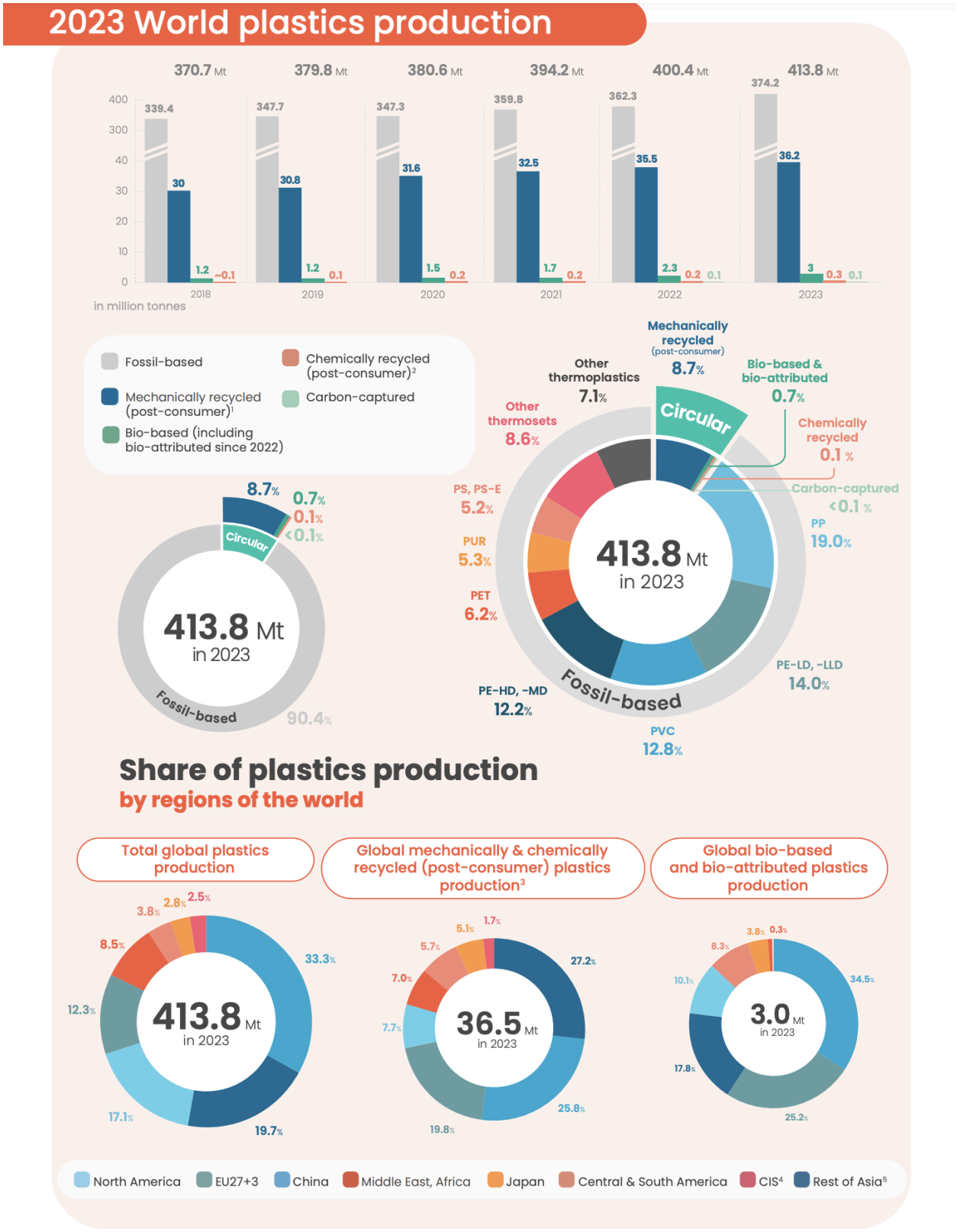

Figure 1. Statistics on global plastic production increase categorized by process, type of plastic produced, and country in 2023. Pulled from *Plastics – the Fast Facts 2024.* Plastics Europe.