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A GLOBAL FRAMEWORK FOR REDUCING GREENHOUSE GASES ARISING FROM PLASTICS

Madeleine Pumberger, Manya Gupta & Maria Alice Camiña

INTRODUCTION

Plastics significantly contribute to climate change, with their lifecycle emissions accounting for 3.3% of global greenhouse gas (GHG) emissions—a figure expected to double by 2060.[1] While the majority of these emissions arise from fossil fuel-based extraction, production, and conversion processes,[2] plastic waste incineration and degradation are also a contributing factor, as GHGs continue to be released long after disposal.[3-4] Additionally, plastics in the ocean harm marine bacteria and plankton, which are essential for carbon dioxide (CO_2) absorption and global climate regulation, thereby affecting the ocean's ability to act as a carbon sink.[5]

The urgency of plastic pollution has spurred international action. At the United Nations Environment Programme (UNEP), countries are currently drafting a binding instrument to address plastic pollution ("UNEP Plastics Treaty"),[6] though it is still unclear if a final agreement—if there is to be one—will enforce strict limits on plastic trade and harmful polymers or adopt a more flexible, goal-oriented approach with country-specific plans. Meanwhile, the World Trade Organization (WTO) has set up discussions on related plastic trade measures.[7]

This brief provides an overview of plastics production and the challenges it poses and highlights some of the global initiatives aimed at reducing plastics' contribution to climate change. It also presents a snapshot of the Montreal Protocol on Substances that Deplete the Ozone Layer ("Montreal Protocol")—which was highly successful at phasing out specific ozone-depleting substances (ODS)—with a view to examining whether a similar approach could complement these initiatives and offer an effective framework in addressing plastics' impact on the climate.

PLASTICS: AN OVERVIEW OF THE BASICS

a. Plastics Production

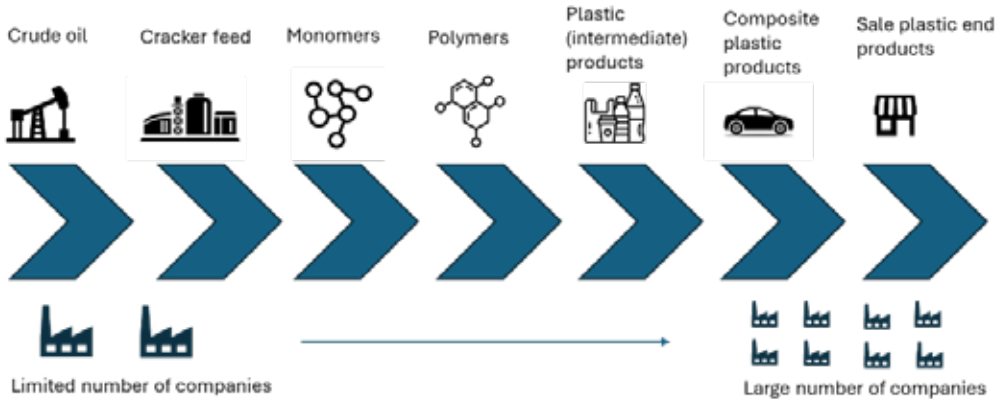
Plastics are created through polymerization, a process that bonds monomers like propylene into polymer chains. Primary or "virgin" plastics are made from monomers derived from either fossil fuels or biobased materials (such as corn or sugarcane), whereas recycled plastics are sourced from previously used materials.[8] Recycled and biobased plastics make up a small market share, with recycled plastics accounting for roughly 6.3% of global production,[9] and

1 Plastic leakage and greenhouse gas emissions are increasing - OECD, https://www.oecd.org/environment/plastics/increased-plastic-leakage-and-greenhouse-gas-emissions.htm (last visited Mar 31, 2024)
2 Lisa Anne Hamilton et al., Plastic and Climate: The Hidden Costs of a Plastic Planet, Center for International Environmental Law, https://www.ciel.org/plasticandclimate/ (last visited Jun 3, 2024).
3 Lisa Anne Hamilton et al., *Plastic and Climate: The Hidden Costs of a Plastic Planet*, Center for International Environmental Law, https://www.ciel.org/plasticandclimate/ (last visited Jun 3, 2024).
4 *Id.*
5 ClientEarth. (2021, January 11). *Is plastic affecting the ocean as a carbon sink? We ask Tatiana Luján*. ClientEarth.https://www.clientearth.org/latest/news/is-plastic-affecting-the-ocean-as-a-carbon-sink-we-ask-tatiana-lujan/#:~:text=How%20does%20plastic%20in%20the,cycle%20isn't%20functioning%20properly.
6 United Nations Environment Programme, Revised Draft Text of the International Legally Binding Instrument on Plastic Pollution, Including in the Marine Environment, (2024), https://wedocs.unep.org/bitstream/handle/20.500.11822/45858/Compilation_Text.pdf
7 World Trade Organization. Plastics pollution and environmentally sustainable plastics trade. WTO. https://www.wto.org/english/tratop_e/ppesp_e/ppesp_e.htm
8 OECD, Global Plastics Outlook: Policy Scenarios to 2060 (2022), https://www.oecd-ilibrary.org/environment/global-plastics-outlook_aa1edf33-en (last visited Nov 4, 2024).
9 Ninhan Karali, Nina Khanna & Nihar Shah, Climate Impact of Primary Plastic Production, (2024).

biobased polymers representing only 1%, or 3.8 million tons, of total plastic production in 2019.[10]

The lifecycle of plastics consists of four stages: (1) virgin polymer production (upstream—see Figure 1), (2) product design and use (midstream), (3) waste management and treatment (downstream), and (4) environmental pollution (leakage). [11]

Figure 1: The production process of virgin plastics



Source: CE Delft. 2021. Nationale heffing op virgin plastics.

b. Types of Polymers and Their Applications

Common polymers and their typical applications, as outlined in the draft emerging from the 15th Conference of the Parties,[12] provide a useful framework for plastic classification.

Table 1: Common types of polymers

POLYMER TYPE	PROPERTIES	TYPICAL APPLICATIONS
High Density Polyethylene (HDPE)	durable and resistant to shock and cold	packaging film, industrial film, bottles, tubs, cups, closures, toys, tanks, drums, cable insulation, pipes, gasoline tanks, shipping containers, seating and household goods
Low-density Polyethylene (LDPE)	lightweight, flexible, and resistant to shock and cold	packaging film, cling-film, bags/sacks, lids, toys, coatings, flexible containers, tubing, irrigation pipes and vehicle dashboards

10 Vanderreydt et al., Greenhouse Gas Emissions and Natural Capital Implications of Plastics (Including Biobased Plastics), (2021).
11 Tim Grabiel et al., Achieving Sustainable Production and Consumption of Virgin Plastic Polymers, 9 Front. Mar. Sci. 981439 (2022).
12 United Nations, Conference of the Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Fifteenth Meeting, Technical Guidelines on the Environmentally Sound Management of Plastic Wastes, UNEP/CHW.15/6/Add.7/Rev. 1 dated July 13, 2022.

Polypropylene (PP)	lightweight and resistant to heat, water and chemicals	yoghurt pots, snack wrappers, packaging films, bottles/caps, automotive battery cases, parts and body components, electrical components, carpet pile and backing, drainage goods
Polystyrene (PS) and Expanded Polystyrene (EPS)	lightweight, structurally weak, and easily thermoformed or expanded	packaging applications, dairy product containers, cups, coat hangers and electrical appliances
Acrylonitrile butadiene styrene (ABS)	durable, stiff, hard and resistant to shock	computers, televisions, kitchen appliances, toys, musical instruments, electrical products and automobile component parts
Polyethylene terephthalate (PET)	clear and resistant to heat, cold, and chemicals	plastic bottles (water, soft drinks etc.) food packaging film, strapping, carpets, vehicle tyre cords and fibres
Polycarbonates (PC)	clear, resistant to shock and heat and flame retardant	electronic applications, products in construction industry (e.g., for dome lights, flat or curved glazing, and sound walls), CDs, Blu-ray discs, automotive, aircraft and railway parts
Polyethers	resistant to heat and chemicals and flame retardant	electrical components, medical equipment, and automobile components
Polyvinyl chloride (PVC)	rigid or soft via plasticizers, resistant to water and solvents and flame retardant	piping, vinyl flooring, cabling insulation, window frames and roof sheeting

Source: UNEP, Technical Guidelines on the Environmentally Sound Management of Plastic Wastes, UNEP/CHW.15/6/Add.7/Rev. 1

The primary polymers used in single-use plastics are LDPE, HDPE, PET, PS, EPS, LLDPE, and PP.[13] As discussed below, most of these polymers present significant challenges in terms of recyclability and climate impact.

c. Plastic Producers

As of May 2024, the Asia-Pacific region accounted for over half of the global polymer production capacity, with China leading at 35% of global production, followed by South Korea, India, Japan, and Thailand.[14] Significant production

13 United Nations Environment Programme, Single-Use Plastics: A Roadmap for Sustainability, Revised Edition, 201; Dominic Charles, Laurent Kimman & Nakul Saran, The Plastic Waste Makers Index, (2021).
14 Polyglobe, *Polyglobe - Worldwide Polymer Producers, Plants, Capacities*, https://www.polyglobe.net/login.asp (last visited May 29, 2024).

also occurs in North America, Europe, and the Middle East, while South America, Africa, and Australia contribute only 4% of global output.[15]

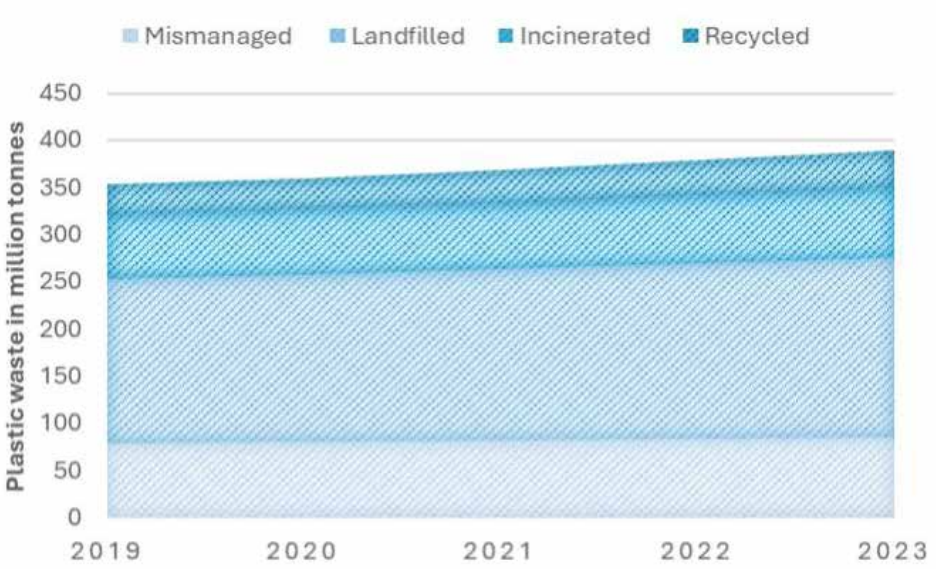
Single-use plastic production is highly concentrated:[16] among approximately 300 producers and 1,200 facilities worldwide, a small group dominates production.[17] Just 20 companies are responsible for about 55% of single-use plastic waste, with ExxonMobil, Sinopec, and Dow alone accounting for 16%.[18] Key exporters of the primary single-use plastic polymers include Belgium, Germany, Saudi Arabia, South Korea, and the United States.[19]

d. Recyclability

A 2022 OECD report reveals that, despite policy efforts, only 8% of the plastics lifecycle is circular. While 15% of plastic waste is collected for recycling, only 9% is actually recycled, with roughly half ending up in landfills and about 20% being incinerated.[20] This low recycling rate is partly due to additives that enhance properties like color, flexibility, and heat resistance, which complicate the recycling process.[21] Additionally, even with a shift toward a new plastics economy, much existing plastic cannot be recycled, necessitating sustainable disposal solutions.[22]

PET and HDPE are the most easily recyclable polymers, while PVC, LDPE, PP, PS are difficult to recycle, and other polymers are even more challenging and costly to recycle.[23]

Figure 2: Plastic waste based on waste management category



15 *Id.*
16 Dominic Charles & Margot Dons, *The Plastic Pollution Fee,* (2023); Dominic Charles, Laurent Kimman & Nakul Saran, The Plastic Waste Makers Index, (2021).
17 The study estimated which polymers would go into single-use plastics by analyzing the conversion processes each polymer undergoes and mapping them to typical end uses. For example, specific processes like extrusion coating were linked to single-use applications, while others, like rotomoulding, were associated with durable goods.
18 Dominic Charles, Laurent Kimman & Nakul Saran, *The Plastic Waste Makers Index*, (2021).
19 Id.
20 OECD, Global Plastics Outlook – Economic Drivers, Environmental Impacts and Policy Options, February 2022, https://www.oecd-ilibrary.org/environment/global-plastics-outlook_de747aef-en.
21 United Nations Environment Programme, Why aren't we recycling more plastics, November 28, 2023, https://stories.undp.org/why-arent-we-recycling-more-plastic
22 United Nations Environment Programme, Turning off the Tap, How the World can end plastics pollution and create a circular economy, 2023, https://wedocs.unep.org/bitstream/handle/20.500.11822/42277/Plastic_pollution.pdf?sequence=3.
23 Plastic for Change, Which Plastics can be Recycled, May 20, 2021, https://www.plasticsforchange.org/blog/which-plastic-can-be-recycled.

Source: Deduced from OECD, Global Plastics Outlook: Policy Scenarios to 2060 (2022).

Single-use plastics, which make up a third of global plastic production and are primarily fossil fuel-based, contribute most heavily to pollution, generating over 130 million metric tons of waste in 2019 alone.[24]

The plastic industry has also created a global imbalance: high-income and some middle-income petro-states export inexpensive virgin polymers, while low and lower-middle-income countries (excluding India) are major net importers. These lower-income countries often lack resources for effective plastic waste management, slowing progress toward a circular economy.[25] Achieving transformation would require significant investment and capital access for private enterprises in these countries.[26] And, according to the industry, it would also entail addressing restricting trade barriers.[27]

e. Climate Impact

Plastic production and disposal has a substantial impact on the climate. Plastics are estimated to emit 1.96 gigatons of CO_2 annually contributing to 3.3% of global emissions.[28] This makes plastics a major obstacle to keeping global temperature rise below 1.5°C. Additionally, plastic leakage into rivers and oceans poses an increasing threat to marine life.[29] In 2019, the production of polyethylene (including LDPE and HDPE), PET and PP accounted for 22%, 21% and 15% of emissions from plastic production, respectively, while other key plastics like PVC were responsible for 23% of global emissions.[30] This means that the polymers used in single-use plastics pose the most significant climate challenges: not only are they harder to recycle and account for a large share of plastic waste, but they also contribute to the majority of plastic-related emissions.

CURRENT INITIATIVES AIMED AT ADDRESSING PLASTIC POLLUTION

a. United Nations Environment Programme's International Legally Binding Instrument on Plastic Pollution (UNEP Plastics Treaty)

On March 2, 2022, the United Nations Environment Assembly adopted a resolution directing the UNEP to form an Intergovernmental Negotiating Committee (INC) to develop a legally binding treaty on plastic pollution.[31] The resolution outlines goals such as sustainable plastic production, eco-friendly waste management, national reporting, and a multistakeholder approach, with possible

24 World Trade Organization. Plastics pollution and environmentally sustainable plastics trade. WTO. https://www.wto.org/english/tratop_e/ppesp_e/ppesp_e.htm
25 Dominic Charles, Laurent Kimman & Nakul Saran, *The Plastic Waste Makers Index*, (2021).
26 United Nations Environment Programme, Turning off the Tap, How the World can end plastics pollution and create a circular economy, 2023, https://wedocs.unep.org/bitstream/handle/20.500.11822/42277/Plastic_pollution.pdf?sequence=3.
27 International Council of Chemical Associations, A Trade and Economic Framework for Addressing Plastic Pollution, 2024, https://icca-chem.org/wp-content/uploads/2024/08/ICCA-Position-Paper-on-Plastics-and-Trade.pdf
28 Hannah Ritchie, How much of local greenhouse gas emissions come from plastics? October 5, 2023, https://ourworldindata.org/ghg-emissions-plastics.
29 OECD, Global Plastics Outlook – Economic Drivers, Environmental Impacts and Policy Options, February 2022, https://www.oecd-ilibrary.org/environment/global-plastics-outlook_de747aef-en.
30 Nihan Karali, et al, Climate Impact of Primary Plastic Production, Lawrence Berkley National Laboratory, 2024, https://escholarship.org/uc/item/12s624vf.
31 United Nations Environment Assembly (2022), *Resolution 5/14, end plastic pollution: towards an international legally binding instrument.*

financial mechanisms like a multilateral fund. While the goal is to finalize the text of the treaty by the end of 2024, the outcome remains uncertain.

A recently released draft reveals several possible mechanisms for controlling primary plastic polymers.[32] One option mandates full lifecycle management, emphasizing design and waste, while another suggests global production limits with country-specific caps. Additional strategies focus on international cooperation, incentivizing recycling, and restricting certain polymers. For hazardous chemicals, one option calls for phasing out harmful substances by specific dates, while another aims to minimize chemicals that hinder recyclability, possibly establishing a compliance fund.

Regarding problematic plastics like single-use items, one proposal calls for bans or restrictions based on the availability of alternatives, with phased elimination. Another allows countries to set their own criteria based on technical and socio-economic factors, permitting exemptions in some cases. The draft also addresses trade in harmful plastics and chemicals, with options to prohibit exports of non-compliant materials or promote international cooperation for sustainable trade practices, especially to support developing countries. However, as noted above, it is not clear that a final agreement on the UNEP Plastics Treaty will be reached by the end of 2024, the stated goal in the UN proclamation, or anytime in the near term.

b. World Trade Organization's Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade

The Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade (DPP), launched by WTO members in November 2020, aims to support global efforts to reduce plastic pollution and promote sustainable plastics trade.[33] Open to all WTO members, the DPP complements ongoing discussions in the WTO Committee on Trade and Environment and aligns with other international initiatives, including the UNEP Plastics Treaty negotiations. The DPP aims to improve transparency, regulatory cooperation, and sustainable trade policies, especially for single-use plastics, while supporting vulnerable economies. It works to identify members' trade-related plastic measures, promote policy harmonization, and facilitate access to waste management technologies and non-plastic substitutes.

The DPP launched a voluntary survey in June 2022 to gather data on trade-related plastic measures (TrPMs).[34] The survey, designed to supplement the WTO's Environmental Database, examined members' trade-related plastic policies. Key findings show that 75% of TrPMs were adopted between 2016 and 2021, with developing countries and LDCs leading in implementation. Main objectives included waste management, leakage prevention, and single-use plastic reduction, with 58% of measures focused on sustainability requirements and 37% involving bans, particularly on single-use plastics.[35]

c. National Policies

National and regional policies have primarily targeted downstream sectors of the plastic lifecycle. The European Union's Single-Use Plastics Directive (Direc-

32 United Nations Environment Programme, Revised Draft Text of the International Legally Binding Instrument on Plastic Pollution, Including in the Marine Environment, (2024), https://wedocs.unep.org/bitstream/handle/20.500.11822/44526/RevisedZeroDraftText.pdf.
33 World Trade Organization, *supra* note 11.
34 World Trade Organization, Informal Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade (IDP) – Questions for a Proposed Survey on Trade-Related Measures on Plastics Pollution, INF/TE/IDP/W/7/Rev.1 dated June 9, 2022.
35 World Trade Organization, Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade – Factual Report of the Trade Related Plastics Measures (TRPMS) Survey, INF/TE/IDP/W/11 dated October 4, 2023.

tive (EU) 2019/904) bans specific single-use plastic items where alternatives are available, sets reduction targets for others, and mandates recycled content in plastic bottles. In 2021, the EU introduced a new fee on non-recycled plastic packaging waste to fund its budget (Council Decision 2053/2020). In the United States, there have been proposals at the federal level, including the Break Free from Plastic Pollution Act, but no measures have been passed by Congress. Building on successful state-level efforts across the United States, the Break Free from Plastic Pollution Act proposes national bans on certain single-use plastics, standardized recycling labels, limitations on waste exports to developing countries, and enhanced recycling practices. Introduced for a third time during the 2023 legislative session, the bill's fate remains uncertain. Similarly, several states in Australia have introduced bans on single-use plastics as part of broader waste reduction strategies that support recycling and reuse initiatives. India has banned manufacturing, import, stocking, distribution, and sale of certain plastic items containing polystyrene,[36] restricted the use of carry bags under 75 microns, and implemented Extended Producer Responsibility for plastic packaging.[37]

THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER

a. Overview

In 1985, the discovery of an ozone layer hole over Antarctica led to the Vienna Convention for the Protection of the Ozone Layer, establishing a framework for monitoring and research. Two years later, the Montreal Protocol was adopted, setting targets to phase out certain ODS used in refrigeration, aerosols, fire suppression, and foam insulation.

Background. The Montreal Protocol was the result of coordinated efforts among government, industry, and civil society, with crucial support from the United States. U.S. legislation had already imposed restrictions on ODS, such as chlorofluorocarbon (CFC), prompting industry to develop alternatives.[38] Despite challenges, regulatory actions like excise taxes spurred research and rapid adoption of low-cost substitutes.[39] Major U.S. CFC producers, including DuPont, backed international regulations to avoid competitive disadvantages.[40] The concentrated CFC industry, dominated by a few companies in the United States, Japan, and Europe, facilitated the Montreal Protocol's success by aligning industry interests with regulatory goals, simplifying negotiations.[41]

Structure. The Montreal Protocol is structured around phased schedules limiting the production and consumption of ODS, with compliance monitored through annual reporting by member countries on ODS production and consumption. Adjustments to phase-out schedules allowed the Montreal Protocol to adapt to new scientific and technical findings. Restrictions on the trade of controlled substances with non-member countries, encouraged broader ratifi-

36 Press Information Bureau, Ban on Single Use Plastics, dated July 21, 2022, https://pib.gov.in/PressReleasePage.aspx?PRID=1843398.
37 Invest India, Understanding the Plastic Waste Management (Amendment) Rules 2022, dated may 17, 2022, https://www.investindia.gov.in/team-india-blogs/understanding-plastic-waste-management-amendment-rules-2022.
38 Elizabeth R. DeSombre, *The Experience of the Montreal Protocol: Particularly Remarkable, and Remarkably Particular*, 19 UCLA J. Environ. Law Policy (2000).
39 Edith Brown Weiss et al., *International Law for the Environment*, (2023).
40 *Id.*
41 *Id.*

cation.[42-43] Additionally, cross-border licensing systems enabled governments to track and control substance flows, reducing the illegal market. [44]

Impact. The Montreal Protocol has been a major force in climate mitigation, reducing GHG emissions by an estimated 135 gigatons of CO_2-equivalent from 1990 to 2010—five to six times the reduction targets of the Kyoto Protocol.[45] Its phase-out of ODS has prevented severe ozone depletion, potentially averting millions of cases of skin cancer and cataracts.[46] The Montreal Protocol's impact was further extended by the 2019 Kigali Amendment, which targets hydrofluorocarbons (potent GHGs that replaced CFCs), preventing up to 105 billion tons of CO_2-equivalent emissions and potentially limiting a global temperature rise by 0.5°C by 2100.[47]

b. Key Design Features

The success of the Montreal Protocol can be traced back to several design features that ensured its effectiveness in addressing ozone depletion. Some of these features may be absent from the latest UNEP Plastics Treaty draft. Core components of the Montreal Protocol included a narrow focus, trade restrictions with non-Parties, and the ability to adapt to new scientific findings. These design features offer valuable insights for shaping future environmental agreements, particularly around plastics, where conditions today resemble those of the ODS sector in the 1980s. For instance, like with CFC restrictions imposed in the United States, many countries have introduced single-use plastic bans. Additionally, the concentrated nature of the single-use plastic industry, along with increasing plastic alternatives (though not yet deployed at scale), suggests that a similar approach might be effective.

Focused scope. The Montreal Protocol's narrow focus on a specific set of controlled substances helped reduce opposition and facilitated negotiations. In contrast, the UNEP Plastics Treaty draft takes a broader approach, tackling plastic pollution across the full life cycle of plastics—from upstream and midstream production to waste management and leakage—making it a more complex challenge.

Targeting substances with alternatives. Another factor in the Montreal Protocol's success was its focus on substances for which viable alternatives already existed. In the case of ODS, the same companies that manufactured ODS were able to produce their substitutes, meaning producers maintained their market share, while consumers were able to continue enjoying their products. The UNEP Plastics Treaty draft suggests that bans should be considered where feasible but does not specifically set out to target those cases where alternatives are available.

Scheduled phase-outs. The Montreal Protocol is deliberately centered around the scheduled phase-out of controlled substances, with differing timelines for developed and developing countries. By contrast, the UNEP's draft provides a range of options for tackling plastic pollution: while some options propose the phase-out of certain polymers, others are more flexible, affording countries

42 Ibid, Article 4.
43 Goldberg et. al, Effectiveness of Trade and Positive Measures in Multilateral Environmental Agreements: Lessons from the Montreal Protocol, Center for International Environmental Law, https://www.ciel.org/wp-content/uploads/2015/06/EffectivenessofTradeandPosMeasures.pdf, Page 8,
44 Ibid, Article 4B.
45 Kaniaru, Donald, Shende, Rajendra, Stone, Scott, & Zaelke, Durwood. (2007).Strengthening the Montreal Protocol: Insurance against Abrupt Climate Change.
Sustainable Development Law & Policy, 7(2), 3-9.
46 United Nations Environment Programme. About Montreal Protocol. UNEP OzonAction. Retrieved November 3, 2024, from https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol
47 *Id.*

considerable discretion in the approach. For instance, one option simply states that "Parties are encouraged to take measures to gradually reduce the use of problematic and avoidable plastic products," based on parameters such as the availability, accessibility, and affordability of sustainable alternatives.

Exemptions. Under the Montreal Protocol, limited exemptions are allowed for essential uses of controlled substances where no feasible alternatives exist, particularly in medical and critical industries. For example, methyl bromide has exemptions for certain agricultural uses, which are renewed annually as alternatives are developed. The UNEP's draft appears to take a broader approach, with numerous proposals suggesting not only applications but also substances the instrument should exclude, including medical and health uses, transportation, energy, infrastructure, chemicals, intermediate products like virgin/primary polymers, dual-use items, packaging, and microplastics.

Export restrictions. Where a Party to the Montreal Protocol continues limited production of controlled substances for essential uses after the phase-out date, it is required to ban the export of any used, recycled, or reclaimed amounts of the substance (except for the purpose of destruction). This measure ensures that the impact of any continued production remains within the Party's borders. The UNEP Plastics Treaty draft contains no such export restrictions.

Trade restrictions with non-Parties. The Montreal Protocol restricts trade with countries that are not Parties to the treaty, thereby ensuring that only Parties to the agreement are allowed to trade in controlled substances, creating a strong incentive for non-participating countries to join. While the UNEP's draft outlines options for certain trade restrictions, a full prohibition on trade with non-Party countries is not considered.

Licensing. The Montreal Protocol establishes licensing procedures to ensure that trade aligns with phase-out schedules and to prevent illegal trade. Parties to the Montreal Protocol are required to establish licensing systems for controlling imports, exports, and re-exports of controlled substances. These systems often include quota allocations that limit the amount of substances that can be imported each year to comply with phase-out targets. The licensing process typically involves accreditation of importers and exporters, with applications requiring detailed documentation such as supplier information, substance details, and safety compliance. Some countries extend licensing to products containing controlled substances and charge fees based on the substance. Customs authorities play a key role in ensuring compliance, using licenses to clear shipments and monitor quota usage. Many countries are also implementing online systems to streamline licensing, improve transparency, and enhance efficiency. These systems help track and manage quotas, facilitate communication among relevant authorities, and ensure that licenses are issued and monitored effectively. One option under the UNEP Plastics Treaty draft includes an obligation to implement a licensing system for the production, import, and export of primary and secondary plastic polymers.

Adjustment mechanism. The Montreal Protocol includes an adjustment mechanism, enabling it to evolve in response to emerging scientific knowledge and technological advancements. This mechanism enables changes to listed substances without requiring ratification by national parliaments or legislatures. However, the addition of new substances requires a formal amendment process to become binding on all Parties. This flexibility ensured that the treaty remained adaptable and relevant over time, avoiding the lengthy and complex process of formal amendments. While the UNEP draft in its current form does not appear to feature a similar adjustment mechanism, it does outline a process for adopting annexes listing plastics or polymers.

CONCLUSION

The Montreal Protocol offers valuable lessons that could help address the climate challenges posed by the most harmful plastic polymers. By adopting its effective strategies, current efforts to reduce plastic pollution could be strengthened, thereby contributing to a reduction in the GHG emissions driving climate change.