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# Producer Responsibility Organizations: An Essential Part of an International Solution to Plastic Pollution



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## INTRODUCTION

Plastic pollution is causing irreparable harm to marine wildlife and the environment.[1] The alarming buildup of plastic pollution is also continuing to negatively affect humankind,[2] and current international law is insufficient to solve this crisis.[3] However, the United Nations is currently working on a revolutionary treaty specifically designed to combat plastic pollution.[4] In order to effectively combat plastic pollution, this treaty must use an approach that overcomes limitations in existing international law. Existing international law does not adequately track compliance, provide effective mechanisms for enforcement, or address land-based sources of pollution.[5] This Comment argues that part of the solution for overcoming these inadequacies is using Producer Responsibility Organizations. The new United Nations treaty should use Producer Responsibility Organizations as part of a strategy to address current shortcomings and impose collective responsibility on plastic producers.

This Comment proceeds in four parts. Part I summarizes the harmful effects of plastic pollution and explains why this crisis must be solved. Part II analyzes the current shortcomings of international law in this area. Part III explains the theory of Extended Producer Responsibility and introduces Producer Responsibility Organizations. Lastly, Part IV explores how the United Nations should incorporate Producer Responsibility Organizations into its new treaty.

## I
## HARMFUL EFFECTS OF PLASTIC POLLUTION

### *A. The Evolution of Plastic's Popularity*

The invention of plastic was a revolutionary moment in humankind's history. In the late 1800s, society recognized the extreme

1 *See infra* Part I.
2 *Id.*
3 *See infra* Parts II–IV.
4 *See infra* Section II.E.
5 *See infra* Parts II–IV.

benefits that plastic provided humanity and even heralded it as a savior of the environment.[6] This is because plastic provided a man-made substitute for limited materials found in nature like ivory, wood, and horn, which were historically used to manufacture items.[7]

The first forms of plastic were composed of natural items with inherent plastic-like properties, such as shellac, rubber, and collagen.[8] In 1907, the first fully synthetic plastic was invented.[9] Named Bakelite after its creator, this form of plastic was made exclusively out of inorganic materials, containing no molecules found in nature.[10] This innovation, along with the demand for products created by World War II, caused the plastic industry to greatly expand and develop more forms of plastic.[11] This post–World War II era was defined by plastic's prevalence in society, including Tupperware's prominence as a disposable household product.[12] Household use of plastic has only continued to skyrocket, resulting in the production of more than 8,000 million metric tons of virgin plastics since the 1950s.[13]

Due to its many benefits and prominence in today's manufacturing industries, plastic's growth in the past sixty-five years "has substantially outpaced any other manufactured material."[14] There are seven different types of plastic in use today.[15] The diversity of synthetic materials allows plastic to be used in many consumer products, including the lining of soda cans, tea bags, chewing gum, cigarettes,

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6 *See History and Future of Plastics*, SCI. HIST. INST., https://www.sciencehistory.org/the-history-and-future-of-plastics [perma.cc/GQ95-KZLP].

7 *Id.*

8 *See History of Plastics, Plastics: A Story of More than 100 Years of Innovation*, PLASTICS EUR., https://plasticseurope.org/plastics-explained/history-of-plastics/ [http://perma.cc/6RJZ-6Q9N] (discussing historical uses of natural materials with intrinsic plastic properties).

9 *Id.*

10 *Id.*

11 *Id.*

12 TOM SZAKY & ALBE ZAKES, MAKE GARBAGE GREAT: THE TERRACYCLE FAMILY GUIDE TO A ZERO-WASTE LIFESTYLE 23 (2015).

13 Roland Geyer et al., *Production, Use, and Fate of All Plastics Ever Made*, 3 SCI. ADVANCES, no. 7, 2017, at 1, https://www.science.org/doi/epdf/10.1126/sciadv.1700782.

14 *Id.* at 3.

15 TOM SZAKY, OUTSMART WASTE: THE MODERN IDEA OF GARBAGE AND HOW TO THINK OUR WAY OUT OF IT 96–98 (2014). The types of plastics in use today are: polyethylene terephthalate (PET), high-density polyethylene (HDPE), polyvinyl chloride (PVC), low-density polyethylene (PE-LD), polypropylene (PP), polystyrene (PS), and a miscellaneous category, which includes products such as contact lenses and CDs.

beauty products, and clothing.[16] The United Nations estimates that half of all plastic produced is designed for single-use purposes, like packaging, which means the products are used only once before disposal.[17] Even though many countries have acknowledged this issue,[18] COVID-19 showcased our society's reliance on single-use plastics, which increased an estimated 300% during the pandemic.[19]

Today, our world produces about 400 tons of plastic waste per year.[20] According to the Organization for Economic Co-operation and Development's *Global Plastics Outlook* report, only 9% of this plastic waste is recycled worldwide.[21] Unfortunately, much of that leftover plastic ends up in the ocean. Eighty percent of all plastic in the ocean comes from land-based sources, while the remaining 20% comes from marine sources.[22]

### *B. Environmental Impacts*

Marine plastic pollution causes many detrimental and irreversible effects on the environment. Approximately 9–14 million tons of plastic enter aquatic ecosystems per year and, if left unchecked, that number is projected to triple by 2040.[23] This plastic negatively affects marine wildlife through wildlife consumption, entanglement, and destruction of the ecosystem.

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16 Tom Bawden, *Revealed: The Everyday Products That Contain 'Invisible' Plastic*, INEWS (Oct. 9, 2020, 12:14 PM), https://inews.co.uk/news/environment/revealed-the-everyday-products-that-contain-invisible-plastic-183517 [https://perma.cc/MD9U-NMQE].

17 *What You Need to Know About the Plastic Pollution Resolution*, UN ENV'T PROGRAMME (Mar. 2, 2022), https://www.unep.org/news-and-stories/story/what-you-need-know-about-plastic-pollution-resolution [https://perma.cc/5BQF-DME4].

18 Victoria Masterson, *As Canada Bans Bags and More, This Is What's Happening with Single-Use Plastics Around the World*, WORLD ECON. F. (Oct. 26, 2020), https://www.weforum.org/agenda/2020/10/canada-bans-single-use-plastics/ [https://perma.cc/2JJA-6G9Z].

19 Jason Knowles, Stephanie Zimmermann & Ann Pistone, *COVID-19 Pandemic Causes Massive Pile-Up of Single-Use Plastics, Through Restaurant Takeout and PPE*, ABC7 (Nov. 11, 2020), https://abc7chicago.com/illinois-covid-19-pandemic-single-use-plastic-coronavirus/7872846/ [https://perma.cc/B338-UEME] (referencing an estimate issued by the International Solid Waste Association).

20 *Microplastics in Wastewater: Towards Solutions*, UN ENV'T PROGRAMME, https://www.unep.org/interactives/beat-plastic-pollution [https://perma.cc/QAH6-UZ5G].

21 *Plastic Pollution Is Growing Relentlessly as Waste Management and Recycling Fall Short*, OECD (Feb. 22, 2022), https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm.

22 Hannah Ritchie, *Where Does the Plastic in Our Oceans Come From?*, OUR WORLD IN DATA (May 1, 2021), https://ourworldindata.org/ocean-plastics [https://perma.cc/2LAJ-NCJ9].

23 *Microplastics in Wastewater: Towards Solutions*, *supra* note 20.

Many marine animals mistake plastic as food (commonly jellyfish or plankton), which is why more than 170 species of marine vertebrates and invertebrates ingest plastic in their lifetime.[24] Recent studies have discovered plastic in 50% of seabirds, 66% of marine mammals, and nearly 100% of turtles.[25] Smaller organisms like zooplankton, oysters, and other filter feeders are also affected as plastic continues to photodegrade into smaller pieces.[26] Ingesting plastic causes a host of negative effects, including endocrine disruption, changes in nutrient cycles, reproductive abnormalities, bioaccumulation, and developmental disorders.[27]

Another growing risk to marine animals is entanglement. Entanglement most often occurs when marine animals mistake plastic for food or shelter.[28] Degrading fishing gear can entangle and smother marine animals.[29] Gear made of synthetic plastics, such as nets and lines, are built to withstand the effects of seawater and can pose a lethal hazard to marine animals for many years past its intended lifetime use.[30] Additionally, plastic pollution causes a phenomenon known as "hitchhiking," where marine animals attach to pieces of plastic and float away, which disrupts their ecosystems and leaves openings for invasive species.[31] In general, plastic pollution has long been linked to other negative effects among marine wildlife, such as viruses, decreased diversity, excessive algal bloom, and permanent ecosystem destruction.[32]

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24 Antonia Kurtela & Nenad Antolović, *The Problem of Plastic Waste and Microplastics in the Seas and Oceans: Impact on Marine Organisms*, 77 CROATION J. FISHERIES 51, 53 (2019).

25 Shaoliang Zhang et al., *Microplastics in the Environment: A Review of Analytical Methods, Distribution, and Biological Effects*, 111 TRENDS ANALYTICAL CHEMISTRY 62, 70 (2019).

26 Susan L. Dautel, *Transoceanic Trash: International and United States Strategies for the Great Pacific Garbage Patch*, 3 GOLDEN GATE U. ENV'T L.J. 181, 187 (2009).

27 Bethanie Carney Almroth & Håkan Eggert, *Marine Plastic Pollution: Sources, Impacts, and Policy Issues*, 13 REV. ENV'T. ECON. & POL'Y 317, 319 (2019).

28 G.G.N. Thushari & J.D.M. Senevirathna, *Plastic Pollution in the Marine Environment*, 6 HELIYON 1, 4 (2020); Dautel, *supra* note 26, at 187.

29 Dautel, *supra* note 26, at 188.

30 *The Problem of Ghost Fishing Gear*, OCEAN CONSERVANCY (Sept. 30, 2023), https://oceanconservancy.org/trash-free-seas/plastics-in-the-ocean/global-ghost-gear-initiative [https://perma.cc/26L7-H22W].

31 Patricia Villarrubia-Gómez, Sarah E. Cornell & Joan Fabres, *Marine Plastic Pollution as a Planetary Boundary Threat – The Drifting Piece in the Sustainability Puzzle*, 96 MARINE POL'Y 213, 215 (2018); Almroth & Eggert, *supra* note 27.

32 Villarrubia-Gómez, Cornell & Fabres, *supra* note 31.

### *C. Human Impacts*

In addition to the negative effects that humans suffer from irreparable environmental damage, plastic pollution directly affects the health of billions of people worldwide. Since plastic is hydrophobic, it absorbs considerable pollutants from the seawater, which can concentrate in plastic at levels 100 times that of seawater.[33] Many of these chemicals have been proven to desorb into the tissues of marine animals when ingested.[34] Marine creatures ingest the plastic—and ingest prey *full* of plastic—increasing the buildup of irremovable harmful chemicals in a process known as bioaccumulation.[35] Since these microplastics and harmful chemicals are heavily resistant to degradation and settle into animal tissues, they are transferred from prey to predator.[36] Due to this bioaccumulation process, microplastics and chemical pollutants make their way up the food chain, all the way to humans.[37] As a result, nearly all the food sourced from the ocean contain plastic remnants.[38] Microplastics entering the human body can cause a myriad of health problems, including inflammation, genotoxicity, oxidative stress, apoptosis, cancer, and necrosis.[39]

Plastic pollution in the ocean also negatively affects social and economic activities. For many communities, beaches draw tourists and local citizens alike for swimming and other recreational pastimes. Unfortunately, plastic in the oceans pose both a hazard and an eyesore to swimmers.[40] Additionally, waste on beaches can deter tourists and place an added economic burden on coastal communities to clean it up.[41] For coastal communities around the world that rely on seafood for income and consumption, the impacts of marine plastics are sickening. Fish and other seafood populations continue to decline, and

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33 DAVID AZOULAY ET AL., PLASTIC & HEALTH: THE HIDDEN COSTS OF A PLASTIC PLANET 31 (2019).

34 *Id.*

35 *Id.* at 54. *See also* Hans T. Ratte, *Bioaccumulation and Toxicity of Silver Compounds: A Review*, 18 ENV'T TOXICOLOGY & CHEMISTRY 90 (1999) (explaining bioaccumulation and its risks on plants and animals).

36 AZOULAY ET AL., *supra* note 33, at 54.

37 *Id.* at 54–55.

38 *Id.* at 54–57; Dautel, *supra* note 26, at 189.

39 AZOULAY ET AL., *supra* note 33, at 61–62.

40 *See* Sarah Carr, *What Is Marine Plastic Pollution Costing Us? The Impacts of Marine Plastic on the Blue Economy*, OPEN COMMC'NS FOR THE OCEAN (May 10, 2019), https://octogroup.org/news/what-marine-plastic-pollution-costing-us-impacts/ [https://perma.cc/PFP6-D54Y].

41 Ciera Dye, *The Pelagic Plastic Problem*, 19 OCEAN & COASTAL L.J. 117, 130 (2014).

fishermen's nets regularly become hopelessly tangled in plastic.[42] This decline is devastating to fishermen in lower-income fishing villages around the world. For instance, one particular group of fishermen in India collected more than sixty-five tons of plastic waste from their trawls and fishing gear in just ten months.[43] Overall, the fishing industry is losing around €138 million annually.[44] Additionally, larger pieces of plastic regularly get caught in propellors and water intakes, resulting in annual costs of more than €235 million for the maritime industry.[45] It is overwhelmingly clear that plastic pollution presents a myriad of negative effects on the environment, humans, and industries.

## II
## CURRENT INTERNATIONAL LAW SURROUNDING MARINE PLASTIC POLLUTION

Mitigating damage caused by marine plastic pollution is a complex problem that will require the cooperation of many stakeholders around the world. Since more than 80% of marine plastic comes from land-based sources,[46] solving the marine plastic pollution crisis requires addressing all stages of the plastic life cycle. International cooperation is key, as stakeholders all over the world interact with plastic in different ways over its life cycle.

Current international law is not sufficient to solve the marine plastic crisis. Many current international frameworks are overly broad and lack effective enforcement mechanisms. The few existing laws that address plastic pollution focus more generally on sources like dumping and hazardous waste, while ignoring land-based sources that contribute a significant amount of marine plastic.[47] However, there is a promising new development as the United Nations (U.N.) recently agreed to

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42 *See, e.g.*, Maanvi Singh, *How India's Fishermen Turn Ocean Plastic into Roads*, NAT'L GEOGRAPHIC (May 23, 2018), https://www.nationalgeographic.com/science/article/fishermen-kerala-india-recycle-plastic-pollution-culture [https://perma.cc/UJK4-VUTW].

43 *Id.*

44 *See* DALBERG ADVISORS & WWF MEDITERRANEAN MARINE INITIATIVE, STOP THE FLOOD OF PLASTICS: HOW MEDITERRANEAN COUNTRIES CAN SAVE THEIR SEA 13 (2019).

45 *Id.*

46 Ritchie, *supra* note 22.

47 *See generally* L. Lebreton et al., *Evidence That the Great Pacific Garbage Patch Is Rapidly Accumulating Plastic*, 8 SCI. REPS., Mar. 22, 2018, https://www.nature.com/articles/s41598-018-22939-w [https://perma.cc/M2PM-YFJY].

develop an international treaty to address plastic pollution.[48] This Part identifies the shortcomings of current international law on this issue[49] and discusses progress on the new U.N. treaty.[50]

### *A. The International Convention for the Prevention of Pollution from Ships (MARPOL)*

The International Convention for the Prevention of Pollution from Ships, or MARPOL, is one of the few treaties that not only addresses marine pollution but specifically prohibits discharging plastics into the sea in Annex V.[51] The background of MARPOL Annex V correctly acknowledges that the "greatest danger [to our ocean] comes from plastic, which can float for years."[52] MARPOL has been widely adopted, with more than 150 countries as signatories.[53] The United States formally adopted MARPOL Annex V through the Plastic Pollution Act, which implements those requirements into U.S. law.[54]

Despite these positives, MARPOL's power is crippled through its limited scope and poor enforcement mechanisms. MARPOL regulates pollution from ships alone, which accounts for a mere 20% of total marine plastic waste.[55] This admirably serves to limit ships from dumping plastic and discharging waste. However, it leaves land-based sources unaddressed. Furthermore, MARPOL lacks an effective enforcement system to hold countries accountable. Many signatories fail to submit the annual reports required by MARPOL with no consequences.[56]

Additionally, the effectiveness of MARPOL varies widely based on the vigilance of port states. Port states allow the inspection of ships that

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48 United Nations, *Nations Sign Up to End Global Scourge of Plastic Pollution*, UN NEWS (Mar. 2, 2022), https://news.un.org/en/story/2022/03/1113142 [https://perma.cc/EQ7H-UMC5].

49 *See infra* Sections II.A–D.

50 *See infra* Section II.E.

51 Marine Environment Protection Committee Res. MEPC.201(62) (July 15, 2011), https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/MEPCDocuments/MEPC.201(62).pdf [hereinafter 2011 amendments to MARPOL Annex V].

52 *Prevention of Pollution by Garbage from Ships: Background of MARPOL Annex V*, INT'L MAR. ORG., https://www.imo.org/en/OurWork/Environment/Pages/Garbage-Default.aspx [https://perma.cc/5RGR-M6RG].

53 *Id.*

54 *See* 33 U.S.C. § 1901(b).

55 Ursula Kazarian, *Islands of Garbage Continue to Grow in Pacific*, 7 SUSTAINABLE DEV. L. & POL'Y 63, 63 (2006).

56 Gerard Peet, *The MARPOL Convention: Implementation and Effectiveness*, 7 INT'L J. ESTUARINE & COASTAL L. 277, 282–85 (1992).

dock in their harbors in order to ensure those ships conform to international laws.[57] Unfortunately, port states lack incentives to enforce MARPOL protocols due to legal costs of prosecuting violators and jurisdictional problems.[58] At various points in a vessel's journey, the flag state (which the ship is registered to), the port state (which the ship is located in), and the coastal state (whose territorial waters the ship passes through) could all claim jurisdiction.[59] Due to the overlapping jurisdiction, violations are most often reported to the vessel's flag state, whose desire to prosecute varies by state.[60] Furthermore, the cover of the high seas is often enough for determined violators to carry out their actions undetected by any state who could exercise jurisdiction.[61]

### *B. The United Nations Convention on the Law of the Sea (UNCLOS)*

In November 1967, Malta's Ambassador to the United Nations, Arvid Pardo, urged the global community to come together and protect the ocean from growing global conflicts and the threat of pollution.[62] Pardo emphasized the customary law principle that the ocean was the "common heritage of mankind" and, as such, should be protected and maintained for future generations.[63] His call set forth a movement that culminated with the adoption of the United Nations Convention on the Law of the Sea (UNCLOS) in 1982.[64] UNCLOS addresses the issue of

57 *Flag State vs. Port State*, MAR. INST. OF TECH. & GRADUATE STUD., https://www.mitags.org/flag-vs-port-state/#:~:text=A%20port%20state%20is%20a,flag%20for%20their%20dock%20country [https://perma.cc/V93R-8L9B].

58 Rebecca Becker, *Marpol 73/78: An Overview in International Environmental Enforcement*, 10 GEO. INT'L ENV'T L. REV. 625, 631–36 (1998). *See* Capt. Deepak Mantoju, *Analysis of MARPOL Implementation Based on Port State Control Statistics*, 5 J. INT'L MAR. SAFETY, ENV'T AFFS. & SHIPPING 132 (2021).

59 *See* Grant A. Harse, *Plastic, the Great Pacific Garbage Patch, and International Misfires at a Cure*, 29 UCLA J. ENV'T L. & POL'Y 331, 349 (2011).

60 *Id.* at 350. For a more in-depth analysis of MARPOL's jurisdictions issues, see Becker, *supra* note 58, at 631–33.

61 Mantoju, *supra* note 58.

62 United Nations, *The United Nations Convention on the Law of the Sea (A Historical Perspective)*, UN DIV. FOR OCEAN AFFS. & THE L. OF THE SEA, https://www.un.org/Depts/los/convention_agreements/convention_historical_perspective.htm#Historical%20Perspective [https://perma.cc/3CTH-CD7D].

63 *Id.*

64 *Id.*

pollution, including, most notably, from land-based sources.[65] Drawing upon the principle that the ocean is the "common heritage of mankind," the purpose of UNCLOS is to create

> a legal order for the seas and oceans which will facilitate international communication, and will promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources, and the study, protection and preservation of the marine environment . . . .[66]

UNCLOS does not specifically address plastic pollution but addresses "all sources of pollution of the marine environment" in Article 194(3).[67] This article specifies that preventative actions to eliminate pollution "shall include . . . (a) the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping; [and] (b) pollution from vessels."[68]

Unfortunately, the broad structure of UNCLOS creates enforcement problems. Part XII, which provides the legal framework for protection of the marine environment, says, "States shall take all measures necessary to ensure that activities under their jurisdiction or control are so conducted as not to cause damage by pollution to other States and their environment . . . ."[69] Coastal states are responsible for enforcing UNCLOS within their own waters. This is problematic because the very nature of marine pollution transcends state boundaries, meaning that it is almost impossible to hold someone responsible for violating UNCLOS without witnessing an act of overt pollution.[70] The nature of marine pollution also ensures that the entire world suffers the consequences of the most culpable states.[71] Additionally, monitoring one's own coastal waters is expensive and the vigilance of states varies widely. Article 207 of UNCLOS calls for states to adopt domestic policies to reduce "pollution of the marine environment from land-

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65 United Nations Convention on the Law of the Sea arts. 43, 194–95, 199, 204, 207–22, 277, *opened for signature* Dec. 10, 1982, 1833 U.N.T.S. 397 (entered into force Nov. 16, 1994) [hereinafter UNCLOS].

66 *Id.* at pmbl.

67 *Id.* art. 194(3).

68 *Id.* art. 194(3)(a)–(b).

69 *Id.* art. 194(2).

70 *See* Matthew Schroeder, *Forgotten at Sea—an International Call to Combat Islands of Plastic Waste in the Pacific Ocean*, 16 SW. J. INT'L L. 265, 273–74 (2010).

71 *See* Daria Vasilevskaia, *Marine Plastic Pollution: Can Law Help?*, LEGAL DIALOGUE (Oct. 22, 2018), https://legal-dialogue.org/marine-plastic-pollution-can-law-help/ [https://perma.cc/EVC7-V63U].

based sources."[72] However, this call is not backed by any incentives and is blind to the reality that political priorities and ability to manage waste vary among member states.[73]

Additionally, the United States, one of the top plastic polluters, has not joined the 167 other countries in ratifying UNCLOS.[74] UNCLOS is widely regarded as binding customary international law.[75] However, American courts have sometimes been reluctant to hold that UNCLOS is legally enforceable. For example, in *United States v. Best*, the Third Circuit held that since UNCLOS was not ratified, it "does not have the force of law."[76] As a nation with significant power to influence plastic production and disposal, the United States' failure to ratify UNCLOS is detrimental to the treaty's influence.

### *C. The Basel Convention*

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal seeks to control hazardous marine pollution,[77] which includes marine plastic pollution.[78] This treaty presses signatories to decrease their generation of hazardous waste and limit its movement by disposing of waste as close as possible to the source.[79] The Basel Convention's focus on transboundary hazardous waste movement addresses a huge problem in international waste disposal. For decades, China and other Southeast Asian nations were viewed as a cheap dumping ground for plastic and textile waste from developed Western economies.[80] However, in 2017, China

72 UNCLOS, *supra* note 65, art. 207(1).

73 *Id.*

74 *Status of Treaties: Chapter XXI, § 6, Law of the Sea*, U.N. TREATY COLLECTION, https://treaties.un.org/Pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=_en [https://perma.cc/3SSV-M2AC] (for a full list of Member States to UNCLOS).

75 THOMAS J. SCHOENBAUM, ADMIRALTY AND MARITIME LAW § 2-2, at 24 (4th ed. 2004).

76 United States v. Best, 304 F.3d 308, 315 (3d Cir. 2002).

77 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, 1673 U.N.T.S. 126.

78 *See id.* at Annex VIII.

79 Ishtiaque Ahmad, *The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal: A Legal Misfit in Global Ship Recycling Jurisprudence*, 29 WASH. INT'L L.J. 411, 415–16 (2020).

80 Yeeun Uhm, *Plastic Waste Trade in Southeast Asia After China's Import Ban: Implications of the New Basel Convention Amendment and Recommendations for the Future*, 57 CAL. W. L. REV. 1, 1–7 (2021).

stopped accepting most shipments of waste under its "National Sword" policy.[81] As a result, this caused a greater influx of waste to other Southeast Asian countries like the Philippines, Indonesia, and Malaysia.[82] These less-developed countries simply do not have the infrastructure to properly dispose of all this waste.[83] Consequently, the plastic and textile waste is often poorly contained in dumping sites, which contaminates streams, rivers, and, eventually, oceans.[84]

In 2019, amendments to the Basel Convention were passed to address this issue.[85] As of 2021, any nation that wants to transport hazardous waste must receive prior informed consent from the recipient nation.[86] Additionally, plastic is included in the definition of hazardous materials, and the amendments specifically describe the banned polymers in order to avoid misinterpretation.[87] This expansive definition of plastic waste and the informed consent requirement will allow governments to better control how much plastic waste they import. Furthermore, it may encourage more developed countries to improve their domestic waste disposal capabilities.

However, the Basel Convention's effectiveness is limited by its lack of enforcement mechanisms and oversight. The treaty operates on self-reporting obligations, but lacks any mechanism to verify reports.[88] Furthermore, there are no financial mechanisms or legal bases to ensure compliance.[89] The commitments are essentially nonbinding to the treaty's 190 signatory nations.[90] While the Basel Convention takes the important step of addressing hazardous waste trading, it does not prohibit trading hazardous substances prior to their "end-of-life," when

81 *Id.* at 3.

82 *Id.*

83 *Id.* at 3–6.

84 *Id.* at 7.

85 *Questions and Answers Related to the Basel Convention Plastic Waste Amendments*, UNEP: BASEL CONVENTION, https://www.basel.int/Implementation/Plasticwaste/Amendments/FAQ/tabid/8427/Default.aspx [https://perma.cc/H68A-LBC3].

86 *Id.*

87 *Id.*

88 *See* Kenda Jo M. McCrory, Comment, *The International Exportation of Waste: The Battle Against the Path of Least Resistance*, 9 DICK. J. INT'L L. 339, 347–49 (1991).

89 *Id.*

90 *See Parties to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal*, UNEP: BASEL CONVENTION, https://www.basel.int/default.aspx?tabid=4499 [https://perma.cc/T4U3-4KAA].

they officially become "waste."[91] Moreover, it does not impose any kind of responsibility on producers who choose to manufacture with plastic.[92] Unfortunately, governments are often left with the responsibility to properly dispose of waste created by producers.[93]

### *D. The London Convention*

In 1975, the London Convention was enacted as one of the earliest global measures to protect the marine environment from human pollution.[94] The primary goal of the Convention is to prevent marine pollution caused by dumping waste into the sea.[95] To accomplish this, the Convention used a "black-and-grey-list" approach to limit the dumping of hazardous items into the ocean.[96] Certain items deemed extremely hazardous were blacklisted and signatories were not allowed to dump them.[97] Other less harmful items were put on the "grey list" and required a special permit to dump.[98] All other substances could easily be dumped after obtaining a general permit.[99]

In recognition that "further international action to prevent, reduce and where practicable eliminate pollution of the sea caused by dumping can and must be taken without delay," the Convention was later updated by the 1996 amendments, which took effect in 2006, known as the London Protocol.[100] The purpose of the London Protocol is the same as the Convention, but the Protocol uses more restrictive regulations that draw upon the precautionary principle.[101] The Protocol operates under a general rule that all dumping is prohibited, unless it is

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91 *See* Environmental Law Institute, *Global Review of Plastics Pollution: Managing Marine Litter*, YOUTUBE, at 27:12–45 (Nov. 11, 2019), https://www.youtube.com/watch?v=Ohq-LyUKYzA&t=489s.

92 *Id.*

93 *See infra* Part III.

94 *See* Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Dec. 29, 1972, 1046 U.N.T.S. 138.

95 *Id.* at 139–40.

96 *Id.* at 141, 203.

97 *Id.*

98 *Id.*

99 *Id.*

100 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Nov. 7, 1996, 36 I.L.M. 1 (1997) [hereinafter London Protocol].

101 *Id.* art. 3. The precautionary principle requires that appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm, even when there is no conclusive evidence to prove a causal relation between inputs and their effects.

an exempted substance listed in the treaty.[102] This is a much stronger stance than the old "black-and-grey-list" approach and ultimately prohibits the dumping of all plastic into the ocean. Additionally, the Protocol prohibits incinerating waste at sea and exporting waste to other countries, who may not be signatories, to dump into the ocean.[103]

The London Protocol developed more effective compliance mechanisms in a 2017 amendment.[104] One of the most effective procedures was the establishment of the Compliance Group, a fifteen-member body that manages compliance issues and provides relevant feedback to all contracting parties.[105] Unfortunately, similar to MARPOL, the London Protocol does not address land-based sources of plastic pollution. The Protocol prevents marine dumping only from "vessels, aircraft, platforms or other man-made structures at sea."[106] This alone is insufficient to eliminate plastic from the ocean, when a vast majority of marine plastic pollution comes from land.[107]

### *E. Progress on a New United Nations Treaty*

The United Nations is working on a new treaty to combat marine plastic pollution that appears promising.[108] Noting that "[p]lastic production has risen exponentially in the last decades and now amounts to some 400 million tons per year—a figure set to double by 2040," the U.N. Environment Programme committed to forging an international, legally binding agreement by 2024.[109] This treaty is set to address the full life cycle of plastic production, including production and disposal.[110] It will also regulate plastics from land-based sources, an important distinction that past treaties lack.[111] Such a treaty, which

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102 *Id.* arts. 1, 4.

103 *Id.* arts. 5, 6.

104 Int'l Maritime Org. [IMO], LC 39/16/Add.1, Annex 5, *Revised 2017 Compliance Procedures and Mechanisms Pursuant to Article 11 of the 1996 Protocol to the London Convention 1972* (2017), https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Revised%202017%20CPM.pdf [https://perma.cc/G6FG-29MA].

105 *Id.*

106 London Protocol, *supra* note 100, art. 1, § 4.1.

107 Ritchie, *supra* note 22.

108 *What You Need to Know About the Plastic Pollution Resolution*, *supra* note 17.

109 *Id.*

110 *UNEP Head Responds to Questions on Global Plastics Agreement*, UN ENV'T PROGRAMME (Feb. 25, 2022), https://www.unep.org/news-and-stories/story/unep-head-responds-questions-global-plastics-agreement [https://perma.cc/68TB-FAZY].

111 *Update on UN Roadmap for a New Global Plastics Treaty*, GIBSON DUNN (Mar. 21, 2022), https://www.gibsondunn.com/update-on-un-roadmap-for-a-new-global-plastics-treaty/ [https://perma.cc/XV9M-V87H].

regards plastic as the central issue, is an important step in successfully regulating plastic usage. Ideally, the treaty will help harmonize regulations, give countries achievable goals, include effective enforcement mechanisms, and push businesses to make beneficial operational decisions.[112] Although the treaty is far from completed, news of its existence is a cause for optimism in the fight against marine plastic pollution.

## III
## EXTENDED PRODUCER RESPONSIBILITY

To improve upon current international law and effectively combat marine plastic pollution going forward, the new United Nations treaty must not rely solely on voluntary commitments or encourage domestic action. Rather, it should be based on enforceable global standards that restrict plastic production and ensure producers take responsibility for plastic waste. A group of forty-nine countries, including the United Kingdom, Canada, France, and Germany, came together to form the High Ambition Coalition to End Plastic Pollution, which advocates for such enforceable global standards to be the basis of the new U.N. treaty.[113]

However, there is growing opposition to this approach from a coalition led by the United States and Japan.[114] The United States asserts that the "primary mechanism" of enforcement should be "the development of national action plans."[115] The official leading the treaty negotiations for the United States believes that "[t]he best way is through a Paris-like agreement that helps countries take ambitious action and holds them accountable, let's [sic] them be innovative on finding solutions, and leads to action now and not later."[116] However, environmentalists are pessimistic that this domestic-based approach will be enough to curb the crisis,[117] especially when projections currently show ocean plastic waste is on track to more than triple by

112 *Id.*

113 *End Plastic Pollution by 2040*, HIGH AMBITION COAL. TO END PLASTIC POLLUTION, https://hactoendplasticpollution.org/ [https://perma.cc/YA2A-GFE2].

114 John Geddie & Valerie Volcovici, *Exclusive: U.S. Seeks Allies as Split Emerges over Global Plastics Pollution Treaty*, REUTERS (Sept. 27, 2022, 10:41 AM), https://www.reuters.com/world/exclusive-us-seeks-allies-split-emerges-over-global-plastics-pollution-treaty-2022-09-27/.

115 *Id.*

116 *Id.*

117 *Id.*

2040.[118] Additionally, the Paris Agreement has faced widespread criticism for having little to no enforcement mechanisms, as evidenced by countries missing key deadlines and facing no consequences.[119] The Paris Agreement is yet another example of a well-intentioned international agreement rendered ineffective by a lack of compliance and enforcement mechanisms. The pressing and international nature of the marine plastic pollution crisis demands an enforceable global solution.

### *A. Extended Producer Responsibility Introduction*

Extended Producer Responsibility, or EPR, is a solution that forces producers to take financial responsibility for the true cost of their products.[120] Under current international law, governments, consumers, and the environment are too often forced to bear the burden of producers' waste. In contrast, EPR systems operate on the "producer pays" philosophy.[121] This shifts the burden onto the businesses that create the waste to pay for its collection and disposal.[122] A common concern for opponents of EPR programs is that companies will pass on these higher costs through price increases for consumers.[123] However, recent studies show that fear is misguided.[124] A recent Columbia University study concluded, "Even if EPR compliance costs were to lead to a doubling of packaging costs throughout the value chain, the

118 Kurtela & Antolović, *supra* note 24, at 52.

119 *See* Oliver Millman, *Governments Falling Woefully Short of Paris Climate Pledges, Study Finds*, THE GUARDIAN (Sept. 15, 2021, 12:16 AM), https://www.theguardian.com/science/2021/sep/15/governments-falling-short-paris-climate-pledges-study [https://perma.cc/CC4H-UGQ3].

120 EMMA WATKINS & SUSANNA GIONFRA, INST. FOR EUR. ENV'T POL'Y, HOW TO IMPLEMENT EXTENDED PRODUCER RESPONSIBILITY (EPR): A BRIEFING FOR GOVERNMENTS AND BUSINESSES 4 (2019), https://d1kjvfsq8j7onh.cloudfront.net/downloads/wwf_germany_epr_briefing___final_230819.pdf [https://perma.cc/4P7H-T8TB].

121 *See id.*

122 EMMA WATKINS ET AL., INST. FOR EUR. ENV'T POL'Y, EPR IN THE EU PLASTICS STRATEGY AND THE CIRCULAR ECONOMY: A FOCUS ON PLASTIC PACKAGING 4 (2017), https://zerowasteeurope.eu/wp-content/uploads/2019/11/zero_waste_europe_IEEP_EEB_report_epr_and_plastics.pdf [https://perma.cc/8ZS5-42PF].

123 *See* Michael Washburn, *Does EPR Increase Consumer Costs? Spoiler Alert – Not as Much as Critics Say*, THE RECYCLING P'SHIP (Aug. 1, 2022), https://recyclingpartnership.org/epreconomicresearch/ [https://perma.cc/7VPS-R28Z].

124 *Id.*

computed upper bound [increase for consumers] is approximately 0.69% of grocery spending."[125]

EPR programs accomplish their goals through two main avenues. First, the programs function to shift responsibility for waste management upstream from the consumer to the producer, with oversight from a governing body.[126] Second, producers are given incentives to incorporate environmental concerns into their product design and packaging.[127] Businesses will be incentivized to move toward products made from more environmentally friendly packaging and materials.[128] In turn, this also creates a market for compliant waste disposal, which strengthens a country's waste disposal infrastructure.[129]

### *B. EPR Systems Worldwide*

EPR systems are growing in popularity and have achieved remarkable results in countries worldwide.[130] Germany led the way in the early 1990s with its implementation of a government-mandated EPR system.[131] Since then, a vast majority of European nations have adopted some form of EPR system, with Asia not far behind.[132] In fact, a 2018 update to the EU's Packaging Directive mandated that EU countries adopt EPR programs for all packaging by the end of 2014.[133] Despite generating more than a quarter of a billion tons of municipal solid waste annually, the United States lags behind most nations in recycling rates.[134] This is largely due to the archaic technology in the United States' underfunded recycling system and the lack of

125 Satyajit Bose, *Economic Impacts to Consumers from Extended Producer Responsibility (EPR) Regulation in the Consumer Packaged Goods Sector*, COLUM. ACAD. COMMONS (July 21, 2022), https://academiccommons.columbia.edu/doi/10.7916/n2af-vv87 [https://perma.cc/G3A4-XDTM].

126 *Product Stewardship & Extended Producer Responsibility*, N.Y. STATE DEP'T ENV'T CONSERVATION, https://www.dec.ny.gov/chemical/66746.html [https://perma.cc/7VR9-Z9A2]. *See also* WATKINS & GIONFRA, *supra* note 120, at 5–6.

127 *Product Stewardship & Extended Producer Responsibility*, *supra* note 126.

128 WATKINS & GIONFRA, *supra* note 120, at 5–6.

129 *Id.*

130 SCOTT CASSEL ET AL., PROD. STEWARDSHIP INST., EPR FOR PPP: POLICIES, PRACTICES, AND PERFORMANCE 4–6 (2020), https://productstewardship.us/wp-content/uploads/2022/11/PSI_EPR_for_PPP.pdf [https://perma.cc/F6YP-CDBL].

131 *Id.*

132 *Id.*

133 *Id.* at 5–6.

134 *Id.* at 2.

centralized EPR programs regarding packaging.[135] Currently, there are more than 350 EPR programs worldwide.[136]

EPR programs are most effective at eliminating plastic pollution when they target product packaging, especially single-use packaging, rather than products themselves.[137] This is because packaging is the single largest market for plastic producers.[138] In fact, packaging alone composes more than a third of all global plastic production.[139] There is a documented pattern of countries seeing great success when enacting EPR policies around packaging.[140] For example, after enacting such a policy, Ireland saw recycling rates for packaging and paper products jump from 19% in 2000 to 65% in 2017.[141] In the same period, rates increased in Italy from 38% to 67% and in Spain from 40% to 68%.[142] Today, nearly all European Union countries with such a policy have rates exceeding 60%.[143] These EPR programs, based on the "producer pays" philosophy, have resulted in industry producers contributing approximately $5.5 billion per year for the collection, sorting, and recycling of packaging across Europe.[144] Although more research is needed to determine the effectiveness of EPR policies on products themselves, it has been consistently shown that implementing EPR policies reduces the generation of plastic waste.

### *C. Individual Producer Responsibility (IPR)*

When designing EPR regulations, leaders must practically consider how the programs will be implemented. Must producers take an active role in proper waste disposal? Who exactly will the responsibilities be imposed upon? Different systems may be appropriate for different regions. However, there are two overarching categories of EPR systems. Individual Producer Responsibility (IPR) is a version of EPR that requires the producer to directly engage with the end user in

135 *Id.* at 2, 7–8.
136 *Id.* at 4.
137 *See id.* at 4–8.
138 Geyer et al., *supra* note 13, at 1.
139 *Id.*
140 *See* CASSEL ET AL., *supra* note 130, at 5–7.
141 *Id.* at 6.
142 *Id.*
143 *Id.*
144 *Id.*

properly disposing of the waste.[145] A program like this would require a beverage manufacturer, like Coca-Cola, to develop recycling programs in which the consumer returns all cans and bottles to Coca-Cola. IPR programs lower governmental involvement, especially because an important characteristic of such programs is requiring the producer to repossess the product after it becomes waste.[146] This does provide benefits to the public, as it frees up government resources and imposes a more accurate allocation of cost onto the producer.[147] Additionally, it encourages producers to innovate in product design to create less wasteful products.[148]

However, the benefits of IPR programs are often overshadowed by the logistical difficulties. The logistics of requiring a producer to take back their products after they become waste is incredibly complicated, especially for single-use plastics.[149] This is because the producer does not have much contact with the end consumer, and it can be difficult to trace a piece of waste back to a consumer or producer.[150] Imagine the logistical nightmare that would ensue if Frito-Lay was required to ensure every bit of single-use packaging returned to them. Unfortunately, packaging, the largest market for plastic use, composes more than one-third of global production of plastic.[151] For higher value items, such as laptop computers, there is potential for an IPR system to work.[152] However, for lower value items that largely make up plastic pollution, the logistical difficulties of collecting the vast amount of waste product make most IPR programs impractical.

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145 Vera Susanne Rotter et al., *Practicalities of Individual Producer Responsibility Under the WEEE Directive: Experiences in Germany*, 29 WASTE MGMT. & RSCH. 931, 931–32 (2011).

146 *See* ORG. FOR ECON. COOP. & DEV., EXTENDED PRODUCER RESPONSIBILITY: UPDATED GUIDANCE FOR EFFICIENT WASTE MANAGEMENT 164 (2016).

147 Rotter et al., *supra* note 145.

148 *See id.* at 932.

149 *See id.* at 942.

150 Jehan El-Jourbagy et al., *Creating an Industrial Regulatory Framework to Reduce Plastics*, 18 BERKELEY BUS. L.J. 94, 115 (2021).

151 Geyer et al., *supra* note 13, at 1–2.

152 *See Apple Trade In*, APPLE, https://www.apple.com/shop/trade-in [perma.cc/S8NV-W4PA].

### *D. Producer Responsibility Organizations (PROs) Impose Collective Responsibility*

The second overarching category of EPR systems uses groups known as Producer Responsibility Organizations (PROs). Rather than imposing an individual responsibility on producers, this style of EPR system imposes a collective responsibility on an industry to meet waste collection and disposal goals.[153] The PRO's board of directors is typically composed of high-ranking members in the industry, who have both a stake in the outcome and the understanding to supervise such a project.[154] The producers in the industry are responsible for paying fees to the PROs.[155] In exchange, the PROs are responsible for the process of waste collection and proper disposal for the industry.[156] Depending on the specifics of the EPR policy, this process can either be directly managed by the PRO or contracted out to a waste disposal company.[157] PROs are also responsible for educating the public on how to properly dispose of their waste.[158] Although the PROs are responsible for ensuring the industry meets their collective responsibility, they still report to governments, who work closely with the PROs to set realistic targets.[159]

Imposing a collective responsibility on an industry through PROs allows for some unique benefits. Pooling producer funds into a single organization composed of the brightest minds in the industry will likely result in a more efficient waste collection and disposal system than if producers had to each develop their own solutions.[160] This collective responsibility system also solves the problem of the vast amounts of lower-value waste products that cannot be traced back to a certain producer. The PROs, usually made up of experienced industry professionals, ensure the entire industry takes accountability and certain producers do not get to evade recycling costs.[161] PROs are empowered to use internal compliance mechanisms to ensure producers are assigned appropriate responsibility.[162] Additionally,

153 WATKINS ET AL., *supra* note 122, at 4.

154 *See id.* at 4, 11.

155 *Id.* at 11.

156 *Id.*

157 *Id.*

158 *See id.* at 35.

159 *See* ORG. FOR ECON. COOP. & DEV., *supra* note 146, at 28–29.

160 El-Jourbagy et al., *supra* note 150, at 115–16.

161 *Id.*

162 *Id.*

producers in many industries tend to prefer the self-regulatory nature of PROs over more intrusive governmental oversight.[163] For example, the European Commission has seen great success with the Circular Plastic Alliance, which has committed to "boosting the EU market for recycled plastics to 10 million ton[s] by 2025."[164] The Alliance currently has more than 300 voluntary signatories.[165] As long as the industry meets the goals set in collaboration between the government and the PRO, the government need not intrude and regulate further.

There are some potential problems that can arise when using PROs to impose a collective responsibility on an industry. Internal conflicts can arise between producers that typically compete in the marketplace when they are forced to collaborate.[166] Additionally, some antitrust concerns may arise when marketplace competitors work closely together.[167] As the waste collection and disposal sector grows, government regulators may perceive PROs that directly manage industry systems as creating an unfair barrier to new entrants.[168] However, thanks to the flexibility of PROs, these difficulties do not present insurmountable obstacles. PROs have great freedom in the methods they use to achieve their end goals. This freedom, combined with the expertise of board members and a steady stream of fees from producers, allows them to adapt to market conditions and governmental regulations. For example, in the early days, many PROs in Europe contracted with local governments, which already had recycling infrastructure in place.[169] Later, when EPR systems matured, PROs began contracting directly with private recyclers or even developing their own recycling infrastructure.[170] The adaptability of PROs and their greater ability to deal with high-volume, low-value waste products make them a superior choice for addressing plastic pollution.

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163 The Circular Plastics Alliance in Europe is a great example of this. For more information, see *Circular Plastics Alliance*, EUR. COMM'N, https://ec.europa.eu/growth/industry/policy/circular-plastics-alliance_en [https://perma.cc/6EMV-P92F].

164 *See id.*

165 *Id.*

166 El-Jourbagy et al., *supra* note 150, at 116.

167 *Id.*

168 *Id.*

169 ORG. FOR ECON. COOP. & DEV., *supra* note 146, at 28–29.

170 *See id.*

## IV
## THE UNITED NATIONS SOLUTION

The international community must act now to address the plastic pollution crisis. Inaction will not only result in irreparable damage to our oceans,[171] but it will also cause humanity to suffer numerous health consequences from ingesting microplastics.[172] Researchers continue to sound the alarm and call for action. A March 2023 report from the Minderoo-Monaco Commission on Plastics and Human Health was hailed as "one of the most comprehensive to date in compiling evidence of plastics' risks for humans, the environment and the economy at every stage of their lifecycle."[173] Among other concerning findings, this report found that less than 10% of plastics are reused or recycled and the rest is burned or goes into landfills.[174] Additionally, the report concluded that these landfills are often in poorer countries that lack the resources to regulate them, resulting in harmful pollutants leaching into the ocean.[175] In 2015, health-related costs from plastic production were more than $250 billion.[176] As the lead author concluded, "The bottom line is that plastic is not nearly as cheap as we thought it was, it's just that the costs have been invisible."[177]

This damning report, and others like it, have become increasingly common since the U.N. Environment Programme announced its commitment to develop a binding international treaty that addresses the full life cycle of plastic production by 2024.[178] This treaty represents a beacon of hope for researchers who have been sounding the alarm on plastic pollution. The authors from the Minderoo-Monaco Commission recommended that this treaty take bold steps to cap plastic production and ban some single-use plastics.[179] Companies and consumers alike are recognizing the dangers that plastic pollution poses to everyday life and are committing to addressing the problem.[180] Additionally, the

171 Almroth & Eggert, *supra* note 27, at 319.

172 AZOULAY ET AL., *supra* note 33, at 61–62.

173 Tatum McConnel, *Every Stage of Plastic Production and Use Is Harming Human Health: Report*, ENV'T HEALTH NEWS (Mar. 21, 2023), https://www.ehn.org/effects-of-plastic-pollution-on-human-health-2659624790.html [https://perma.cc/8MVC-ENGZ].

174 PHILIP J. LANDRIGAN ET AL., THE MINDEROO-MONACO COMMISSION ON PLASTICS AND HUMAN HEALTH 6 (2023).

175 *Id.* at Section 3—Ocean Health.

176 *Id.* at 3.

177 McConnel, *supra* note 173.

178 *What You Need to Know About the Plastic Pollution Resolution*, *supra* note 17.

179 LANDRIGAN ET AL., *supra* note 174, at 123–24.

180 *See End Plastic Pollution by 2040*, *supra* note 113.

COVID-19 pandemic resulted in a dramatic increase in the production of single-use plastics, but also showed the world the kind of positive environmental effects that can happen when the economy slows.[181]

These circumstances present the perfect storm for the most powerful international organization, the United Nations, to address plastic pollution with its upcoming treaty. The United Nations should use PROs in the 2024 treaty to impose a collective responsibility on the international community to end the plastic pollution crisis.

### *A. Improving upon Current International Law*

Using PROs to impose a collective responsibility upon the international community would be an improvement over current international frameworks that inadequately address plastic pollution. Current international law in this area does not sufficiently track compliance, have effective enforcement mechanisms, or address both land-based and ocean-based plastic pollution.

One of the leading international frameworks, MARPOL, showcases these issues. Port states lack incentives to enforce MARPOL protocol because there are no rewards or punishments for doing so.[182] Many annual signatories simply fail to submit the annual report with no consequences.[183] Additionally, although the treaty seeks to limit dumping of plastic waste from ships at sea, it leaves land-based sources unaddressed.[184] As discussed above, this is simply not enough to combat marine plastic pollution when up to 80% comes from land-based sources.[185] Other international frameworks, such as UNCLOS and the London Protocol, have similar shortcomings.

A system based on PROs would improve upon these shortcomings. In its upcoming treaty, the United Nations should require all signatories to form PROs. Every country's PRO could then work with its national government and the U.N. Environmental Programme to set a realistic goal for reducing plastic pollution, while keeping research like the Minderoo-Monaco Commission in mind. This goal should encompass a cap on plastic production, improving plastic waste collection and

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181 Dave Ford, *COVID-19 Has Worsened the Ocean Plastic Pollution Problem*, SCI. AM. (Aug. 17, 2020), https://www.scientificamerican.com/article/covid-19-has-worsened-the-ocean-plastic-pollution-problem/ [https://perma.cc/2H6B-B9KS].

182 Becker, *supra* note 58.

183 Peet, *supra* note 56.

184 *See* Kazarian, *supra* note 55, at 63.

185 Ritchie, *supra* note 22.

disposal, and limiting further production of certain single-use plastics like packaging. The PROs could collect fees and compliance data from producers and report directly to the U.N. Environmental Programme.

This collective responsibility system would be more effective than current international law seeking to limit plastic pollution because it better tracks holistic compliance and has the backing of the United Nations for enforcement. Rather than tracking only pollution originating at sea or one juncture of the plastic life cycle,[186] this method would track the circular life cycle of plastic from its production on land to its eventual reuse or disposal. This method also allows for a more cooperative process that will improve compliance and ensure realistic goals. PROs will include industry experts and plastic producers that possess operational knowledge of what it takes practically to implement a goal. This knowledge would be valuable when working with national governments and the United Nations for setting country-specific goals to reduce pollution.[187] Additionally, the collective nature of this solution eliminates free riders and ensures that every country is doing its part.[188]

Giving the producers a seat at the table through the use of PROs will not only improve the goalsetting process, but it will also incentivize the producers to meet those goals. Producers tend to prefer the self-policing nature of PROs, which, by design, have very little government oversight.[189] As long as the PROs meet their goals, governments or the United Nations need not step in and impose overly burdensome regulation. Additionally, PROs are usually empowered to enforce their rules through levying financial penalties on uncooperative producers. As the United Nations' first treaty of its kind that solely focuses on plastic pollution,[190] this treaty must take the bold step of imposing collective responsibility through PROs to address an epidemic that threatens our very existence.

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186 *See* Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, *supra* note 77.

187 Although this Section refers to country-specific goals, it could be more efficient to create regional PROs that have collective, region-specific goals. Analysis of a regional PRO framework is beyond the scope of this Comment, however.

188 *See* El-Jourbagy et al., *supra* note 150, at 115–16.

189 *See Circular Plastics Alliance*, *supra* note 163.

190 *See What You Need to Know About the Plastic Pollution Resolution*, *supra* note 17.

### *B. The United Nations' Role and Other Advantages of PROs*

Environmental scholars have long called for a comprehensive, binding international treaty that targets plastics.[191] In a historic win for the environment, the United Nations Environmental Assembly (UNEA) is making progress toward such a treaty.[192] In order for such a treaty to be effective, the UNEA must carve out an appropriate role for itself during the treaty drafting process, while still empowering PROs.

During the treaty drafting process, the UNEA should decide what powers PROs will possess. PROs are most effective when they are given the power to enforce the rules made in pursuit of their goals.[193] A common problem with binding international treaties is the difficulty of creating a single solution that works for many countries with different laws and political landscapes.[194] PROs can solve this problem because their flexible, self-policing nature allows the experienced professionals in the industry to create specialized plans and work with governments as needed. The UNEA should ensure PROs are acting in good faith and oversee the reporting process. If a country's PRO does not meet its predetermined goals, then the UNEA should step in and take a more active role in regulating the plastic industry for that country.

In addition to working with national governments and PROs to set realistic goals, the UNEA should also take a portion of the fees PROs collect from producers and use it to fund cleanup efforts in international waters[195] and encourage innovation. Many countries simply do not have sufficient recycling infrastructure for their waste, leading them to ship plastic waste off to poorer, less regulated countries.[196] The waste is often poorly contained and ends up in the ocean.[197] The use of PROs has the potential to create a boom in the waste collection and recycling industry. In order to meet their goals, PROs can choose to

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191 *See* Elizabeth A. Kirk & Naporn Popattanachai, *Marine Plastics: Fragmentation, Effectiveness and Legitimacy in International Lawmaking*, 27 REV. EUR., COMP. & INT'L ENV'T L. 222, 229–33 (2018).

192 *Fifth Session of the United Nations Environment Assembly*, UN ENV'T PROGRAMME, https://www.unep.org/environmentassembly/unea5 [https://perma.cc/KEY6-WNWN].

193 *See* El-Jourbagy et al., *supra* note 150, at 115–16.

194 *See* UNCLOS, *supra* note 65, art. 207(1).

195 *See, e.g.*, THE OCEAN CLEANUP, https://theoceancleanup.com/ [https://perma.cc/4DVM-YAWP].

196 Uhm, *supra* note 80, at 1–7.

197 *Id.*

either develop their own waste collection and disposal system or contract with third parties.

Infrastructure must be built to accommodate the increased demand. This would create jobs and encourage innovation as the marketplace seeks to find more efficient methods to recycle plastic. The UNEA should encourage this innovation and fund projects accordingly, with its portion of producer fees. By taking an appropriate role that empowers PROs, the UNEA can use the advantages of the collective responsibility structure to create an enforceable treaty that addresses plastic pollution.

## CONCLUSION

The new United Nations treaty should make use of Producer Responsibility Organizations to impose collective responsibility on plastic producers. This solution overcomes the shortcomings of current international law because it tracks actor compliance, provides an effective mechanism for enforcement, and addresses land-based sources of pollution.[198] The flexible nature of PROs allows for customized regional solutions created by experienced professionals in the industry.[199] Unlike existing international laws, which mainly rely on voluntary compliance, PROs have U.N.-backed authority and expertise to enforce regulations.[200] The United Nations should use PROs as a part of its new treaty to address the plastic pollution crisis before catastrophic damage is done to mankind and the environment.

198 *See supra* Parts III–IV.

199 *See supra* Section III.D.

200 *See supra* Section IV.A.