



FORUM: Environment Commission

ISSUE: Measures to Address Marine Pollution and Plastic Waste in International Waters

STUDENT OFFICER: Boyun Choi

POSITION: Deputy Chair of Environment Commission

Introduction

Marine pollution has been one of the international agenda items for decades, but the vast scale of the plastic problem has once again elevated it to the very top of the United Nations' priorities on the environment. Every year, between 19 and 23 million tons of plastic waste flow into lakes, rivers, and the sea. Without stronger action, this amount is expected to nearly triple by 2040, with 23 to 37 million tons of plastic waste added to the sea each year. Especially, plastic accounts for about 85% of all ocean debris.

This burden is not shared evenly among the countries. More than 80% of the plastic entering the world's oceans originates from fewer than 1,000 rivers, most of which are in Asia. Additionally, only a very small number of countries account for disproportionately large amounts. According to a study published in Science Advances in 2021, Philippines produces about 356,371 tons of ocean plastic waste annually, which is the highest in the world. In Philippines, cities such as Metro Manila discharge large amounts of land-based plastic waste through urban waterways like Pasig River, which is considered the world's largest source of plastic inflow. This phenomenon has spread throughout Southeast Asia, within countries like Philippines, Malaysia, Indonesia, Myanmar, Vietnam, and Thailand. In doing so, these nations account for more than half of the world's marine plastic pollution.

It is also important to note that this issue is beyond a matter of which country produces or consumes the most plastic. Countries with smaller land areas, longer coastlines, and higher precipitation are more likely to see plastic waste flow into the ocean. This is especially true for countries with weaker waste management systems, regardless of their total emissions. The damage caused by this imbalance ultimately falls most heavily on the very coastal countries that are emitting the most pollution. Plastic pollution not only harms the tourism and fishing industries that these economies depend on, but the pollutants themselves that end up flowing into the sea do not care at all about the borders that would determine who is responsible.

Background



Marine pollution has a long history that has continued long before plastic. The act of dumping waste into the sea dates back to ancient times, but during the Industrial Revolution, when factories began dumping waste into rivers, pollution reached truly serious levels, and those rivers flowed into the sea. By the twentieth century, the sea had become a place where all the waste produced by land-based industries was essentially discarded. Communities

around the world regarded the sea as little more than a place to dump garbage into, with little regulation, until the 1970s. These included industrial chemicals, sewage, and oil, and there were some limitations to them until the early 1970s when the international community began organizing around this issue.



Regulation began following the London Convention of 1972 and the MARPOL Convention of 1973, which were the first genuine global treaties concerning marine dumping and ship-based waste. However, these treaties were created in response to pollution problems of the time, mainly waste dumping and oil emissions, and because plastic waste had not yet emerged as a major problem, they were not specifically designed with plastics in mind.

It began to change from the 1980s. As the plastic waste piling up in the sea became no longer something that could be ignored, attention noticeably shifted from oil spills to plastic waste. Since the mid-20th century, plastic production has increased substantially. Many industries started to use plastic in cheap, disposable consumer goods. Consequently, a significant portion of it has inevitably ended up flowing into rivers, lakes, and the ocean. When scientists began directly measuring the scale of the problem, the figure was shocking. According to a widely cited study from 2015, coastal nations emitted 275 million tons of plastic waste over one year, of which an estimated 12.7 million tons to 4.8 million tons had entered the oceans.



Plastic has now become the leading cause of marine pollution and acts differently from previous types of waste. Although oil and industrial chemicals break down or disperse slowly, plastics do not, and they accumulate in marine eddies and along the coast for decades. In addition to this persistence, the enormous amounts that are still being produced and discarded have brought plastic pollution to the center of marine pollution issues, and it remains a challenge that international negotiations are still trying to address today.

Problems Raised

Ecosystem Degradation and Biodiversity Loss



Marine litter directly kills marine life through entanglement and ingestion. According to a 2018 UN report, more than 600 species of marine life are harmed by marine litter, and 15% of them are already endangered. It is estimated that more than 100,000 marine mammals die each year from ghost fishing gear alone, and nearly 85% of the remaining North Atlantic gray whale population has injuries caused by entanglement in nets. Sea turtles are suffering particularly severe damage. All seven species of sea turtles inhabiting the Atlantic, Pacific, and Mediterranean Oceans had microplastics found in their guts, and in a study conducted in the Mediterranean, nearly half of the loggerhead turtles examined were found to have ingested some form of

plastic by mistaking floating plastic bags or films for jellyfish. The seabirds are experiencing a similar fate as well. According to recent research, plastic was found in 90% of the surveyed seabirds, and repeated ingestion caused a new disease specific to plastic in some populations. Researchers coined the term “plasticosis” to describe the phenomenon of scarring forming inside due to the sharp edges of degradable plastics, a condition now observed in seabirds such as the flesh-eaten gull.



Human Health and Food Security



Marine plastic pollution does not remain only in the ocean. It moves up the food chain and flows back into human bodies. Microplastics have already been detected in the human placenta and in human blood, confirming that the exposure is already occurring in real life. Beyond seafood, microplastics have also been found in tap water, bottled water, and everyday items like

salt and beer. The United Nations Development programme suggested that the average adult consumes around 2,000 microplastic particles a year from salt alone.

History warns us of what happens when pollutants quietly accumulate in food and water supplies before anyone even notices. In the Jinz River basin in Japan, wastewater from a mine located upstream discharged cadmium into the river for about 50 years, contaminating the irrigation water used to cultivate rice and ultimately the rice plants themselves. The residents who drank that contaminated rice and water contracted the disease that came to be known as Ita-Ita disease. This disease was not identified until several decades after the contamination began, and by that time nearly 200,000 confirmed cases had been reported in that area alone. This is one of the clearest historical examples showing that pollutants entering water and the food chain can ultimately lead to a large-scale, irreversible public health crisis.

Exposure to microplastics is becoming a serious concern because it may affect the body's normal biological processes. When plastic particles enter the body, they can cause cellular stress and inflammation. In turn, chemicals released from degradable plastics can affect hormone regulation and other important functions. This is of particular concern because these effects can extend beyond temporary exposure and affect long-term development. For example, exposure to plastic-related pollutants during pregnancy is known to lower children's birth weight and negatively affect other developmental outcomes. As plastic waste continues to break down, releasing fine particles and chemical pollutants into the environment, potential health issues may become increasingly difficult to separate from the broad environmental impact of plastic pollution.



International Actions

International Convention for the Prevention of Pollution from Ships (MARPOL) Annex V (1988)

Annex V is part of the broader MARPOL Convention, which the International Maritime Organization (IMO) first adopted in 1973. MARPOL itself was adopted in 1973, but Annex V only came into effect on December 31, 1988, after sufficient States had ratified it and met the treaty's criteria. Annex V generally prohibits dumping all kinds of waste into the sea and allows only exceptional cases, such as food waste or cargo residues under certain conditions. In particular, plastics have been designated as a complete outright prohibited item, making it legally impossible to legally dump plastic waste generated from ships into the sea thereafter. This regulation applies to all vessels with a gross tonnage of 100 tons or more, all vessels certified to transport 15 or more persons, and to fixed or floating offshore platforms.

In practice, rather than directly enforcing it at sea, compliance is compelled through paperwork and penalties. Vessels with a cover must have a waste logbook that records a waste management plan and all records of disposal or incineration, and the fines imposed for violations are set differently for each country to which they are signed. For example, the U.S. Coast Guard can impose a fine of up to \$25,000 per violation on the violator, regardless of where the violation occurred. Currently, 153 countries representing more than 98% of the total gross tonnage of ships worldwide have joined Annex V, making it one of the most widely adopted standards in this field. However, the scope of this law is designually limited, so it only regulates waste generated on ships during normal operation, and takes no action at all against land-based plastic waste, which constitutes the majority of what enters the sea.

UN Global Plastics Treaty Negotiations

In March 2022, the UN Environment Assembly adopted Resolution 5/14 in its resumed fifth session. It initiated negotiations for an international legally binding convention addressing plastic pollution, including the marine environment. Unlike MARPOL, which only addresses waste generated on ships, this treaty was designed to regulate the entire lifecycle of plastics. An intergovernmental negotiation committee (INC) was formed to implement this. Since then, INC has held multiple meetings: reconvening in Punta del Este in 2022, in Paris and Nairobi in 2023, in Ottawa and Busan in 2024, in Geneva in 2025, and an additional special meeting in February 2026. Progress was difficult. There is still debate over whether the treaty should mandate reductions in plastic production and regulate certain concerning chemicals, and whether the resulting obligations should have global legal binding force or be left to the discretion of individual countries. Until the most recent meeting, the final draft of the



agreement had not been agreed upon, making it the most ambitious yet the slowest-moving task among international efforts directly targeting plastic pollution.

Sustainable Development Goal 14.1



SDG 14 presents the international community's shared goal of conserving the ocean and marine resources and using them sustainably. Among them, Target 14.1 aims to prevent and substantially reduce all forms of marine pollution by 2025. Particularly, it emphasizes on pollution from land activities, marine litter, and nutrient pollution. It is significant in that, rather than directly regulating specific industries such as shipping, it broadly addresses the root causes of marine pollution, including the release of plastic waste and nutrients.

The extent of implementation of Goal 14.1 is continuously monitored through concrete indicators, rather than through legally binding regulations. Indicator 14.1.1 uses the coastal eutrophication index and plastic litter density to assess marine pollution, and collects relevant data through a variety of sources, including satellite observations, reports from governments of various countries, and the UNEP Regional Ocean Programme. However, the SDGs have the limitation that they are not legally binding treaties, but rather international goals based on the voluntary implementation by individual countries. Therefore, Target 14.1 functions more as an international monitoring system than as a direct regulatory instrument, enabling countries to measure and compare the extent of marine pollution and the progress of improvement using common standards.

Key Players

Small Island Developing States (SIDS)

Small Island Developing States (SIDS) are often highly dependent on coastal tourism and fishing, making them particularly vulnerable to marine litter. In addition, due to limited land area and waste



management capacity, processing incoming waste is difficult and also very costly. As a result, SIDS tend to receive generally stronger international cooperation and more financial and technical support, especially from major plastic-producing countries.

United Nations Environment Programme (UNEP)

UNEP is a United Nations agency that coordinates the international response to environmental issues, and most of the major measures related to marine plastic pollution discussed in this Commission lie at the center of them. The UN's mandate is defined through resolutions of the UN Environment Assembly, and among them Resolution 5/14 formally called on UNEP to convene an intergovernmental negotiating committee (INC) to develop a legally binding convention on plastic pollution. UNEP does not merely observe this process; it manages it, provides a secretariat, and establishes the technical foundation on which member states negotiate. In addition to treaty negotiations, UNEP operates the Global Partnership on Plastic Pollution and Marine Litter (GPML), a multi-stakeholder partnership formed in 2012, with more than 710 member organizations worldwide currently coordinating plastic pollution response activities.

UNEP's position on this issue is clear. The current governance is inadequate, and only a comprehensive, binding, end-to-end approach can bridge this gap. The current governance strategy and approach remain fragmented responses that do not adequately address the problems of marine plastic waste and microplastics, and it states that this issue requires intervention throughout the entire process, from raw material extraction and product design to final disposal, rather than being limited to narrow shipping or waste management issues. The leadership described the treaty negotiations as a process in which the urgency and pressure for a conclusion are continuously imposed on the delegations, and that they are testing the international community's shared responsibility to protect the environment, ensure human health, and stand in solidarity with the countries most affected by the crisis.

Possible Solutions

Strengthening Extended Producer Responsibility (EPR)

The expansion of producer responsibility as defined by the OECD is an environmental policy approach that extends producers' responsibility throughout the product lifecycle, up to the post-consumption stage. It means that companies that manufacture, import, and sell plastic products are responsible not only for the government and consumers, but also for collecting used packaging materials



for recycling or safe disposal. This has already been successfully piloted in several countries. Japan shows the clearest example of what can be achieved by strict enforcement of the EPR. Thanks to a system that holds producers financially and operationally accountable for the packaging materials they put on the market, Japan's PET bottle recycling rate reached 93% by 2021, placing it among the world's highest. This reflects the legal framework that requires producers to fund and systematically manage the entire process. This process ranges from post-consumption collection to recycling, rather than leaving it to local governments or consumers to handle on their own. The Pew Charities Trust estimated that if the EPR system is implemented more strictly and adopted more widely, marine plastic waste could be reduced by up to 80% by 2040.

In developing countries, where the rate of plastic entering the oceans is especially high, there are still major obstacles to expanding EPR internationally. In this context, applying the EPR involves several challenges, including reliance on informal waste collection systems, high transportation costs, fragile rural waste collection, limited recycling facilities, and producers who evade their obligations. For this reason, the EPR is being discussed more and more as an element of the international framework rather than as a purely national policy. The United Nations Environment Programme (UNEP) is developing global EPR guidelines and providing technical support to pilot countries. Instead of relying on the different laws of each country or temporary fixes that depend on binding global agreements, the Executive Board can consider one concrete option.

Improving Fishing Gear management

The government should strengthen gear management by requiring that owner information be clearly displayed on fishing nets and other fishing gear. Deposit systems or return programs can encourage fishermen to return damaged or unused gear instead of discarding it into the sea. The government can also establish a system for reporting lost fishing gear and recovering it. These measures will reduce ghost fishing, which is becoming an increasing threat to marine ecosystem. Furthermore, this may limit the amount of fisheries-related waste entering the ocean.

Glossary

Marine dumping

Marine dumping is the intentional disposal of wastes, chemicals, or other materials into the ocean from ships, aircraft, or platforms.

Microplastics



Microplastics are tiny plastic pieces that are less than five millimeters (0.2 inches) long. They pollute oceans, soil, air, and food chains because they do not break down easily.

Ghost Fishing

Ghost fishing is the process by which lost, abandoned, or discarded fishing gear (known as "ghost gear") continues to trap, injure, and kill marine life and damage aquatic habitats without human control or supervision. This can occur when fishing nets, traps, lines, or other gear remain active in the water and continue catching organisms long after they have been lost or discarded.





Sources

Encyclopedia.com. “Ocean Dumping.” *Encyclopedia.com*, <https://www.encyclopedia.com/earth-and-environment/geology-and-oceanography/geology-and-oceanography/ocean-dumping>.

EBSCO Research Starters. “Ocean Pollution.” *EBSCO*, <https://www.ebsco.com/research-starters/environmental-sciences/ocean-pollution>.

Fauna & Flora. “How Does Plastic Pollution Affect Marine Life?” *Fauna & Flora*, <https://www.fauna-flora.org/explained/how-does-plastic-pollution-affect-marine-life/>.

International Maritime Organization. “International Convention for the Prevention of Pollution from Ships (MARPOL).” *IMO*, [https://www.imo.org/en/about/conventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-\(marpol\).aspx](https://www.imo.org/en/about/conventions/pages/international-convention-for-the-prevention-of-pollution-from-ships-(marpol).aspx).

International Maritime Organization. “London Convention and Protocol.” *IMO*, <https://www.imo.org/en/ourwork/environment/pages/london-convention-protocol.aspx>.

International Institute for Sustainable Development. “International Legally Binding Instrument on Plastic Pollution, Including in the Marine Environment.” *Earth Negotiations Bulletin*, <https://enb.iisd.org/negotiations/international-legally-binding-instrument-plastics-pollution-including-marine>.

National Geographic Society. “Great Pacific Garbage Patch.” *National Geographic Education*, <https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/>.

National Oceanic and Atmospheric Administration. “Marine Pollution: Ocean Dumping.” *NOAA*, <https://www.noaa.gov/gc-international-section/marine-pollution-ocean-dumping>.

Oceana. “The Impacts of Plastic Pollution on Ocean Animals.” *Oceana*, <https://oceana.org/blog/the-impacts-of-plastic-pollution-on-ocean-animals/>.

One Ocean. “Marine Pollution.” *One Ocean*, <https://www.oceanprotect.org/resources/issue-briefs/marine-pollution/>.

ScienceDirect. “Itai-Itai Disease.” *ScienceDirect Topics*, <https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/itai-itai-disease>.



ScienceDirect. “Microplastics in Seafood: Implications for Food Security, Safety, and Human Health.” *ScienceDirect*, <https://www.sciencedirect.com/science/article/pii/S1385110123000795>.

United Nations Development Programme. “Microplastics on Human Health: How Much Do They Harm Us?” *UNDP*, <https://www.undp.org/kosovo/blog/microplastics-human-health-how-much-do-they-harm-us>.

United Nations Environment Programme. “Intergovernmental Negotiating Committee on Plastic Pollution.” *UNEP*, <https://www.unep.org/inc-plastic-pollution>.

U.S. Fish and Wildlife Service. “Marine Debris: Impacts on Ecosystems and Species.” *U.S. Fish & Wildlife Service*, <https://www.fws.gov/testimony/marine-debris-impacts-ecosystems-and-species>.