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Study Guide

REDUCING PLASTIC WASTE
IN OCEANS AND RIVERS

Letter From The Secretary-General

Most esteemed participants of FLZMUN’25,

I, as the Secretary General of FLZMUN’25, welcome you all to the first edition of this prestigious conference.
It is an honor and a pleasure to be able to present to you what we have been preparing for months and dreaming for years. My team has worked tirelessly to bring the best you have ever seen, starting with our organization to our academics.

Our objective is to facilitate proficient and elevated diplomatic deliberations, fostering valuable and constructive solutions throughout the duration of FLZMUN’25, enriched by the collective contributions of all participants. As a delegate, your journey begins here, with the study guide prepared by our dedicated members; your most honorable chairboard.

I advise you to read this study guide thoroughly and expand your research on different perspectives; focusing on your allocated country. It is essential to bear in mind that each nation and every perspective holds significance if you are adequately prepared to engage with the agenda at hand.

You have my best wishes for success and enriching discussions during these two days of enjoyment. I eagerly anticipate witnessing the valuable contributions you'll make to our conference.

Mehmet Onur ÇİĞDEM
Secretary-General of FLZMUN’25

Introduction to the Committee

The United Nations Environment Programme (UNEP) serves as the leading institution within the United Nations system responsible for environmental protection and sustainable development. Its work focuses on studying the condition of the natural world, identifying environmental problems, and supporting countries in creating solutions that protect ecosystems such as oceans, rivers, forests, and land. One of the significant global challenges UNEP addresses is plastic pollution, which affects both wildlife and human societies.

UNEP conducts scientific research to understand how plastic waste enters the environment and the ways in which it harms living organisms and natural systems. It provides guidance to governments on reducing pollution, improving waste management, and designing cleaner production and recycling systems. UNEP also supports international cooperation, since plastic pollution travels across borders through water and air currents.

In recent years, UNEP has taken an important leadership role in global action on plastic pollution. In 2022, during a session of the United Nations Environment Assembly (UNEA), countries agreed to begin developing a legally binding agreement to reduce plastic pollution worldwide. This decision marked a major step toward addressing the entire life cycle of plastics, including production, design, use, and disposal.

Because plastic pollution affects oceans, rivers, wildlife, human health, and economies, UNEP plays a central role in coordinating international responses and helping nations work together to protect the planet.

Introduction to the Topic

Plastics are materials invented by humans that are light, strong, and inexpensive to produce. Because of these qualities, people all around the world use plastic for many common objects: bottles, food wrappers, bags, containers, toys, clothes, and more. Sadly, these advantages come with a big problem: once plastic items are thrown away or lost, many of them do not disappear. Instead, they can end up in nature, especially in rivers, lakes, seas, and oceans, where they stay for a very long time and harm the environment.

Plastic pollution happens when plastic objects and fragments accumulate in natural places. This pollution is becoming one of the most serious environmental problems in the world. It affects water, land, animals, and even human health.

One part of the problem is easy to see: larger plastic items like bottles, bags, nets, and containers floating in rivers or oceans. Over time, these items can break into smaller pieces because of sunlight, waves, water movement, and weather. These tiny pieces, called **microplastics**, are usually too small to see, but they are dangerous because many animals

mistake them for food. Microplastics can travel with water currents and end up everywhere: on riverbanks, shores, deep sea floors, or even inside marine animals. Because plastics take a long time to break down, sometimes hundreds of years, these pieces accumulate over time and build up into a large problem.

A large portion of plastic pollution in oceans starts on land. People throw away plastic waste, or it is lost from factories, roads, and cities. Rain, wind, floods, or sewage can carry that waste into rivers. Rivers act like conveyor belts: they carry land-based waste downstream, and eventually discharge much of it into seas and oceans.Once plastic reaches the ocean, it does not stay in one place. Ocean currents carry plastic debris far from its original source. Plastic may gather in gyres (large circular ocean currents), accumulate near coastlines, or sink to the seafloor as microplastics.

The consequences of plastic pollution are serious. Plastic waste harms animals , sea turtles, fish, seabirds, mammals, which may eat plastic, get tangled in it, or get injured by it. Some plastics break down into microplastics that small animals ingest; these microplastics can then go up the food chain, affecting larger animals, including humans.

Moreover, microplastics and plastic debris can carry other pollutants, toxic chemicals, industrial residues, or pollutants they accumulate from water. When marine creatures ingest plastic, these pollutants may enter their bodies, and potentially come back to humans through seafood. Because plastic pollution spreads through rivers and oceans, affects many species, and lasts a very long time, it is not only a local problem but a global one. It threatens biodiversity (the variety of life), the health of ecosystems, and the well-being of communities, especially those that depend on water, fishing, and coastal resources.

Therefore the issue of plastic waste in oceans and rivers must be treated as a major global concern. Finding solutions requires understanding how plastic waste travels from land to water, how plastic breaks down and spreads, how it affects wildlife and humans, and what can be done to stop or reduce it. This topic is particularly important because actions taken now, by individuals, communities, and governments, will affect the health of water systems and the living world for many years or even centuries.

History of the Topic

The history of plastic pollution in oceans and rivers is closely tied to the history of plastic itself, how and when plastics were invented, how their use expanded, and how scientific awareness of their environmental impact developed over time.

Origins of Plastic and Early Use

The journey begins in the 19th and early 20th centuries, when inventors began developing new materials to replace scarce or expensive natural materials. The first commercially manufactured plastic is often identified as Parkesine (a modified cellulose-based "plastic"), patented in the 1860s. Later, in 1907, the creation of Bakelite marked the first fully synthetic plastic of wide commercial importance.

These early plastics were used for various goods such as combs, billiard balls (as a substitute for ivory), and other household and industrial products. The word "plastic" itself derives from the Greek "plassein," meaning "to mold or shape," reflecting the material's versatility. However, in these early decades, plastics were still relatively rare. Large-scale environmental effects were not yet visible or documented.

Post-World War II Boom and Rise in Plastic Production

The situation changed dramatically after World War II. Industrialization, economic growth, and consumer culture led to mass production and widespread use of plastic, especially for packaging, disposable items, and a variety of consumer goods.

Global plastic production surged: from modest early output, by the 1950s plastics had become common in many countries. Over the following decades, production grew rapidly. Between 1950 and 2017, it is estimated that humanity produced approximately 9,200 million tonnes of plastic. Of this, around 7,000 million tonnes became plastic waste. This rapid increase meant that large volumes of plastic were entering use , and inevitably, large volumes would eventually become waste.

Early Evidence of Marine Plastic Pollution

As plastic use expanded, signs of environmental impact began to appear. In 1972, the first scientific report of plastic debris in the open ocean was published. The study described small plastic particles found floating in the surface waters of the Sargasso Sea.

Throughout the 1970s and 1980s, researchers recorded increasing encounters with marine litter. Evidence mounted that plastics were no longer limited to landfills or coastal areas; they were reaching the open ocean, carried by currents, wind, and rivers. In the mid-1980s, systematic scientific observations began. During an expedition in 1986, researchers counted small plastic items in surface water trawls across the North Atlantic, marking the start of long-term data on ocean plastic accumulation.

By the 1990s, plastic pollution in oceans had increased markedly. For instance, a long-term time series (covering 1957 to 2016) shows a sharp rise in the frequency of plastic entanglement in marine sampling nets after 1990, suggesting a significant acceleration. In 1996, an environmental researcher discovered enormous accumulations of plastic debris in a central ocean gyre, what became widely known as the Great Pacific Garbage Patch. The first scientific description of this garbage patch was published a few years later. Around the same

time, awareness of small plastic particles, now called microplastics, grew. In 2004, scientists reported microplastics widely present in ocean sediments and surface waters.

Growing Recognition of the Problem and Early International Response

By the 1980s and 1990s, it became clear that marine plastic pollution was not just from dumped rubbish or lost fishing gear, but from widespread, diffuse sources , especially from land. Mismanaged waste, urban runoff, littering, poor waste disposal systems, and loss or dumping of plastic during manufacturing or transport started to be recognized as major drivers.

In response, some early legal measures were taken. One milestone was the adoption of MARPOL Annex V (Marine Pollution regulations), which came into effect in December 1988. This regulation prohibited dumping of plastics from ships into the ocean. At the same time, some in industry recognized the need to prevent plastic pellet spills (during production, packaging, or transport), these pellets could easily be lost into waterways and eventually reach oceans.

Nevertheless, even though dumping from ships was regulated, most litter entering the oceans came from land-based sources, which were harder to control. The volume of plastic items entering marine environments was growing faster than these early mitigation efforts could contain.

Plastic Pollution in the 21st Century: Exponential Growth and Scientific Evidence

The 21st century brought dramatic increases in both plastic production and plastic waste entering marine and freshwater systems. Global plastic production rose sharply: by 2016, worldwide annual production had reached hundreds of millions of tonnes. Despite efforts at waste management, recycling, and legislation, a large proportion of plastic waste remained mismanaged: not collected properly, not recycled, or dumped. As a result, both macroplastic (large items) and microplastic pollution continued to accumulate. Scientific monitoring confirmed this trend. The 60-year time series (1957–2016) for the North Atlantic showed a clear rise in open-ocean plastics, especially after 1990. PMC Observations in many parts of the world revealed plastic debris in surface waters, coastal zones, sediments, and even in remote ocean basins far from human activity.

In parallel, researchers documented more frequent interactions between marine animals and plastic debris: ingestion by seabirds, entanglement of marine mammals and turtles in plastic nets and waste, and accumulation of plastic fragments in marine habitats such as coastlines, seabed, and gyres.

By the 2010s and 2020s, plastic pollution had become recognized as a global environmental crisis. International bodies, scientists, environmental organizations, and governments began calling for coordinated global action. Data from international monitoring

and scientific research raised alarm about the scale, persistence, and long-term risks of plastic in natural water bodies.

Recent Projections and the Urgency of Global Action

According to the most recent data from the United Nations Environment Programme (UNEP), every year 19 to 23 million tonnes of plastic waste leak into aquatic ecosystems, rivers, lakes, seas, and oceans. UNEP estimates that of the 9,200 million tonnes of plastic produced globally from 1950 to 2017, about 7,000 million tonnes became waste. If current trends continue without effective intervention, the flow of plastic waste into aquatic ecosystems is projected to nearly triple by 2040. Thus, the problem has moved from being seen as isolated pollution events to a systemic, global environmental threat, one that requires international cooperation, strong policies, waste management, reduction in plastic production, and changes in consumption habits.

Key Terms & Definitions

Plastic Pollution / Marine Litter / Plastic Waste: All kinds of plastic items, from large objects (bottles, bags, fishing nets) to tiny particles, that enter natural water bodies (rivers, lakes, seas, oceans) and contaminate them.

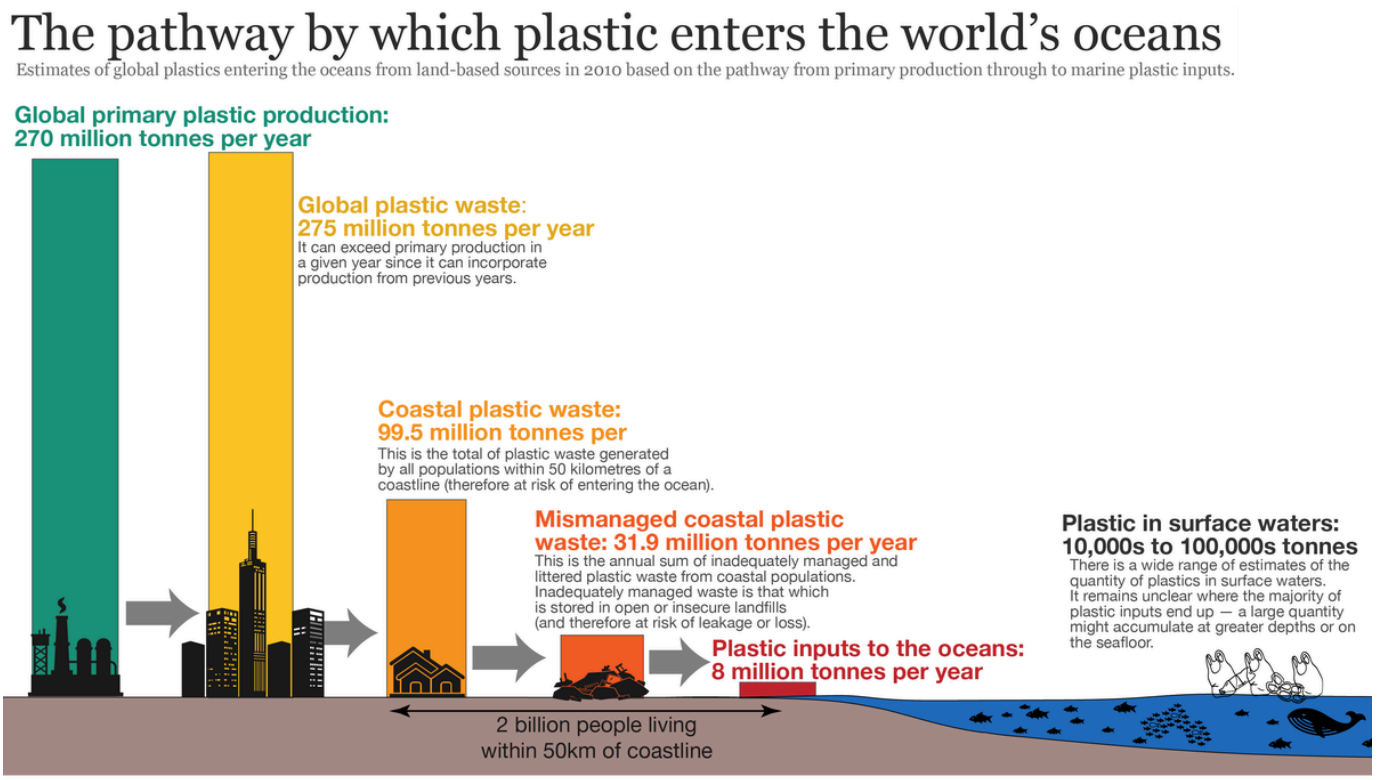
Microplastics: Very small plastic particles (smaller than 5 millimeters) that result when larger plastic pieces break down under sunlight, waves, or mechanical wear. Microplastics can be swallowed by small creatures, including fish, and can move up the food chain, potentially affecting larger animals and even humans.

Riverine Plastic Emissions: Plastic waste that is carried by rivers from land into seas/oceans. When waste is thrown or dumped on land, especially near cities, villages, or poorly managed waste sites, rain, wind, and floods can carry that waste into rivers, which then flow to the sea. Rivers act as “highways” that transport land-based plastic waste into marine ecosystems.

Plastic Lifecycle: The full “life journey” of a plastic item, from its production (making plastic from raw materials), through manufacturing and use, to disposal or recycling. A lifecycle approach takes all phases into account to prevent plastic waste from leaking into nature. This concept is central to the new global treaty being negotiated under UNEP.

Global Treaty / International Legally Binding Instrument on Plastic Pollution: A future international agreement that would require participating countries to follow shared rules and standards on plastic production, design, waste management, and pollution reduction. The aim is to address plastic pollution at a global, coordinated level rather than having fragmented national rules.

Waste Mismanagement: When plastic waste is not properly collected, recycled or disposed of , for example, thrown out as litter, dumped illegally, burned, or put in open dumps, which increases the chance that plastic will enter natural environments. In many regions, weak waste management systems contribute significantly to plastic pollution.



Stance of Key Countries and Concepts

The debate over how to reduce plastic waste in oceans and rivers, especially under a prospective global treaty, has revealed major differences among countries. These differences reflect each country's economic interests, industrial structure, and environmental priorities. Below is a summary of the main positions of key countries (or groups of countries), and the core concepts that shape their stances.

Major Positions and Country/Group Perspectives

High-Ambition Coalition (Pro-Regulation / Production-Caps Advocates)

A group of countries supports a strong, comprehensive treaty that regulates plastics throughout their full lifecycle, from production to disposal. Key elements of their stance:

- They argue that to meaningfully reduce plastic pollution, it is not enough to focus only on waste management or recycling; plastic production itself must be limited.

- They support banning or phasing out certain problematic plastics (e.g., single-use plastics), eliminating harmful additives or chemicals in plastic products, and establishing design standards to encourage reuse or easy recycling.

- They often invoke the principle that producers, not only waste handlers, should be held financially responsible for the environmental harm caused by plastics.

- Many countries in this coalition aim for a long-term goal of ending or significantly reducing plastic pollution by a certain target year (e.g., 2040).

Members or leading supporters of this coalition include some states of the European Union (EU), and countries such as Rwanda, Australia, and several others.

The rationale behind their approach is that limiting production addresses the problem at its source. They argue that waste management and recycling alone cannot keep up with the volume of plastic produced globally.

“Like-Minded” Group / Oil- & Petrochemical-Producing Countries (Production-Caps Opponents)

Another group, often nations with significant fossil-fuel or petrochemical industries, resists rules that would limit plastic production or regulate raw materials and polymers. Their key arguments:

- They argue that a treaty focusing on production caps or regulation of raw materials goes beyond the mandate and could harm their economies, especially since plastic and petrochemicals are major industries for them.

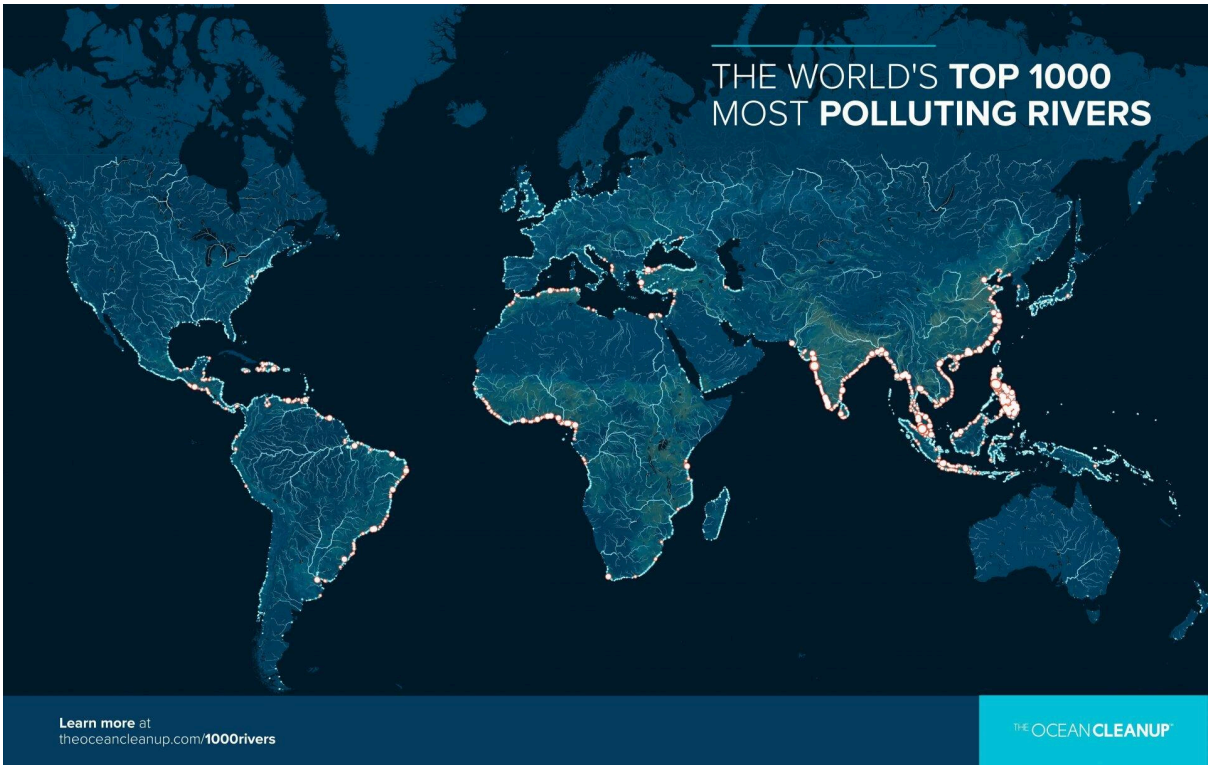
- They prefer that the treaty focus instead on waste management: improving collection, recycling, disposal, reuse, and design standards of plastic products, rather than limiting production or raw-materials supply.

- They often emphasize national sovereignty and flexibility, arguing that each country should decide its own policies based on domestic circumstances rather than being bound by globally uniform caps or detailed restrictions.

- Many of these countries are among the world’s top producers or exporters of oil and plastics, for them, strict caps can threaten jobs, revenue, and economic growth.

Examples within this group include Saudi Arabia, Russia, China, India, and some Gulf states and petrochemical-producing nations.

These countries tend to accept improvements in waste management, recycling, and product design, but they draw the line at binding global limits on plastic production or restrictions on raw materials.



Middle Positions / Conditional Supporters (with Concerns)

Some countries do not firmly belong to either of the extremes. Their position may depend on certain conditions:

- They may support production limits only if paired with financial support, technology transfer, and realistic phase-out plans that consider social and economic impacts.

- Some may favor a balanced treaty that combines improved waste management, design standards, regulation of harmful chemicals, and, possibly, voluntary reductions in production rather than strict caps.

- These countries often emphasize “common but differentiated responsibility,” meaning all countries share a responsibility to address plastic pollution, but richer and more industrialized countries , which historically produced more plastic, should take stronger measures, support developing countries with funding and technology, and

ensure equity.

Some states in Latin America (for instance, parts of Brazil and other members of the group GRULAC, Group of Latin America and the Caribbean) have previously expressed openness to ambitious measures, provided there are just transition schemes and support for implementation.

Underlying Concepts That Shape Stances

1. Lifecycle Approach vs Waste-Only Approach

One major conceptual divide is whether the treaty should address the "full lifecycle" of plastics (production, design, use, disposal) or focus only on waste management and pollution after plastics are made.

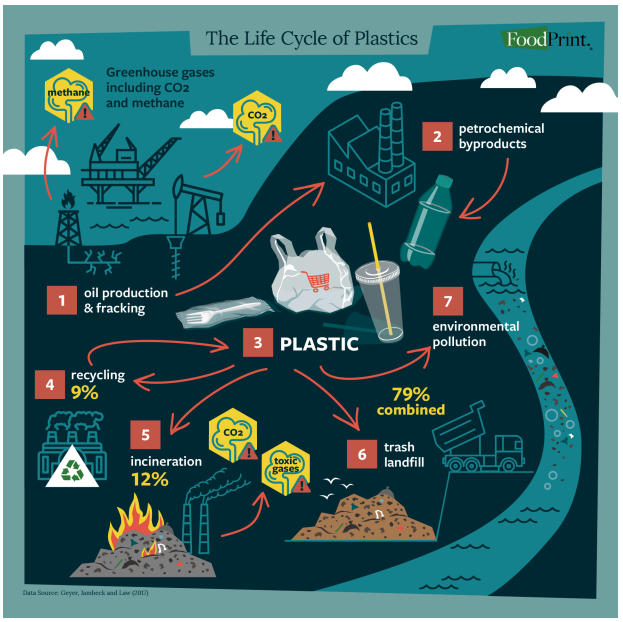
- Advocates of the lifecycle approach argue that limiting production and controlling raw materials is essential, because once plastic is produced and distributed, much of it becomes waste, and waste management cannot keep up with global production.

- Opponents argue that targeting production or raw materials is beyond the mandate or too disruptive economically; they prefer a focus on waste-handling, recycling, design improvements, and reuse.

This conflict reflects deeper values: whether to treat plastic pollution as a design-and-production challenge, or as a waste-management challenge.

2. "Polluter Pays" Principle and Producer Responsibility

Many supporters of stricter regulation invoke the "Polluter Pays Principle," arguing that producers of plastics, especially large companies and industries, should bear financial and environmental responsibility. They suggest that producers should be held accountable for the entire lifecycle of their plastic products, including eventual waste and pollution.



On the other hand, some countries and industry-linked actors argue that such liability could hinder industrial growth,

employment, and economic stability. They warn that strict producer responsibility or fees might raise costs, affecting consumers and economies.

3. Common but Differentiated Responsibilities & Equity Concerns

Given that plastic pollution affects all countries, but not all contribute equally to production , many states call for equitable treatment in any global agreement.

- The concept of "common but differentiated responsibilities" suggests that wealthier, industrialized nations (which historically produced and exported most plastics) should take stronger action, provide funding and technology transfer to developing countries, and support their transition.

- Developing countries and small or island states , often disproportionately harmed by pollution despite producing relatively little plastic , tend to favour a treaty that includes financial support, capacity building, and assistance for sustainable waste management.

4. Economic Interests, Petrochemical Industry, and National Sovereignty

For many oil- and petrochemical-producing countries, plastics represent a significant part of the economy, industry, and national revenue. Thus, limits on plastic production or regulation of raw materials are seen as threats to economic interests.

These countries often emphasize national sovereignty and the right to manage resources according to their economic needs, rejecting externally imposed caps or mandates.

Recent Developments in Positions (2023–2025)

Recent negotiations under the Intergovernmental Negotiating Committee on Plastic Pollution (INC) reveal some shifts and continuing tensions among countries.

- According to recent reporting, some countries that previously were skeptical, including United States, signaled willingness to accept regulation covering the full plastic lifecycle, including production, design, and disposal.

- Nevertheless, major petrochemical-producing countries such as Saudi Arabia, Russia, and others maintained strong opposition to binding production caps, arguing the draft treaty "goes beyond red lines."

- As a result of these divisions, negotiations have repeatedly stalled, principally over whether to include production caps or restrict raw material supply, versus focusing solely on waste management, recycling, and design.

These recent developments show that while there is growing global awareness of plastic pollution as a systemic crisis, translating that into a strong, binding international agreement remains challenging due to deep economic and political differences.

Implications of Diverging Stances

The different positions and concepts among countries have profound implications for global efforts to reduce plastic pollution:

- If a treaty only focuses on waste management and recycling, without addressing production or raw materials, the volume of plastic entering the environment may continue to grow, possibly outpacing recycling capacities and undermining long-term environmental goals.

- A treaty that includes production caps, design standards, and producer responsibility could substantially reduce the flow of new plastic into the environment, but such measures may face strong resistance from powerful petrochemical and oil-producing nations, potentially blocking agreement altogether.

- The principle of equity and differentiated responsibility means that for the treaty to be fair and effective, wealthier and more industrialized countries may need to support developing nations with finance and technology; otherwise, disparities in capacity could hinder implementation.

- The involvement of major industries (plastics, petrochemicals) and the economic stakes make political negotiations complex; striking a balance between environmental protection and economic interests is key, but difficult.

Given these factors, any realistic global solution must account for both environmental urgency and the economic, social, and political realities of member states.

Related Scientific and Environmental Risks

Plastic pollution affects more than just water; it threatens wildlife, ecosystems, and human health.

Marine debris is harming **more than 800 species**, including fish, sea mammals, seabirds, turtles, and many other forms of life. Many animals die because they swallow plastic (thinking it is food) or become entangled in plastic waste. Plastic waste also damages habitats like coral reefs, seagrass beds, and coastal areas.

Microplastics add another risk: because they are tiny, they can be ingested by small animals (like plankton or small fish), then travel up the food chain , potentially reaching humans through seafood. Some recent scientific studies even suggest microplastics might affect human health, for example during pregnancy, though more research is needed.

Because plastics persist in the environment for decades or longer, their negative effects are long-term. Once plastic enters aquatic ecosystems, cleaning up becomes very difficult and costly.

Moreover, plastic pollution can harm economies: fishing, tourism, shipping, and coastal industries suffer when seas and rivers are polluted.

These risks show why plastic pollution is not just a “trash problem,” but a serious environmental, social, economic, and health problem for all life on Earth.

Questions to Be Answered

In working toward solutions on reducing plastic waste in oceans and rivers, several key questions must be addressed:

1. What should the global rules be for plastic production, design, consumption, and disposal to minimize pollution from the very start?

2. How can countries with weak waste management, be supported to collect, recycle, or dispose of plastic properly?

3. How to balance economic and industrial interests (plastic production, manufacturing) with environmental and health concerns?

4. How to engage citizens, communities, private companies (producers, manufacturers, retailers) in reducing plastic waste , not only governments?

5. What is the role of rivers , small and large , and land-based waste systems in stopping plastic from reaching oceans? Which rivers (or regions) should be prioritized for cleanup or prevention, and how?

6. Which signs can show that the world is getting better at reducing plastic pollution, such as using less plastic, recycling more, letting less plastic enter rivers and oceans, and helping animals and nature recover?

7. How to combine short-term solutions (cleanup, waste management) with long-term prevention (design, production, consumption changes) to avoid further pollution?

8. How to regulate international cooperation to be maintained and strengthened in a changing world , with growing populations, plastic demand, industrial development, and varying national capacities?

Reference List

Britannica. (n.d.). Plastic pollution. Encyclopedia Britannica. https://www.britannica.com/science/plastic-pollution

Britannica. (n.d.). Plastic pollution in oceans and on land. Encyclopedia Britannica. https://www.britannica.com/science/plastic-pollution/Plastic-pollution-in-oceans-and-on-land

Earth.org. (2024). Key players and positions in the global plastic treaty negotiations. https://earth.org/key-players-and-positions-in-the-global-plastic-treaty-negotiations

Euronews. (2024). Global plastic treaty talks begin on Monday to finalise deal for curbing plastic pollution. https://www.euronews.com/green/2024/11/25/global-plastic-treaty-talks-begin-on-monday-to-finalise-deal-for-curbing-plastic-pollution

European Commission. (2024). EU calls for ambitious global plastics treaty. https://environment.ec.europa.eu/news/eu-calls-agreement-conclude-global-plastics-treaty-2024-11-25_en

Frontiers in Marine Science. (2025). Analysis of global positions on the plastics treaty. https://www.frontiersin.org/articles/10.3389/fmars.2025.1677615/full

MarineBio Conservation Society. (n.d.). Marine plastic pollution. https://www.marinebio.org/conservation/ocean-dumping/marine-plastic-pollution

Mongabay News. (2024). U.S. toughens stance on plastics production ahead of treaty summit. https://news.mongabay.com/2024/11/u-s-toughens-stance

National Geographic. (n.d.). Plastic pollution. https://www.nationalgeographic.com/environment/article/plastic-pollution

Plastics Engineering. (2024). Inside the global plastics treaty. https://www.plasticsengineering.org/2024/07/inside-the-global-plastics-treaty

Seabin Foundation. (2024). Key outcomes from the latest global plastics treaty negotiations. https://seabinfoundation.org/global-plastic-treaty-key-outcomes

United Nations Environment Programme. (2022). UNEA resolution on an international legally binding instrument on plastic pollution.

United Nations Environment Programme. (n.d.). Plastic and microplastics: A growing environmental threat. https://www.unep.org/news-and-stories/story/plastic-and-microplastics-our-oceans-serious-environmental-threat

United Nations Environment Programme. (n.d.). Marine litter and microplastics.

Wikipedia. (n.d.). Plastic pollution. https://en.wikipedia.org/wiki/Plastic_pollution

World Wildlife Fund (WWF). (2020). Plastic pollution and its impacts on marine life. WWF International.