Waves of Change

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Research Report

Forum: UNEP

Issue: Combating the Issue of Marine Litter and Microplastics in Oceans and Waterways

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Introduction and overview

The extensive pollution of marine litter and microplastics is one of the most pressing environmental challenges of the modern era with universal consequences. With the exponential growth of human population and industrial activities, the impact on oceans and waterways has become more prominent. The UNEP has taken a significant role in addressing and recognising the urgency of this issue and create comprehensive strategies to combat wit the detrimental effects of marine debris and microplastics pollution.

Understanding Marine Litter and Microplastics

Litter in the marine consists of a wide range of materials that have been discarded irresponsible. This ranges from plastic bags, bottle, packaging materials to fishing gear and debris from the sewage. However, one of the most alarming materials is microplastics. These miniscule plastic particles, usually less than 5 millimetres resulting for the breakdown of larger plastic objects. Some are also manufactured at a microscopic scale for several industrials and consumer purposes. The omnipresence of them in the marine ecosystems poses severe risks to aquatic life, ecosystems and potentially human health due to their persistence, capacity of toxic pollutants absorption and ingestion by marine organisms.

Impact on Oceans and Waterways

The impact of marine litter and microplastics on oceans and waterways is complicated and wide-ranging. Not only do these pollutants pose immediate threats to marine species through ingestion, entanglement and disrupt their habitat, they also have long term consequences for ecosystem functioning, biodiversity, and the overall health of aquatic environments. The complex web of marine life suffers as a result of such contamination with consequences that extend throughout the food chain, affecting various species. Furthermore, the ability of the microplastics to accumulate and transport harmful chemicals raises concerns about their potential transfer into the human food chain through seafood consumption. This can lead to severe risks to human health.

Statistics about Plastic Waste

Plastic materials are a big part of our lives, maybe unimaginable to live without. However, the production, usage and disposal is very harmful for the environment. Each person in the EU generates an average of 35.9kg of plastic packaging waste in 2021. At the same time, the recycling rate was only 39.7%. Moreover, the overall amount of plastic waste continues to increase at a high rate, with the plastic production expected to triple by 2060. Between

2011 and 2021, the amount per capita of plastic packaging waste generated in the EU increased by 26.7%.

We have produced more plastic in the last decade than the whole of last century. Plastic takes up around 10% of the total waste generated and approximately 90% of all the trash floating on the surface of the ocean, with around 46000 pieces of plastic per square mile. It is found to be almost impossible to clean the seas from plastic waste and microplastics. Hence, the only valid solution would be to eliminate the source, as it is not sustainable to clean up the plastic pollution once it has entered the sea.

Drivers and Sources of Marine Litter

The rapid increase in the amount of marine litter and microplastics is driven by a myriad of interconnected factors. Anthropogenic activities like improper waste management, insufficient recycling practices, industrial discharge, shipping, tourism and recreational activities contribute to the accumulation of debris in oceans and waterways. Plastic production has increased exponentially over the past few decades, coupled with the durability and persistence of plastics, worsens the issue. Furthermore, the global nature of marine pollution implicates multiple sources across international boundaries, creating a need for collaborative and coordinated response to an international extent.

International Efforts and Challenges

Efforts and actions taken place to address marine litter and microplastics have gained momentum at the international level. The United Nations Sustainable Development Goal 14, “Life Below Water,” specifically targets the reduction of marine pollution. Additionally, initiatives such as the UNEP’s Global Partnership of Marine Litter and the Basel Convention’s Plastic Waste Amendments aim to enhance international cooperation and policy frameworks to combat this issue. Despite these great efforts and advancements, several challenges persist, nonetheless. Some challenges include inadequate data and research, the complexity of the issue, limited public awareness, and the need for stronger regulations being enforced, frameworks to ensure that these regulations are being followed.

In conclusion, the issue of marine litter and microplastics in oceans and waterways demands urgent attention and intensive action. It is imperative for nations, organisations and individuals to collaborate, innovate and implement effective strategies to mitigate and prevent further degradation of our marine ecosystems.

Definition of Key Terms

Microplastics

Extremely small pieces of plastic in the environment that come from consumer products and industrial waste

Marine litter

Marine debris, also known as marine litter, is man-made waste that is intentionally or accidentally released into a sea or ocean. Floating ocean debris tends to accumulate in the center of gyres and along coastlines, and often washes around, where it is known as beach debris or tideweed.

Sustainable development goals

The Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015 as the new global sustainable development agenda for 2030. The SDGs are in effect from 2016 to 2030. There are 17 objectives and 169 underlying objectives to achieve these objectives.

Major Parties Involved

United Nations Environment Programme (UNEP):

UNEP is the United Nations committee that aims to focus on Environmental issues and make a difference in our world.

International Maritime Organization (IMO):

The IMO is an agency which is under the control of the United Nations and is an organisation specialised in drafting initiatives addressing the issue of marine litter. It focuses primarily on pollution from ships.

World Health Organization (WHO):

The World Health Organisation is working towards a world where everybody is equally safe and healthy. The WHO is an organisation under the United Nations which is focused mainly on the health of the world. WHO has played a huge role in reducing the amount of microplastics present in the environment, especially within water sources containing drinking water and seafood.

Plastic Pollution Coalition:

The plastic pollution coalition (PPC) is a non-profit coalition of multiple organisations, business and governments working together to make the world pollution free. Over 1,200 organisations and 75 countries are part of the coalition.

Ocean Conservancy:

The Ocean Conservancy is an environmental non-profit organisation that specialises in protecting the ocean and aims to reduce the amount of plastic pollution floating around. It creates scientific based solutions for healthy oceans and wildlife living in it.

The Ocean Cleanup:

This is the largest Ocean Cleanup in organisation in history. The ocean cleanup is a non-profit organisation that aims to develop new technology to remove plastic debris from the ocean.

Ellen MacArthur Foundation:

This foundation was founded in 2009 and aims to work towards a circular economy. Through design, they aim to eliminate all waste and pollution while promoting sustainable practices that will help the world become more sustainable.

European Union (EU):

The European Union is an organisation with 27 countries that are part of the European continent, that overall works towards a better more sustainable world. They have taken specific legislative measures to address the pollution in oceans and overall reduce the impact of single-use plastics.

G7 and G20:

The G7 and G20 are two committees in the United Nations with the G7 containing 7 major countries and the G20 containing 20 major countries. These two committees have formed multiple initiatives such as the G7 Oceans Plastics Charter.

Global Ghost Gear Initiative (GGGI):

The GGGI is an alliance formed that aims to find all lost or discarded fishing gear in the ocean which is one of the largest and most dangerous factors of ocean pollution.

Main countries involved

United States:

The United States has played a significant role in reducing the amount of plastic pollution happening in the world. This is done by national measures such as the Oil Pollution Act and the single-use plastics initiatives. Many states in the US have laws that prohibit the use of plastic grocery bags or plastic straws, but the US government hasn't gotten that far. The government for the entire country has laws the go against an overall plastic ban, slowing down the amount of progress the US can make.

China:

China is the largest producer and consumer of plastic products largely shipping to all over the world. China is now responsible for 1/5th of the world's plastic pollution. In 2021 alone, China managed to produce 80.1 million tons of plastic waste. Due to their high plastic production, China also is a large contributor to reducing the amount of plastic that is released into the oceans. Some policies implemented by China are the ban on imports of plastic waste in 2017, and other subnational laws within specific areas.

India:

Due to its overwhelmingly high population, India is one of the biggest contributors to plastic pollution especially in the ocean. Due to COVID-19, the amount of plastic waste multipllied by 4 due to the amount of online shopping and plastic production. Of this plastic waste, only 12% of it is recycled leaving 88% lying around in landfills. Around half of the plastic production is single-use which is why India has launched multiple initiative to reduce single-sue plastics and improve waste management practices. On top of that, India has the The Plastic Waste Management Rules of 2016 which made it compulsory for organisations to create a collect-back policy which has been effective over the years.

Indonesia:

Indonesia contributed to 800,000 tonnes of plastic that is dumped into the oceans per year. As Indonesia has clustered populations around the coast, a lot of the plastic that is produced and exported gets dumped into the oceans where most of the country lives. Indonesia inadequately disposes of the plastic which largely contributes to the presence of marine litter in the water bordering Indonesian land. The plastic distributed in the ocean travels outwards and ends up on multiple islands around the area. Due to the amount of plastic pollution, Indonesia has started to take action by creating legislations against dumping plastic into water, and ordering regular clean-ups for plastic on the shores.

Philippines:

In October of 2023, a study showed that per person 3.30 kilograms per year of plastic was dumped into the ocean. As of now, the Philippines is ranked as the highest plastic polluter in the world's oceans. All the plastic of the Philippines starts in the rivers in the cities which transport the waste into the oceans. The Philippines don't have any adequate waste management systems and use a huge number of single-use plastics. Yet, the Philippines have done their best to take small steps in order to reduce the amount of waste they produce with the Ecological Solid Waste Management Act of 2000 and the National Plan of Action for the Prevention, Reduction, and Management of Marine Litter

Timeline of key events:

1972:

United Nations Conference on the Human Environment

In 1972, the first world conference recognising the environment as a huge issue was held in Stockholm. The declaration contained 26 principles which were further discussed yet focused mainly on the environment and how it was being harmed. During this conference as well, a new committee of the United Nations was formed called the United Nations Environment Programme (UNEP) which was created to focus on helping countries reduce their carbon emissions and safeguarding ecosystems.

1982:

United Nations Convention on the Law of the Sea (UNCLOS)

The Convention sought to protect the environment by establishing rules and regulations detailing how the ocean and its resources should be used. It mainly focuses on enforcing old traditional laws on the oceans, yet also focuses on implementing new rules and providing a framework for regulations to be made in the future regarding the ocean.

2008:

Honolulu Strategy - Regional Framework for the Prevention and Management of Marine Debris in the Pacific Region

The Honolulu Strategy (created in Honolulu) was the first regional strategy with the goal of preventing marine debris. While many countries put in a lot of effort to reduce the amount of marine debris in their waters, their efforts were not very successful. That is why the Honolulu strategy was created to recognise all these efforts and incorporated into a global template to reduce marine debris in oceans and other waterways. The framework wasn't designed in a way that evey country had to implement directly but was created to support already existing actions taken by various stakeholders all over the world.

2015:

United Nations 2030 Agenda for Sustainable Development

In 2015, the United Nations established 17 interlinked objectives that they would enforce within the member states. These objectives were designed to serve as a "shared blueprint for peace and prosperity for people and the planet, now and into the future." (Un.org, 2015) Within this, the 14th goal was created which states that the UN would focus to: "Conserve and sustainably use the oceans, seas, and marine resources." On top of that, these objectives were created with the promise that nobody would be left behind and that it should be applicable to all countries with regards to their different cultures, geographical elements and already existing national policies and regulations.

2017:

United Nations Oceans Conference

The United Nations Conference was held in order to further implement Goal 14 (as already stated in the 2030 Agenda for Sustainable Development). During the conference further strategies were discussed to tackle the problems facing the marine ecosystem. The meeting called for efforts from all member states to properly conserve all oceans and other marine resources and use them sustainably.

2018:

G7 Oceans Plastics Charter

The Oceans Plastics Charter was a charter launched by Canada at the Leaders' Summit in Charlevoix in order to address the impacts of marine litter on the health and sustainability of oceans, seas and marine resources, focusing mainly on large industries in different countries. Its contents recognise the catastrophic effects that marine litter has on the oceans, coastal communities and all ecosystems. The charter aimed to honor 5 key commitments including: working with industries to make the world more sustainable, work with industries to create a solution for the already existing plastics either on its way or already in oceans, strengthening measures and educating industries about the effects of plastics, research and innovation for new technologies, and coastal and shoreline action. This charter gained 18 signatories and is now working with more than 50 industries.

2018:

European Union's Single-Use Plastics Directive -

In 2018, a directive was created that outlined the need for immediate action to reduce the amount of single-use plastic products. Its aim was to focus on plastic leakages as to reduce the impact it had on the environment in turm impacting our immediate future. This directive is a document with legislations that all EU member states are required to follow making sure that all their industries whether manufacturers, producers, retailers, importers or sellers, comply. The directive includes 5 main goals including: product bans, design requirements, collecting plastic bottles separately, EPR obligations, and awareness-raising measures. The directive was the first of its kind, making sure that all these components working towards a more sustainable world were provided in a package.

2019:

Basel Convention Amendment on Plastic Waste-

During the Basel Conference, taking place from 29th of April to 10th of May 2019, the participating countries amended the Basel convention to regulate plastic trade more and make the overall trade more transparent. This was incorporated into a legally binding framework ensuring a healthier and safer environment. At the same time, they also established a new partnership called the Partnership on Plastic Waste which was created to provide support to implement new measures to decrease the amount of plastic waste that gets lost in the oceans.

2020:

The Ocean Decade (2021-2030)

In 2017, the decade of the ocean was proclaimed by the General Assembly to be from 2021 to 2030. This was called the UN Decade of the Ocean Science for Sustainable Development. This decade was declared with the purpose to educate the world about the ocean and increase the amount of knowledge present in order to reduce the amount of waste being put into the ocean. On top of that, the ocean decade was declared to further promote ocean research and conservation and encourage donation and further support.

2021:

Global Ghost Gear Initiative

One of the most dangerous forms of litter in the ocean is discarded/lost fish gear also known as ghost gear. In 2021, the G7 finally accepted ghost gear as a legitimate problem and started working towards locating it, and stopping more from entering the ocean, bringing to life the Global Ghost Gear Initiative. The G7 encouraged many more countries to joing the GGGI and supported their overall efforts helping them to achieve many things in

2021, Some examples include launching the NANCI project, co-authoring a position paper that would be read in the UNEP and collaborating with multiple countries in different continents to make a difference.

2022:

International Maritime Organization (IMO) Action Plan on Plastic Litter from Ships

As ships produce a lot of litter and excrete a lot of waste into the ocean, the IMO sought to regulate the amount of marine litter that was going into the oceans. The IMO has been regulating marine plastic litter for the past 50 years, yet during this meeting shifted their focus towards ships. The overall vision created by the IMO during the meeting was to reduce the amount of marine litter produced primarily by fishing vessels to zero by 2025. This was sought to be implemented as soon as possible.

2023:

Proposed Global Treaty on Plastic Pollution

The treaty was drafted during a negotiation and is still waiting for further amendments due in 2024. Between November 13 and 19, in Nairobi, Kenya, the UN member states sat down together and negotiated a legally binding global agreement working towards the overall goal of ending plastic pollution. This treaty aims to reduce plastic pollution to zero by 2040. The UN plans to work with the EU on this treaty and will propose further negotiations in April of 2024.

Previous attempts to solve the issue

United nations sustainable development goal 14 (2012)

The United Nations sustainable development goal aims to ‘’conserve and sustainably use the oceans, seas and marine resources for sustainable development ‘’. They hope to have achieved this by 2030.

The ocean cleanup (2013)

The ocean cleanup project is a non-profit organisation that aims to clean up the ocean from floating plastic. Their goal is to have cleaned up 90% of the oceans by the year 2040, and they’re already well on their way. Since 2016 they have cleaned up over 7 million pounds of plastic and other waste from the oceans.

The microbead-free water project (2015)

This act was passed by the US congress in 2015. It prohibits the use of microbeads (commonly found in soap and body scrubs) in cosmetics. These tiny pieces of plastic find themselves in the waterways when being washed off.

Possible Solutions

Stricter regulations on plastic production, use and disposal should be enforced. Governments should encourage the implementation and enforcement of bans on single-use plastics and promote extended producer responsibility. The government could also incentivise eco-friendly alternatives.

The waste management infrastructure and practices should be enhanced globally. They should focus on effective waste collection, recycling and proper disposal methods. Technologies for better waste sorting and recycling should be encouraged and invested in.

Comprehensive awareness campaigns targeting individuals, communities, industries and institution should be created to increase behavioural changes, encourage responsible consumption and promote proper waste disposal practices.

The government and private firms should invest in research and development of innovative solutions such as biodegradable materials to substitute the use of plastic, eco-friendly packaging alternatives and more advanced filtration systems to capture the microplastics before they even enter the water bodies.

International cooperation among organisations, governments and stakeholders should be encouraged to share their most effective practices, exchange knowledge and collaborate on strategies to reduce the marine litter. Joint initiatives withing nations should be promoted and research should be funded.

Initiatives that take responsibilities and action to conduct large scale clean-up operations should be supported and invested in. Development of advanced technologies for plastic removal from oceans and waterways should also take priority and be considered as an initiative.

Designing products with an initial purpose of reuse, recycling and regeneration of materials should be encouraged and adopted into economies to minimise waste generation.

Better data collection methods and technologies to monitor the sources, pathways and impacts of marine litter should be invested in. This will provide a deeper understanding of the problem and its specifications, leading to a more adaptable and suitable solution.

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Appendix:

GGGI Annual Report of 2021

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IMO Strategy to address marine plastic litter from ships - zero plastic waste discharges to sea from ships by 2025

https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/marine%20litter/STRATEGY%20TO%20ADDRESS%20MARINE%20PLASTIC%20LITTER%20FROM%20SHIPS.pdf

Honolulu Strategy

https://marinedebris.noaa.gov/sites/default/files/publications-files/Honolulu_Strategy.pdf

G7 Charter full report

https://plasticactioncentre.ca/wp-content/uploads/2019/04/PolicyPDF3.pdf

Managing Plastic Waste in the People's Republic of China PDF

https://www.adb.org/sites/default/files/publication/891876/managing-plastic-waste-prc.pdf

USA microbead-free waters act

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The ocean cleanup

https://theoceancleanup.com/

Sustainable development goal 14

https://sdgs.un.org/goals/goal14