

## Committee Introduction - UNEP

The United Nations Environment Programme (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment. Its mission is "to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations."

Official website of UNEP: <http://www.unep.org/>

## Topic Introduction - The Challenge of Marine Debris

As the development of globalization and linear production in factories, the problem of marine debris has grown to global scale. Large amount of debris enter the ocean and pose serious threat on different aspects of human society, including environmental, economic and social aspect. Marine debris is one of the most widespread pollution problems. It will determine whether we are able to sustain our marine resources in the future.

In 2005, the General Assembly first addressed the issue of marine debris in the sixth meeting of United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea. Since then, the issue of marine debris and sustainable fisheries has been addressed annually by the General Assembly and called for further actions. In 2012, States parties reached a consensus to **“take action, by 2025, to achieve significant reductions in marine debris so as to prevent harm to coastal and marine environment”** in United Nations Conference on Sustainable Development (Rio Earth Summit 2012). This goal was reiterated in 2030 Agenda for Sustainable Development under Goal 14.

## Background Knowledge of Marine Debris

### **What is marine debris?**

According to UNEP, marine debris is any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment. Plastics are one of the main categories of marine debris. They play important roles in humans' daily life, and have been used progressively. Therefore, plastics become a

big part of waste stream. An estimated minimum of 5.25 trillion plastic particles weighing 268,940 tons are currently floating in the world's ocean. Plastic debris will bring overwhelming problems to the environment and humans. One of the problems is that toxic chemical which was added in the production of plastic will be released in the ocean. Another problem is that plastics might enter the food web and food system, which brings about the issue of food security. Plastics take hundreds of years to biodegrade, and they might break down into microplastics. Although it is lack of research, microplastics, which easily attract toxic chemicals such as POPs, may possibly increase the threat to the environment and humans' health (Further information can be found in the sections of Environment Impact of Marine Debris and Economics and Social Impact of Marine Debris).

Besides plastics, another main category of marine debris is abandoned, lost or otherwise discarded fishing gear (ALDFG). According to National Oceanic and Atmospheric Administration Marine Debris Program, this gear refers to nets, lines, crab/shrimp pots, and other recreational or commercial fishing equipment that has been lost, abandoned, or discarded in the marine environment. ALDFG causes ghost fishing, the process where ALDFG functions in the water as fishing apparatus on its own, which greatly impacts both the environment and fisheries.

### **Where does marine debris come from?**

There are two different kinds of sources of marine debris: land-based and sea/ocean-based sources.

It has been estimated that about 80 percent of marine debris which enters the oceans comes from the land. The situation stresses the importance that people need to make an effort to keep land-based activities from impacting the ocean.

As below is a list of some examples of sources:

#### Land-based sources

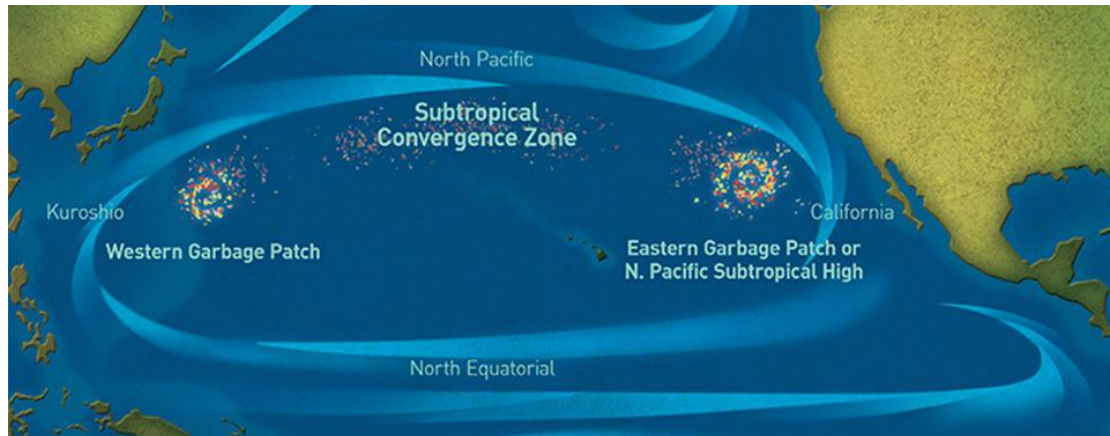
- Waste from unprotected and poorly managed landfills and dumps
- Discharging or overflowing of untreated or insufficiently treated sewage and stormwater into rivers or directly into the sea
- Decommissioning of ships and oil rigs
- Industrial sites and harbors
- Coastal tourism and general public litter

#### Sea/ocean-based sources

- Abandoned, lost or discarded fishing gear (ALDFG)
- Commercial shipping, ferries and cruise liners

- Synthetic polymers from ship coatings
- Military fleets and research vessels
- offshore installations and aquaculture sites
- Recreational boating
- Pleasure craft

## How serious is the problem?



<http://oceanservice.noaa.gov/facts/garbagepatch.html>

A huge amount of marine debris, whether it is land-based or sea-based, concentrating in an area is a so-called “garbage patch.” Garbage patches tend to build up in ocean gyres. A gyre is a circular ocean current whose center is relatively calm and stable. The circular motion of the gyre draws in debris. The garbage enters the center of the gyre, where it becomes trapped and builds up. Lots of people associate garbage patches with islands made up of debris. In fact, most of patches are made up of microplastics which can’t always be seen with the naked eye. Satellites or aerial photographs of the oceans are unable to reveal a giant patch of garbage as well.

Some reports have estimated that the Great Pacific Garbage Patch is twice as large as the United States of America, but no one is ever able to discover the exact area of it. In fact, it is difficult to estimate the exact size, content, and location of any garbage patch because it is vast, remote and constantly changing with the sea. In spite of the fact that we can’t get the detailed information of garbage patches, it is necessary to cope with the manmade debris which doesn’t belong to the sea.

Given how serious the problem is, the discussion about the impact of marine debris on different aspects of human society and our marine ecosystem is needed.

# Environmental Impacts of Marine Debris

## **Entanglement**

Ghost fishing may cause damage to the ecology. ALDFG entangles marine animals and hinders their ability to move, feed, and breath. What's more, ALDFG may even drown or injure marine animals.



<http://www.opiinc.org/Ocean-Problems/ghost-fishing>

## **Ingestion**

Marine organisms mistaking debris for food occurs throughout the food web. It is estimated that plastics ingestion will impact 99 percent of all species by 2050. Experimental studies show that eating plastics will result in the loss of nutrition, internal injury, intestinal blockage, starvation, and even death. What's worse, it may decrease the average survival and reproductive success rate in populations. The secondary ingestion, which happens when animals eat prey that has already ingested debris, raises the concern for human health, since plastic debris and fibres from textiles have been found in fish and bivalves sold for human consumption.



<https://marinedebris.noaa.gov/discover-issue/impacts>

### **Alien species**

When organisms colonize floating debris and transport to a new habitat by the currents and winds, they may damage the local ecology. Microplastics can carry microbes and pathogenic bacteria and may promote the presence of harmful algal blooms and the spread of diseases.

### **Toxic chemical substances**

The discarded products which enter the sea may release toxic substances that have been added when manufactured. Toxic chemical substances and persistent organic pollutants (POPs) are easily absorbed by the sea plastics since it has high surface area to volume ratio. Thus, microplastics facilitate the transport of contaminants and reinforce the accumulation of them.

## **Economical and Social Impacts of Marine Debris**

### **Human safety**

Humans are at the risk of ingesting marine debris and toxic substances which have been consumed by the sea animals they eat. Additionally, swimmers may be entangled by debris such as nets or lines, which results in injury or even death. People take walks around coastal area may also get cuts and punctures by medical or sanitary debris.

### **Fisheries**

Ghost fishing may decrease the amount of fish caught every year. For example, in the United States of America, it was estimated that US\$ 250 million of marketable lobster is lost annually to ghost fishing. What's more, the costs of fishing increase because of the ALDFG. According to the European Union, the cost to the fishing industry could amount to almost 60 million euros annually, which is nearly as much as 1 percent of the total revenues.

### **Shipping and yachting industries**

The owners of ships and yachts experience economic impacts as a result of the entanglement of propellers and removing marine debris from facilities in harbors and marinas. It has been estimated that because of marine debris, the accidental loss of cargos, indirect expenses related to operational costs and disruption of service cost up to US\$ 279 million per year.

## **Tourism**

Marine debris detracts from the physical beauty of a location, which not only causes tourism to shrink, but also necessitates expensive clean-up measures. Areas with reefs are most affected. A variety of activities, such as sport fishing, submarine tours, turtle and whale watching trips, snorkelling, scuba-diving and spearfishing, rely on healthy reefs. If tourism industry declines, the local residents who depend on tourism will need alternative livelihoods.

## **Taking Actions**

As mentioned in the previous sections, international community has reached a consensus of achieving significant reduction in marine debris in order to prevent harm to the coastal and marine environment by the year of 2025. Since the call from United Nations General Assembly in 2005, numerous legislative and political instruments have developed at the global, regional and national level.

With all the programs, action plans, and projects which are organized and conducted by governments (policy framework), along with international and regional conventions, protocols, and directives (legal framework), one can roughly separate these actions to tackle marine debris into two different approaches: upstream and downstream actions.

**For upstream actions**, the elimination and reduction of marine debris will be focused. With regard to land-based debris, it is crucial to establish an integrated waste/sewage management and recycling system, so as to prevent land-based debris from entering waterways and eventually end up in ocean environment. For ocean-based debris, ports and harbors infrastructures are needed for mandatory discharge of ship-generated waste. Additionally, monitoring of abandoned fishing gears and levy system for those who obey the implementation of International Convention for the Prevention of Pollution From Ships also relies on these facilities.

Some countries are moving forward to address the issue at source, aiming at product redesign and the selection of materials chemicals used in products. For instance, Australia secured a voluntary agreement from the personal care industry to phase microbeads out of “rinse-off” products no later than 1<sup>st</sup> of July, 2018. Monaco also promotes the reduction of packaging and waste in the way of prohibiting single-use plastic bags in 2016 and disposable kitchen utensils starting in 2020. Other recommendations targeting upstream approach also include public awareness-raising

through campaigns, education programs and partnership with civil society organizations.

**For downstream actions**, the cleaning of existing marine debris will be focused. In recent years, the impact of marine debris has gradually gained public attention and generated community involvement in clean-up events throughout the world. International Coastal Clean-up (ICC) activities are one of the examples. One of the keys to generate economic incentives for ocean cleaning is to call attention to the importance of plastic recycling. According to World Economic Forum 2016, 95 percent of the value of plastic packaging material, almost exclusively destined for single-use, totaling US\$80 billion-120 billion annually, is lost to the economy. Additionally, only 14 percent of plastic packaging is collected for recycling. Therefore, improvement to technologies, such as conversion of plastic waste into new materials or energy, may facilitate plastic waste treatment and clean-up actions.

## **Challenges We Face**

Although the international community has put a degree of effort toward addressing the issue of marine debris, there are still some challenges and obstacles for managing marine debris, including plastics and microplastics (MDPMs) and creating a sustainable ocean environment and fisheries. As below are some challenges for further discussion in the conference.

### **Data and knowledge gap**

Although impacts of marine debris on environment, economic and social aspects have gradually been noticed by international community, a significant gap in knowledge and data regarding these impacts still exists. The shortage of reliable, consistent and long-term monitoring data knowledge becomes obstacles while establishing policies and legislation. Apparently, systematic research is the fundamental element for policy making and public awareness raising. Bridging the data and knowledge gap determines whether a country will build its capacity when facing the impacts of marine debris.

### **Lack of adequate infrastructure**

When it comes to capacity building of a country, infrastructure is another factor of concern. In the previous sections, it has been mentioned that waste and sewage management, recycling system, and reception facilities at all ports and harbors are basic infrastructure to prevent leakage of debris from human society into the ocean.

However, many countries and regions are still limited with their resources and funds to build such infrastructure, especially small island developing countries.

According to Global Waste Management Outlook conducted by UNEP, 2 billion people have no access to solid waste collection, while 3 billion people have no access to controlled waste disposal facilities. What can be done to encourage the developed countries to provide technical and financial support to developing island countries which lack adequate infrastructure remains a question to be discussed

### **Indirect legal and policy framework**

Among all the international and regional policies and legal frameworks regarding marine resources and environment, for instance, United Nations Convention on the Law of the Sea, International Convention for the Prevention of Pollution From Ships, UNEP Regional Sea Programme, and the Commission for the Protection of the Antarctic Marine Living Resources, there are few existing frameworks which directly point out objectives of tackling marine debris. Most of the frameworks indirectly cover the range of marine debris reduction without specifically addressing this issue. Without integrated plans addressing MDPMs directly, it is easy to form enforcement gaps and overlaps.

### **Lack of effective enforcement and implementation**

Some of the international rules and standards are called for remain of non-legally binding nature. Not only do they lack of incentives for compliance, but they also do not provide a mechanism for follow-up actions to ensure that measures are taken. In addition, only few landlocked States have participated in regional frameworks regarding marine resources and environment, even when they contribute to riverine pollution.

Apparently, cooperation and coordination between different sectors are needed in order to conduct interdisciplinary research, make integrated action plans, and bridge the gaps of enforcement. In this conference, the discussions will cover building a global multi-stakeholder partnership with Governments, integrating civil society and individuals to face the marine debris challenges, and creating a sustainable environment for present and future generations.



## **Sources of Information**

Most of the information in this study guide is referenced from the report conducted by United Nations Secretary-General with a view to facilitating discussions at the 17<sup>th</sup> meeting of the UN Open-ended Informal Consultative Process on Ocean and the Law of the Sea, on the theme “Marine debris, plastics and microplastics.”

Document Link: [http://www.un.org/ga/search/view\\_doc.asp?symbol=A/71/74](http://www.un.org/ga/search/view_doc.asp?symbol=A/71/74)