

Vietnam submission for the Ad Hoc Open Ended Expert Group on Marine Litter and Microplastics

1. Name of Organisation: Vietnam

2. General information

Marine litter and microplastic is one of the most pervasive global threats to the health of the ocean and our waterways and is an issue of growing local, regional, national, and international concern. Marine debris, also known as marine litter, has been defined by UNEP (2009) as “any persistent, manufactured or processed solid material discarded, disposed of or abandoned in the marine and coastal environment” or “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment” (NOAA, Lippiatt et al., 2013) . This definition does not include trees and shrubs, which account for a significant proportion of debris that is transported from land to sea. Marine litter and microplastic can be classified by origin (plastic, glass, rubber, etc.), or size (from nano (10^{-6} m) to mega (> 1 m) (Lippiatt et al., 2013).

Marine litter and microplastic (Coe & Rogers 1997; UNEP 2005). Marine litter includes Polypropylene (PP), Polyethylene (PE), and Polyvinyl chloride (PVC), accounting for 24%, 21%, and 19% in total global resin production in 2007 (Andrady, 2011). Marine litter, especially microplastic debris (5mm) (Lippiatt et al., 2013), formed during the manufacture or fragmentation of plastic materials, exists in the form of suspended matter and in Seawater deposits are difficult to decompose, easily accumulated in the food chain from production organisms (zooplankton, bivalves, etc.) to higher order organisms and cause significant impacts marine ecosystems (Andrady, 2011; Coe and Rogers, 1997). Large plastic litter such as nets and fishing gears, floating on the sea, also cause serious damage to marine life when they are trapped and directly affect coastal economies and communities due to maritime accidents as well as reduced productivity of fisheries and tourism (Cho, 2005). In particular, Vietnam has the fourth largest amount of plastic debris discharged into the sea, with volumes discharged in the South China Sea fluctuating between 0.28-0.73 million tons/year, equivalent to 6% of the total the amount of plastic debris in the world. However, people are not aware of the risk of marine litter pollution nor do they have the necessary actions to protect the marine environment.

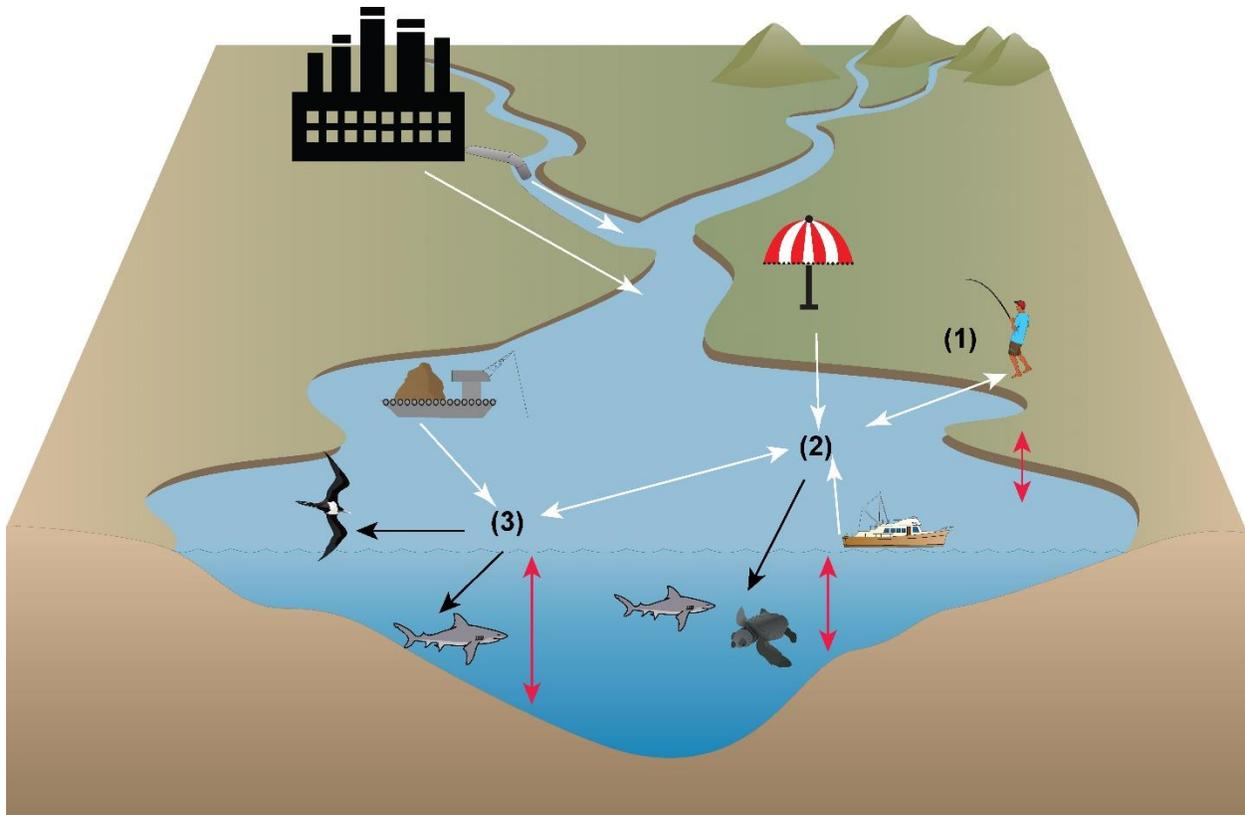


Figure 1. Schematic diagram showing the main sources and movement pathways for plastics in the marine environment, with sinks occurring (1) on beaches, (2) in coastal waters and their sediments and (3) in the open ocean. White arrows depict litter movement due to currents, red arrows vertical movement through the water column and black arrows ingestion by marine organisms (Ryan et al., 2009).

3. Your view on major barriers to combatting marine litter and microplastics

Plastic is a synthetic material originated from petrochemicals. It is used as material in a wide range of industries including textile and garment, packaging, household, electricity and water supplies as well as automobile and aircraft building. Statistics show that only one third of plastic materials is recovered for recycling or reuse. Most of which was dumped into the sea and ocean, becoming one of the main types of marine debris. In 2015, scientists pointed out that there are up to 8 to 9 million tons of solid wastes entering into the marine environment each year, in which around 80% originate from land-based resources and 20% from ocean-based resources. It is also noted that 90% of marine debris are plastic and it could take more than 400 years for them to decompose or biodegrade.

Being considered one of the biggest global challenges in the 21st century, together with climate change, ocean acidification and biodiversity loss, plastic marine litter and microplastic harms marine wildlife and human health. Studies have shown that more than 200 different marine species have suffered from entanglement. Many animals have been known to accidentally ingest plastic debris, leading to choking, physical blockage, malnutrition, and even death.

Microplastics which are the result of larger pieces of plastic breaking down into smaller ones, including originally manufactured products found in textiles or cosmetics and personal care products, etc, are difficult to find and recover. When floating on the ocean for a certain time, they are found deposited at the seafloor and thus restrain the respiration of sediment and animals living there, leading to oxygen deprivation and death. Furthermore, microscopic fragments of plastic are also found in the ingestion system of zooplankton or organisms. The effect of such consumption could possibly reach out to other species and human through food chain.

Plastic debris usually contain toxic chemicals including non-flammable compounds and Polychlorinated Biphenyls (PCBs), etc, which have negative effects on the marine and coastal environment as well as human health. Globally, it is estimated that plastic debris causes an annual damage of 13 billions USD to fishery, maritime transportation and tourism industries, as well as coastal clean-up operations (UNEP, 2014).

4. Your view on potential national, regional and international response options and associated environmental, social and economic costs

Viet Nam's development of plastic waste collecting system along with landfill management has helped reduce the quantities of solid wastes dumped into the oceans.

Performing its duties under international conventions, Viet Nam has adopted legal documents regarding environment protection and management policies, including: (i) The Law of Environment Protection 2014, entering into force on 01 July 2016; (ii) Decree No. 38/2015/NĐ-CP on the control of wastes, entering into force on 15 June 2016.

Viet Nam has actively participated in the UN Conference on Sustainable Development (Rio+20) and other multilateral and intergovernmental forum on the protection of marine environment and the prevention and reducing of marine debris.

Viet Nam has launched shorelines clean-up operations in coastal areas and propagated information to local residents and tourists to raise the public awareness of environment protection.

5. Your view on the feasibility and effectiveness of different response options

To reduce and prevent the negative impacts of marine litter, there are already many international conventions, treaties, and regulations signed between nations for use as a basis of implementation, such as:

- United Nations Convention on the Law of the Sea (UNCLOS 1982);
- Annex 5 of the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78 Convention);
- 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (London Protocol);
- UNEP/IOC Guidelines on Survey and Monitoring of Marine Litter.

Managing and monitoring marine litter and microplastic in general, in particular, is a complex issue that requires large amounts of funding, on a large scale. Thus, we need to establish a paper by working with partners at the national and international levels to coordinate and implement marine litter and microplastic efforts among Vietnam and other Asia countries.

6. Recommendations to prevent and reduce marine debris, plastics and microplastics

Strengthen international cooperation in knowledge and information sharing regarding transboundary issues of marine litter pollution.

Enhance the management capacity and improve policy-making mechanism regarding marine litter and microplastic control.

Enhance research capacity on the issue of marine litter and microplastic including factual analysis, trends of marine debris pollution and its impacts on marine life and ecosystem in different perspectives.

Increase public awareness, among manufacturers, goods distributors, consumers and others about marine litter and microplastic

Promote investment in infrastructure development to control, produce statistics, categorize marine litter and microplastic and land-based wastes and to build waste processing and recycling systems.

Assist developing countries to draw comprehensive solutions and improve its management capacity as well as to develop domestic legal documents in order to effectively implement the Basel Convention and the MARPOL Convention.

7. Reference

1. Andrady, A. L. (2011). "Microplastics in the marine environment." *Marine Pollution Bulletin* 62(8): 1596-1605.

2. Cheshire, A.C., Adler, E., Barbieri, J., Cohen, Y., Evans, S., Jarayabhand, S., Jeftic, L., Jung, R.T., Kinsey, S., Kusui, T.E., Lavine, I., Manyara, P., Oosterbaan, L., Pereira, M.A., Sheavly, S., Tkalin, A., Varadarajan, S., Wenneker, B., Westphalen, G., 2009. UNEP/IOC Operational Guidelines on Survey and Monitoring of Marine Litter. UNEP Regional Seas Report No. 186. IOC Technical Series No. 83, pp. xii+120.

3. Cho, D. O. (2005). "Challenges to Marine Debris Management in Korea." *Coastal Management* 33(4): 389-409.

4. Coe, J. M. and D. Rogers (1997). *Marine Debris: Sources, Impacts, and Solutions*, Springer New York.

5. Jambeck, J. R., et al. (2015). "Plastic waste inputs from land into the ocean." *Science* 347(6223): 768.

6. Lippiatt, S., Opfer, S., and Arthur, C. 2013. *Marine Debris Monitoring and Assessment*. NOAA Technical Memorandum NOS-OR&R-46

7. Ryan, P. G., et al. (2009). "Monitoring the abundance of plastic debris in the marine environment." *Philosophical Transactions of the Royal Society B: Biological Sciences* 364(1526): 1999-2012.