

# Marine Plastic Pollution

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The extensive use of plastic in India has reached a critical point, which should concern everyone. Over the last ten years we have produced more plastic than during the whole of the last century. Plastic pollution threatens food safety and quality, human health, coastal tourism, and contributes to climate change. There is an urgent need to explore the use of existing legally binding international agreements to address marine plastic pollution.

**In news:** How India can face the tidal wave of marine plastic

**Placing it in syllabus:** Environment

## Dimensions

- What is Marine plastic pollution?
- Source of Plastic pollution in oceans
- Impact of plastic pollution
- Solution to Marine Plastic Pollution

## Content:

### What is Marine Plastic Pollution?

- Marine Plastic Pollution is any persistent, manufactured or processed plastic material discarded into the sea or rivers or on beaches.
- It could be brought indirectly to the sea with rivers, sewage, storm water or winds; or discarded or lost at sea.
- It is estimated that almost all of the marine pollution in the world consists of plastic materials.
- The average proportion varied between 60% and 80% of total marine pollution.
- Plastic in the ocean breaks down into such small

segments that pieces of plastic from a one litre bottle could end up on every mile of beach throughout the world.

- It takes 500 to 1,000 years for plastic to degrade.
- Tons of plastic can be found in swirling convergences in the oceans making up about 40% of the world's ocean surfaces.

Plastic is a synthetic organic polymer made from petroleum with properties ideally suited for a wide variety of applications, including packaging, building and construction, household and sports equipment, vehicles, electronics and agriculture.

Plastic is cheap, lightweight, strong and malleable. Over 300 million tons of plastic are produced every year, half of which is used to design single-use items such as shopping bags, cups and straws.

Marine Plastic pollution is a **transboundary challenge** that is **rooted in unsustainable production and consumption patterns**. They are poor solid waste management and lack of infrastructure, lack of adequate legal and policy frameworks and poor enforcement, including on interregional cross-border trade of plastic waste, and a lack of financial resources.

## **Source of Plastic pollution in oceans**

- As much as 80% of pollution enters the ocean from land-based sources.
- The main sources of marine plastic are land-based, from urban and storm runoff, sewer overflows, beach visitors, inadequate waste disposal and management, industrial activities, construction and illegal dumping.
- Ocean-based plastic originates mainly from the fishing industry, nautical activities and aquaculture.

The **Central Pollution Control Board's (CPCB)** Annual Report on

Implementing the Plastic Garbage Rules, 2016, is the only regular estimate of the quantum of plastic waste generated in India. According to it, the **waste generated in 2018-19 was 3,360,043 tonnes per year** (roughly 9,200 tonnes per day).

Given that total municipal solid waste generation is between 55 and 65 million tonnes per day, **plastic waste contributes about 5-6 per cent of total solid waste generated in India.**

But according to a 2017 science breakthroughs study, only **nine per cent of all plastic waste has ever been recycled.**

Approximately 12 percent has been burnt, while the remaining **79 per cent has accumulated in landfills.** Plastic waste is blocking our sewers, threatening marine life and generating health risks for residents in landfills or the natural environment.

## **Impact of Plastic Pollution:**

Plastic pollution is the most widespread problem affecting the marine environment. It also threatens ocean health, food safety and quality, human health, coastal tourism, and contributes to climate change.

### ***Impacts on marine environment:***

- The most visible and disturbing impacts of marine plastics are the **ingestion, suffocation and entanglement of hundreds of marine species.**
- Marine wildlife such as seabirds, whales, fishes and turtles mistake plastic waste for prey, and most die of starvation as their stomachs are filled with plastic debris.
- They also suffer from lacerations, infections, reduced ability to swim, and internal injuries. Floating plastics also contribute to the **spread of invasive marine organisms** and bacteria, which disrupt ecosystems.

### ***Impacts on food and health:***

- Invisible plastic has been identified in tap water, beer, salt and are present in all samples collected in the world's oceans, including the Arctic.
- Several chemicals used in the production of plastic materials are known to be carcinogenic and to interfere with the body's endocrine system, causing developmental, reproductive, neurological, and immune disorders in both humans and wildlife.

### ***Biomagnification:***

- Toxic contaminants also accumulate on the surface of plastic materials as a result of prolonged exposure to seawater and could be ingested by marine life which over time accumulate in the food web.
- The transfer of contaminants between marine species and humans through consumption of seafood has been identified as a health hazard.

### ***Impacts on climate change***

- Plastic, which is a petroleum product, also contributes to global warming.
- If plastic waste is incinerated, it releases carbon dioxide into the atmosphere, thereby increasing carbon emissions.

### ***Impacts on tourism***

- Plastic waste damages the aesthetic value of tourist destinations, leading to decreased tourism-related incomes and major economic costs related to the cleaning and maintenance of the sites.
- Enormous social costs accompany these. Residents of coastal regions suffer from the harmful health impacts of plastic pollution and waste brought in by the tides and are inextricably linked to the fishing and tourism

industry for their livelihoods.

### ***Economic Costs:***

- The financial costs of marine plastic pollution are significant as well. According to conservative forecasts made in March 2020, the direct harm to the blue economy of the Association of Southeast Asian Nations will be \$2.1 billion per year.
- Notably, only the direct expenses of three industries are covered: Shipping, fisheries and aquaculture and maritime tourism. Boats may become entangled in abandoned or discarded fishing nets or their engines may become blocked with plastic debris.

## **Solution to Marine Plastic Pollution**

The problem of marine plastic pollution can – and must – be tackled from a range of perspectives. Some of the solutions are as follows:

### ***Designing alternative products:***

- Identifying plastic items that can be replaced with non-plastic, recyclable, or biodegradable materials is the first step.
- Find alternatives to single-use plastics and reusable design goods by working with product designers.
- Countries must embrace circular and sustainable economic practices throughout the plastics value chain to accomplish this.

### ***Reforming Pricing Structure:***

- Plastics are **inexpensive because they are made with substantially subsidised oil** and may be produced at a lower cost, with **fewer economic incentives to employ recycled plastics**.
- Price structures that reflect the adverse impacts of plastic consumption and promote alternative materials or

reused and recycled plastics are necessary.

### ***Technologies and Innovation:***

- Developing tools and technology to assist governments and organisations in measuring and monitoring plastic garbage in cities.
- **'Closing the loop' project** of the **United Nations Economic and Social Commission for Asia and the Pacific** assists cities in developing more inventive policy solutions to tackle the problem. A similar approach can be adopted in India.

### ***Promoting a plastic-free workplace:***

- All catering operations should be prohibited from using single-use plastics.
- To encourage workers and clients to improve their habits, all single-use goods can be replaced with reusable items or more sustainable single-use alternatives.
- By reconsidering how we operate, this initiative can save tonnes of plastic waste each year

### ***Enforcing Producer responsibility:***

- Extended responsibility can be applied in the retail (packaging) sector, where producers are responsible for collecting and recycling products that they launch into the market.

### ***Municipal and community Mobilization:***

- Beach and river clean-ups, public awareness campaigns explaining how people's actions contribute to marine plastic pollution (or how they may solve it) and disposable plastic bag bans and levies.

### ***Multi-stakeholder collaboration:***

- Government ministries at the national and local levels must collaborate in the development, implementation and oversight of policies, which includes participation from industrial firms, non-governmental organisations and volunteer organisations.
- Instead of acting in silos, all these stakeholders must collaborate and synchronise with one another.
- Identifying hotspots for plastic leakage can assist governments in developing effective policies that address the plastic problem directly.

Legal efforts have been made at the international and national levels to address marine pollution. The most important are:

- the **1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter** (or the **London Convention**),
- the 1996 Protocol to the London Convention (the London Protocol), and
- the 1978 **Protocol to the International Convention for the Prevention of Pollution from Ships (MARPOL)**.

However, compliance with these laws is still poor, partly due to limited financial resources to enforce them. Existing international legally binding instruments should be further explored to address plastic pollution.

**Mould your thought:** Why is Marine Plastic pollution a critical issue in the current times? What can be done to address this issue effectively?

***Approach to the answer:***

- Introduction
- Define Marine Plastic pollution
- Discuss its extent
- Mention its socio-economic and environmental impacts
- Suggest solutions to tackle this menace
- Conclusion