



## Plastic-Waste Management

This editorial is based on [“Microbes that devour plastic offer hope for recycling plans”](#) which was published in The Mint on 04/07/2022. It talks about the plastic waste management and related issues.

**For Prelims:** Single Use Plastic, Microplastics, Plastic microfibers, plankton, Oxo-biodegradable plastics, Circular Economy, Plastic-eating bacteria, Extended Producer Responsibility (EPR)

**For Mains:** Single Use Plastic, Impacts of Utilisation of Plastic, Solutions to Plastic-Waste Management, Recent Initiatives to combat Plastic waste

Plastic has become one of the most pressing environmental issues that we are facing today. **India is generating about 3.5 million tonnes of [plastic waste](#) annually.**

Right from municipal solid waste, plastic waste, to automobile waste, **the amount of waste is expected to be 3 times by 2025.** Less than one tenth of plastic is recycled. The huge volumes of leakages in plastic wastes demands a clarion call for a various efforts for plastic waste management in the country.

In this context, let's understand the issues associated with plastic waste and solutions.

### What is the Significance of Plastic?

- Resistant, inert, and lightweight, plastic offers many benefits to companies, consumers, and other links in society. This is all because of its **low-cost and versatile** nature.
- **In the [medical industry](#), plastics are used to keep things sterile.** Syringes and surgical implements are all plastic and single use.
- **In the [automotive industry](#), it has allowed a significant reduction in vehicle weight, reducing fuel consumption** and, consequently, the environmental impact of automobiles.
  - Plastics **protect our heads in the form of helmets.** They keep us **safer in our cars in the form of seatbelts, fuel tanks, windcreens and airbags.**

### Where does the Real Problem Lie?

- **[Single Use Plastic:](#)**
  - Plastics are primarily **produced from crude oil, gas, or coal**, and **40% of total plastic is discarded after a single use.**
    - Our relationship with plastic is short-term focused. Many of these products, such as plastic bags and food wrappers, have a **lifespan of mere minutes to hours**, yet they may **persist in the environment for hundreds of years.**
- **[Microplastics:](#)**
  - **Sea, sunlight, wind, and wave action break down plastic waste into small**

**particles**, often less than one-fifth of an inch across **called microplastics**. Spread throughout the water column and have been found in every corner of the globe.

- **Microplastics are breaking down further into smaller and smaller pieces.- [Plastic microfibers](#)**. They have been **found in municipal drinking water systems and drifting through the air**.

▪ **No Strict Adherence to Plastic Waste Management:**

- Globally, about **one fourth of plastic waste is never collected**.
  - In less wealthy countries, **waste plastic is sometimes burned in the open**, releasing toxic chemicals into the air.

## What are the Issues Associated with Plastic-Waste in India?

▪ **More Plastic Per Person:**

- Like much of the world, India is struggling to dispose of its growing quantities of plastic waste given how ubiquitous it has become- **from our toothbrushes to debit cards. A little over 10,000 tonnes a day of plastic waste remains uncollected**.

▪ **Unsustainable Packaging:**

- India's packaging industry is the biggest consumer of plastics. A 2020 study on **packaging in India projects a loss of almost 133 billion dollars worth of plastic material value over the next decade due to unsustainable packaging**.

- **Unsustainable packaging** involves **general packaging through single use plastic**.

- **Online Delivery:**

- The popularity of online retail and food delivery apps, though restricted to big cities, is contributing to the rise in plastic waste.
- India's **biggest online delivery startups Swiggy and Zomato are each reportedly delivering about 28 million orders a month**.
- **E-commerce** companies too have come under fire for excess use of plastic packaging.

▪ **Upsets the Food Chain:**

- Polluting **plastics can affect the world's tiniest organisms, such as [plankton](#)**. When these organisms become poisoned due to plastic ingestion, this **causes problems for the larger animals that depend on them for food**.

- Larger items, such as plastic bags and straws, can choke and starve **marine life**, while smaller fragments (microplastics) can cause liver, reproductive, and gastrointestinal damage in animals and it can **directly impact the blue economy as well**.

▪ **Impact on Human Health:**

- The **[World Health Organisation](#)** published shocking research in 2018 that exposed the **presence of microplastics in 90% of bottled water**.
  - **We absorb plastic through our clothes, 70% of which are synthetic and the worst fabric for the skin**.
  - **We even breathe plastic when due to poor waste management** by burning the trash in the open air.
  - Plastic toxicity in humans can lead to hormonal disruption and adverse reproductive and birth outcomes.

## How is India Addressing the concerns regarding Plastic-Waste?

▪ **[National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management:](#)**

- India launched a **nationwide awareness campaign on Single Use Plastics** on **[World Environment Day](#)** in June 2022.
- A **mobile app for Single Use Plastics Grievance Redressal** was also launched to empower citizens to check sale/usage/manufacturing of SUP in their area and tackle the plastic menace.

▪ **[Plastic Waste Management Amendment Rules, 2022:](#)**

- It **prohibits the manufacture, import, stocking, distribution, sale and use of several single-use plastic items as of July 1, 2022**.

- It has also mandated **Extended Producer Responsibility (EPR)** that incorporates circularity by making **manufacturers of products responsible for collecting and processing their products upon the end of the products' lifetime.**
- **India Plastics Pact:**
  - It is the **first of its kind in Asia.** The Plastics Pact is an ambitious and collaborative initiative to **bring stakeholders together to reduce, reuse and recycle plastics within the material's value chain.**
- **Mascot 'Prakriti':**
  - To spread awareness among masses about small changes that can be sustainably adopted in lifestyle for a better environment.
- **Project REPLAN:**
  - **Project REPLAN (stands for REducing PLastic in Nature)** launched by **Khadi and Village Industries Commission (KVIC)** aims to reduce consumption of plastic bags by providing a more sustainable alternative.

## What are the Effective Solutions to Plastic-Waste Management?

- **Identifying Hotspots:**
  - Identifying key **hotspots of Plastic leakage associated with production, consumption, and disposal of Plastic** can assist governments in developing effective policies that address the plastic problem directly.
- **Designing Alternatives:**
  - 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.
    - Promoting the use of **Oxo-biodegradable plastics**, that are manufactured to be **broken down by ultra-violet radiation and heat, more quickly than regular plastics.**
- **Breaking Down Plastic Waste:**
  - Plastic has become so enmeshed in our ecosystem that **bacteria have evolved to digest it.**
    - **Plastic-eating bacteria, discovered in Japan,** have been cultivated and modified to digest polyester plastics (food packaging and plastic bottles).
- **Recycling through Technologies and Innovation:**
  - **Waste is valuable and Waste is a resource, especially plastic.** Recycling, especially plastic recycling, sets a system in place which **creates a value chain for waste.**
  - **Thiagarajar College of Engineering in Madurai has received a patent for manufacturing tiles and blocks from waste plastic.**
    - The manufactured tiles could withstand heavy loads and could be used a construction material.
- **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.**
- **Circular Economy for Plastic Management:**
  - Circular economy can reduce material use, redesigns materials to be less resource intensive, and recaptures "waste" as a resource to manufacture new materials and products.
    - **Circular economy** is not just applicable to the global currents of plastic and clothes, but can also **contribute significantly to the achievement of sustainable development goals.**
    - **Circular economy** can reduce material use, redesigns materials to be less resource intensive, and **recaptures "waste" as a resource to manufacture new materials and products.**
- **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.**

## What are the Current Global Initiatives to Tackle Plastic-Waste?

- **Resolution:**
  - In 2022, **124 countries, parties to the [United Nations Environment Assembly](#), including India**, signed a resolution to draw up an agreement which will in the future make it legally binding for the signatories to **address the full life of plastics from production to disposal, to end plastic pollution.**
    - As of July 2019, **68 countries have plastic bag bans with varying degrees of enforcement.**
- **European Union:**
  - In July, 2021, the **Directive on Single-Use Plastics** took effect in the **[European Union \(EU\)](#).**
- **[Closing the loop:](#)**
  - **It is a** 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.
- **The Global Tourism Plastics initiative:**
  - It aims to reduce plastic pollution from the tourism sector through a set of actionable commitments by 2025.
    - The Initiative will also **engage the value chain to promote 100% of plastic packaging to be reusable, recyclable or compostable** and commit to collaborate and invest in increasing the recycling and composting rate for plastics.

### ***Drishti Mains Question***

Plastic has become one of the most pressing environmental issues that we are facing today. Give an account of the current status and the targets to be achieved pertaining to plastic waste management in the country.

## **UPSC Civil Services Exam, Previous Year Questions (PYQ)**

**Q. Why is there a great concern about the 'microbeads' that are released into environment? (2019)**

- (a) They are considered harmful to marine ecosystems.
- (b) They are considered to cause skin cancer in children.
- (c) They are small enough to be absorbed by crop plants in irrigated fields.
- (d) They are often found to be used as food adulterants.

**Ans: (a)**

**Exp:**

- Microbeads are **small, solid, manufactured plastic particles** that are less than 5mm and do not degrade or dissolve in water.
  - Mainly made of polyethylene, microbeads can also be prepared from petrochemical plastics such as polystyrene and polypropylene. They may be added to a range of products, including rinse-off cosmetics, personal care and cleaning products.
- Microbeads, because of their small size pass unfiltered through the sewage treatment system and reach the water bodies. The untreated microbeads in the water bodies are taken up by the marine animals, thus producing toxicity and causing harm to the marine ecosystem.
  - In 2014, Netherland became the first country to ban cosmetics microbeads.
- Therefore, option (a) is the correct answer.

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