Beat Plastic Pollution

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Plastic Waste

- Polyethylene (PE)
- Polypropylene (PP)
- Polyethylene Terephthalate (PET)
- Polyvinyl Chloride (PVC)
- Polystyrene (PS)
- Polyamide (PA)/nylon

PE and PP are less dense than sea water and will tend to be buoyant, whereas PS, PA and PET are denser and will tend to sink.

Household Plastic Items

Types of Plastic Packaging

Polymer Types	Examples of applications	Symbol
Polyethylene Terephthalate	Fizzy drink and water bottles. Salad trays.	Pet
High Density Polyethylene	Milk bottles, bleach, cleaners and most shampoo bottles.	HDPE
Polyvinyl Chloride	Pipes, fittings, window and door frames (rigid PVC). Thermal insulation (PVC foam) and automotive parts.	PVC
Low Density Polyethylene	Carrier bags, bin liners and packaging films.	LDPE
Polypropylene	Margarine tubs, microwaveable meal trays, also produced as fibres and filaments for carpets, wall coverings and vehicle upholstery.	PP
Polystyrene	Yoghurt pots, foam hamburger boxes and egg cartons, plastic cutlery, protective packaging for electronic goods and toys. Insulating material in the building and construction industry.	PS
Unallocated References	Any other plastics that do not fall into any of the above categories - for example polycarbonate which is often used in glazing for the aircraft industry	null

Plastic Pollution

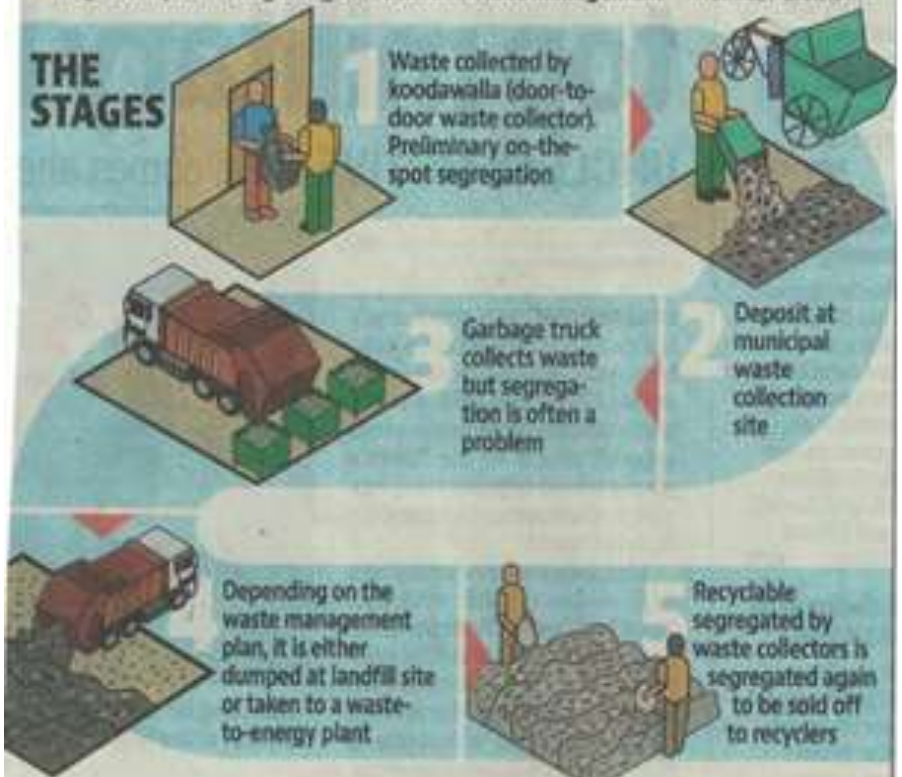
- Consumer plastics often end up in drains, rivers and water bodies.
- Plastic pollution is the accumulation of plastic products in the environment that adversely affects wildlife, water bodies, habitat, or humans. Plastic pollutants are categorized into micro (between 2mm-5mm), meso (5 mm to 20 mm), or macro (more than 20 mm)which include plastic grocery bags, etc.
- Poor waste management practices, inadequate policies and regulation, ineffective enforcement, and the attitude and behaviour of individuals.
- Micro-plastic contaminates water and air

Plastic pollution afflicts animals, birds, Marine Life, land, waterways and oceans.

Plastic Waste Comprises 10% of Total Garbage

Municipal Waste Management has no System of Segregation of Plastics, Except by Rag Pickers

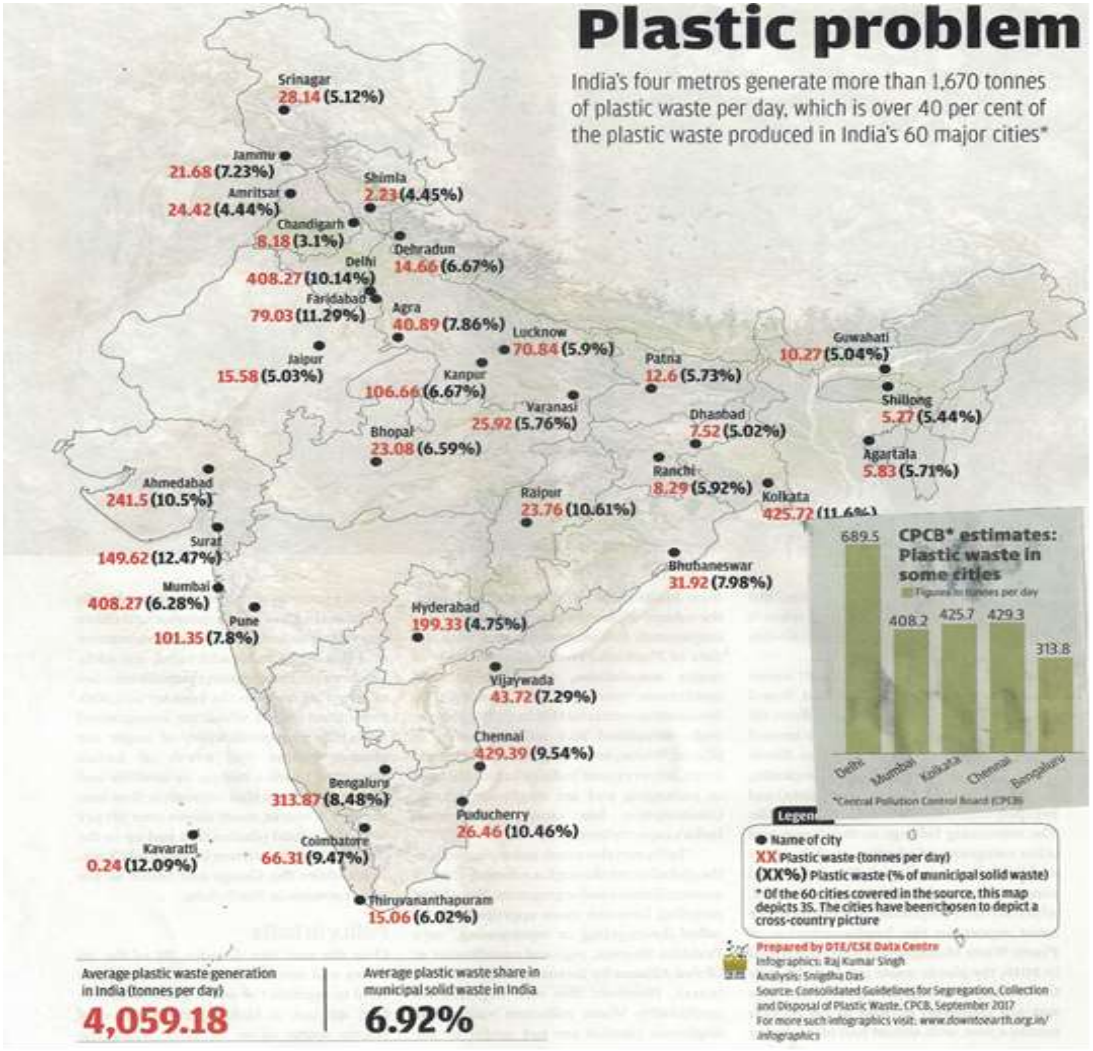
Single-compartment garbage trucks hurt waste management ANUSHREE FADNAVIS/HT



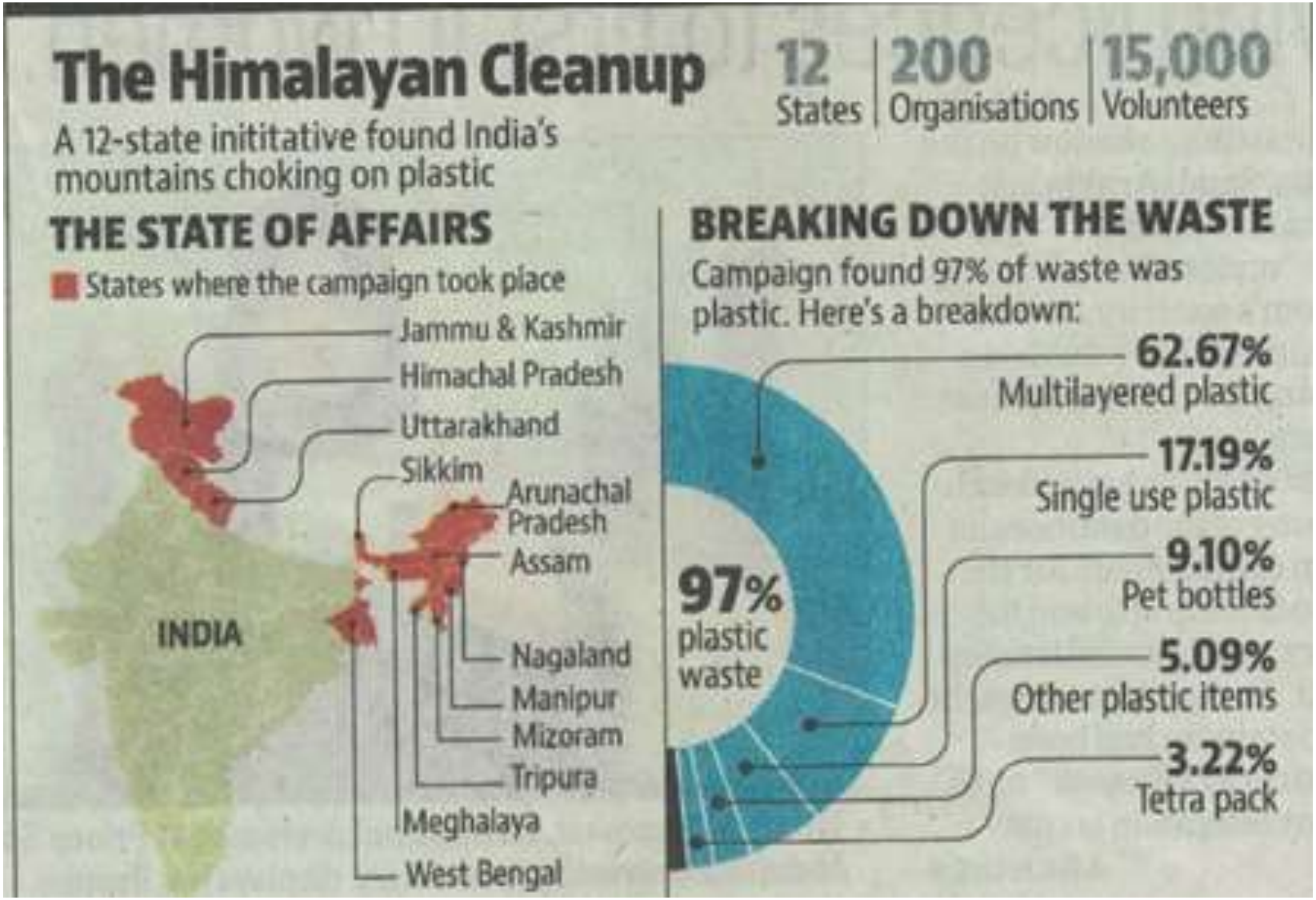
Quantum of Plastic Waste

- In India 5.6 million tonnes of plastic waste is produced each year, of which only 20% is recycled.
- Katie Dangerfield informs “The world’s oceans will have more plastic than fish by 2050”. 8 million tons of plastic ends up in the oceans each year.
- Accumulation of Bio- Toxins such as DDT and PCB’s, which are hydrophobic and can cause adverse health affects.

Plastic Waste: Delhi 690 mt, Mumbai 408 mt and Bengaluru 314 mt/day



97% of Waste in Himalayas is Plastic (largely Bottles, bags, Single Use Plastic)



Measures (under Plastic Waste Management Rules, 2016) are not happening on the ground. There has been no implementation of EPR as of now... Almost 25 states and UTs have banned plastic, but

Obstinate Nature of Plastic

Depending on their chemical composition, plastics have properties of contaminant, absorption and adsorption. Polymer degradation takes much longer. It is estimated that a foam plastic cup takes 50 years, a plastic beverage holder 400 years, a disposable nappy 450 years, and fishing line 600 to 1000 years to degrade.

The Life of Wastes

Waste	Life
Banana Peel	3-4 weeks
Paper Bag	1 month
Cotton Cloth	5 months
Woollen Shawl	1 year
Wood	5,10, 20 years
Leather Shoe	40-50 years
Tin Can	50-100 Years
Plastic Waste	5 to 1000 years
Glass	Unknown

Toxins of Plastic

- Chlorinated plastic release harmful chemicals into the soil, which seep into groundwater and the ecosystem
- Bacteria such as Pseudomonas, nylon-eating bacteria, and Flavobacteria break down nylon through the activity of the nylonase enzyme. Breakdown of biodegradable plastics releases methane, a very powerful greenhouse gas that contributes to global warming.
- Toxic chemicals such as bisphenol A and polystyrene leach into waters from some plastics
- The toxins of plastic include diethylhexyl phthalate (toxic carcinogen) lead, cadmium, and mercury.

Water Contamination

A 2017 study found that 83% of tap water samples taken around the world contained plastic pollutants. The United States was the most polluted, followed by Lebanon and India. People may be ingesting between 3,000 and 4,000 microparticles of plastic from tap water per year.

Killer Plastic

- Entanglement in plastic debris has been responsible for the deaths of many marine organisms, such as fish, seals, turtles, and birds.
- Plastics can be carcinogenic or promote endocrine disruption.
- Chemicals used in plastic production can cause dermatitis upon contact with human skin

Killer Plastic

Plastic Problems: Polluting , fire, animals, water bodies, clogged drains

Solutions: Legal enforcement, Behaviour/Culture, 4 Rs, Pay for Carry bags, Heavy Tax on Plastic, Ban Styrofoam, single Use Plastic, Water Bottles

15,342 tonnes of waste generated in India per day (5.6 million tonnes per annum)

690 tonnes is Delhi's daily share alone

90% of this plastic not being recycled

500-1000 years it takes for plastic to degrade

WHERE THE PLASTIC LANDS UP AFTER WE THROW IT AWAY

Landfill sites Where instead of decomposing, the plastic often catches fire due to high methane generation

Roadside garbage dumps Where it is consumed by animals

Waterbodies and waterways Around 90% of the plastic being generated is making its way into oceans through rivers

Clogged drains Plastic bags in the soil and at landfill sites lead to toxic metals, such as lead and cadmium, leaching into groundwater

WHAT IS THE SOLUTION

- Use bags made of cloth or other environment-friendly material; opt for sturdy glass or aluminium bottles
- Segregate waste
- Introduce stricter waste management policy to ensure effective recycling

HOW OTHER COUNTRIES DO IT

Ireland There was a dramatic decrease in the use of plastic bags after customers were forced to pay for bags

Rwanda A total ban on manufacturing, sale, use and import of all plastic bags with heavy fines and even jail time for offenders

New York City Styrofoam banned as it is impossible to recycle

China A ban on plastic tableware to reduce its environmental impact

Strategic Framwork of Four R's

SDG 12: Develop 10 year framework to reduce plastic waste by half

- **REFUSE** disposable plastic whenever and wherever possible. Choose items that are not packaged in plastic, and carry your own bags, containers and utensils. Say 'no straw, please.'
- **REUSE** durable, non-toxic straws, utensils, to-go containers, bottles, bags, and other everyday items. Choose glass, paper, stainless steel, wood, ceramic and bamboo over plastic.
- **REDUCE** your plastic footprint. Cut down on your consumption of goods that contain excessive plastic packaging and parts. If it will leave behind plastic trash, don't buy it.
- **RECYCLE** what you can't refuse, reduce or reuse. Pay attention to the entire life cycle of items, from source to manufacturing to distribution to disposal.

The Way Forward: Ban, Refuse

- Ban on plastic items, such as bottled water and plastic bags.
- Biodegradable and degradable plastics help reduce plastic pollution
- BPA has been banned in the production of baby bottles and children's cups
- Adopt Integrated, ecosystem-based and Adaptive Management
- Precautionary Principle and Flexible Management Approach
- UK: Prohibitive tax on consumer plastics (2018)

The Way Forward: Disposal Free

- The Ministry of Drinking Water and Sanitation, Government of India, requested various governmental departments to avoid the use of plastic bottles for drinking water during governmental meetings.
- The states of Maharashtra, Bihar and Sikkim have restricted the usage of plastic water bottles (in government functions and meetings) and styrofoam products.
- The 2015 National Games of India, (Thiruvananthapuram), aimed at "zero-waste" venues to make the event "disposable-free“ and ban on usage of disposable water bottles, plastic tableware and tumblers

The Way Forward: Recycling

- All plastics can be recovered and recycled; Waste plastic (HDPE) can be recycled into plastic timber, pallets, tiles, waste containers liners, railway sleepers, fence posts, park benches,, street furniture, lumber, tables, roadside curbs, benches, truck/cargo liners, stationery , etc.
- Recycled plastic can be used for road surface with aggregate and bitumen (asphalt) at a temperature of 220°C (428°F) .

Recycling


PLASTIC WASTE RECYCLING MACHINE
YDN-A-series
Air Cooled Plastic Waste Recycling Machine

What We Can Do

- Start by giving up on single use plastics- straws, plastic beverage containers, cling films, wet wipes, etc.
- Replacing plastics with more sustainable options like reusable steel or glass bottles, asking restaurants to serve in non disposable utensils, replacing disposable sanitary napkins with menstrual cups and cloth pads, carrying our own bag for shopping
- Segregate plastic waste from rest of the waste to ensure maximum recovery and recycling of plastic waste
- No single use plastic

CROSS HAIRS BY SORIT GUPTO

High standards of living for all the world's inhabitants would require up to six earths: University of Leeds study

THANKS