

SINGLE-USE PLASTIC

What is single-use plastic?

In 2018, 'single use' was voted the word of the year by Collins Dictionary, which describes it as 'made to be used only once'. The word found its way into the record books mainly because of its association with plastic, underlining the grip single-use plastics have gained over human life.

Simply put, plastic produced and designed to be thrown away after being used only once is termed single-use plastic (SUP). By that definition, a large number of products fall in the category of single-use plastic. These include everything from a disposable straw to a vinyl flec.

As per the United Nation's (UN) definition, any plastic that is made from polymers of high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyethylene

terephthalate (PET), polystyrene (PS), polypropylene (PP) or expanded polystyrene (EPS) is single-use plastic.¹ The problem with this neat definition is that it does not reflect the ground reality or indeed the policy desires in the developing world. Single-use plastic demands country-specific definitions (see Table 1: Definition of single-use plastics in different regions across the globe).

Unfortunately, there is no official definition of single-use plastic in India yet. This is a cause of some confusion. Common perception in India often conflates polythene carry-bags with all single-use plastics. In some cases, the terms 'single-use plastic' and 'disposable plastic' are used interchangeably.

In this context, the definition provided by the European

Table 1: Definition of single-use plastics in different regions across the globe

Authority and source	Definition
Parliament of UK (England, Scotland, Wales and Northern Ireland) Available at: https://bit.ly/2Y569yj	Single-use plastics are known as 'single use carrier bags', generally referring to the conventional, lightweight, plastic carrier bags offered to customers in most UK supermarkets
Scottish Parliament Available at: https://bit.ly/2JASoUX	A 'single-use carrier bag' is defined, broadly, in regulations as a bag which is made wholly or mainly from plastic and if either of the following applies: <ul style="list-style-type: none">• It is made of thin plastic (any part of the bag has a thickness of no more than 49 microns); or• It is less than 439 mm x 404 mm in size when laid flat (excluding handles). Therefore, single-use plastics are defined as single-use carrier bags that are supplied with the intention that they be used once, to carry goods away from a point of sale
Republic of Philippines, Legarda Senate Bill 1948 or Single-Use Plastics Regulation and Management Act of 2018 Available at: https://bit.ly/2TJZ9IE	'A polymer bag or a bag made in whole or in part of polyethylene, polypropylene and polycarbon, or other similar material, and designed to be provided or utilized at the point of sale for carrying or transporting goods or items.'
Citi Global Perspectives and Solutions (GPS) Available at: http://citi.us/2TfxtGn	Any plastic product used once before being disposed of or recycled. This includes plastic bags, food wrappers, straws, coffee stirrers, beverage bottles, utensils, and caps or lids.

1. https://wedocs.unep.org/bitstream/handle/20.500.11822/25496/singleUsePlastic_sustainability.pdf?isAllowed=y&sequence=1

Green Cities California: Single-use plastic bags (SUPBs) are defined as recyclable high-density polyethylene (HDPE) bags designed to be used only once
'Master Environmental Assessment on Single-Use and Reusable Bags' by ICF International
Available at: <https://bit.ly/2CqZkxl>

Municipality of Wood Buffalo, Alberta Single-use plastic bags are defined as plastics less than 2.25 mils (0.571 millimeter) thick polyethylene, viz., (but not limited to) a door hanger bag designed to hold flyers, coupons or other advertisements; plastic gift bags; oxo-degradable bags, etc.
Available at: <https://bit.ly/2Wrst3z>

French Government (2017) 'Ultra-thin bags' which are less than 50 micron thick and cannot be easily used
Available at: <https://bit.ly/2HPfO6h>

Environmental and Policy Analysis Division, Planning Department, the City of San Diego Single-use plastic carry out bags are referred to as thinner single-use bags, which are typically made from high density polyethylene (HDPE)
Available at: <https://bit.ly/2YjNVJj>

Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Putrajaya, Malaysia Single-use plastics are those plastics which are commonly used for plastic packaging or as carry bags and include items intended to be used only once before they are thrown away
Available at: <https://bit.ly/2YjWYdo>

National Environment Management Authority (NEMA), Ministry of Environment and Natural Resources, Kenya 'Single-use plastic carrier bags' have been put under the category of plastics, which entails that they are usually manufactured for single use. They are constructed with handles and may have a gusset but generally tear or puncture after first use. They are easily transported by the wind and are some of the most visible components of roadside and shoreline litter
Available at: <https://bit.ly/2FxMezE>

Source: CSE compilation

Union (EU) and derived from on-ground research and analysis of 'single-use plastic products' that form a major part of litter might be more useful. As per the EU definition, a single-use plastic product is a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to the producer for refill or reused for the same purpose for which it was conceived.²

This definition is better than the technical definition provided by UN because it is mindful of real-world situations. However, developing countries like India recycle many products designed for single-use (90 per cent of

technically 'single-use' PET bottles are recycled). On the other hand, disposable cutlery that can neither be recycled nor reused also falls in the category of single-use plastic. Utility products such as toothbrushes, with a longer lifetime, are SUPs, but so are products with much smaller lifecycles.

So, even though the EU definition fits the Indian scenario better, the diversified and dynamic consumption patterns in India present an irrefutable argument in favour of developing a unique definition for the country. Some products that fall under the category of single-use plastic as per the UN and EU definitions have a varied mean service lifetime (time between start of usage of a product and its disposal) in India.

2. http://ec.europa.eu/environment/circular-economy/pdf/single-use_plastics_proposal.pdf



Table 2: Classification of single-use plastics as per EU

Type of plastic	Usage in percentage	General usage
PS and EPS	6.7	PS: Eyeglasses frames, plastic cups and egg trays PSE: Packaging and building insulation
PET	7.4	Bottles for water, soft drinks, juices and cleaners
Polyurethane (PUR)	7.5	Building insulation, pillows, mattresses and insulating foams for fridges
Polyvinyl chloride (PVC)	10	Window frames, profiles, floor and wall covering, pipes, cable insulation, garden hoses and inflatable pools
HDPE	12.3	Toys, milk bottles, shampoo bottles, pipes and houseware
LDPE and Linear LDPE	17.5	LDPE: Reusable bags, trays, containers and agricultural film LLDPE: Food packaging film
PP	19.3	Food packaging, sweet and snack wrappers, hinged caps, microwave proof containers, pipes, automotive parts and bank notes
Others	19.3	Hub caps, optical fibre, eyeglasses lenses, roofing sheets, touch screens, cable coating in telecommunications, medical implants and surgical devices

Source: Plastics Europe Market Research Group and Conversion Market and Strategy GmbH

Why is single-use plastic dangerous?

SUPs are cheap, convenient and easily available. In some sectors like healthcare, they are irreplaceable. But the convenience of and dependency on SUP items has led to manifold consequences on the environment, society, economics, food and health.

The problems associated with single-use plastic can be examined from two angles:

1. Environmental and social
2. Economic

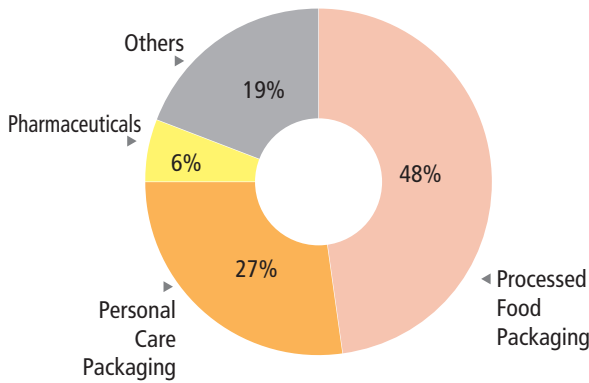
Environmental and social

Most plastics do not biodegrade. Instead, they slowly break down into smaller fragments known as microplastics. Studies suggest that plastic bags and containers made of expanded polystyrene foam

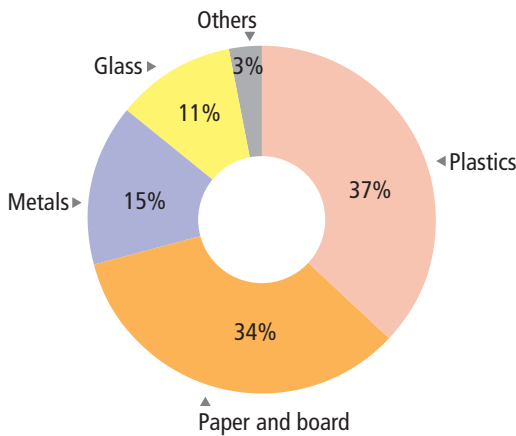
(commonly referred to as ‘Styrofoam’) can take thousands of years to decompose, contaminating soil and water. Plastic waste causes a plethora of problems when it leaks into the environment. The stranded single-use plastics create visual pollution. Second, they are one of the main causes of urban flooding as many plastic items like carry bags, wrappers, gutkha sachets and packets block waterways and exacerbate natural water-related disasters. By clogging sewers and providing breeding grounds for mosquitoes and pests, plastic bags can increase the transmission of vector-borne diseases like malaria and cholera.

High concentrations of plastic materials, particularly plastic bags, have been found blocking the respiratory and digestive systems of hundreds of land and marine species. There is evidence that the

Graph 1: Sector-wise usage of packaging in India



Graph 2: Packaging materials in India



Source: Centre for Market Research & Social Development Pvt Ltd, Technology Gap Assessment in Packaging Techniques in MSME sector

toxic chemicals added during the manufacture of plastics transfer to animal tissue, eventually entering the human food chain. Styrofoam products, containing carcinogenic chemicals like styrene and benzene, are highly toxic if ingested, and damage the nervous systems, lungs and reproductive organs. Toxins in Styrofoam containers can leach into food and drinks. In poorer countries, plastic waste is often burned for heat or cooking, exposing people to toxic emissions. Disposing of plastic waste by burning it in open-air pits releases harmful gases like furan and dioxin into the atmosphere.

Economic

The environmental and social problems associated with SUPs could somehow be kept in check if these materials were recycled at scale. However, the economic value of post-consumption single-use plastics is low. In fact, it makes little economic sense to collect back and recycle these materials.

Take the example of carry bags. They are made of LDPE and are technically recyclable. However, the sheer volume-to-weight ratio and low final returns (per unit weight) mean that it would make little sense for the entire recycling chain, from informal waste-pickers to industrial-scale waste recyclers, to collect and recycle these bags. Same is the case with packaging and wrapping materials.

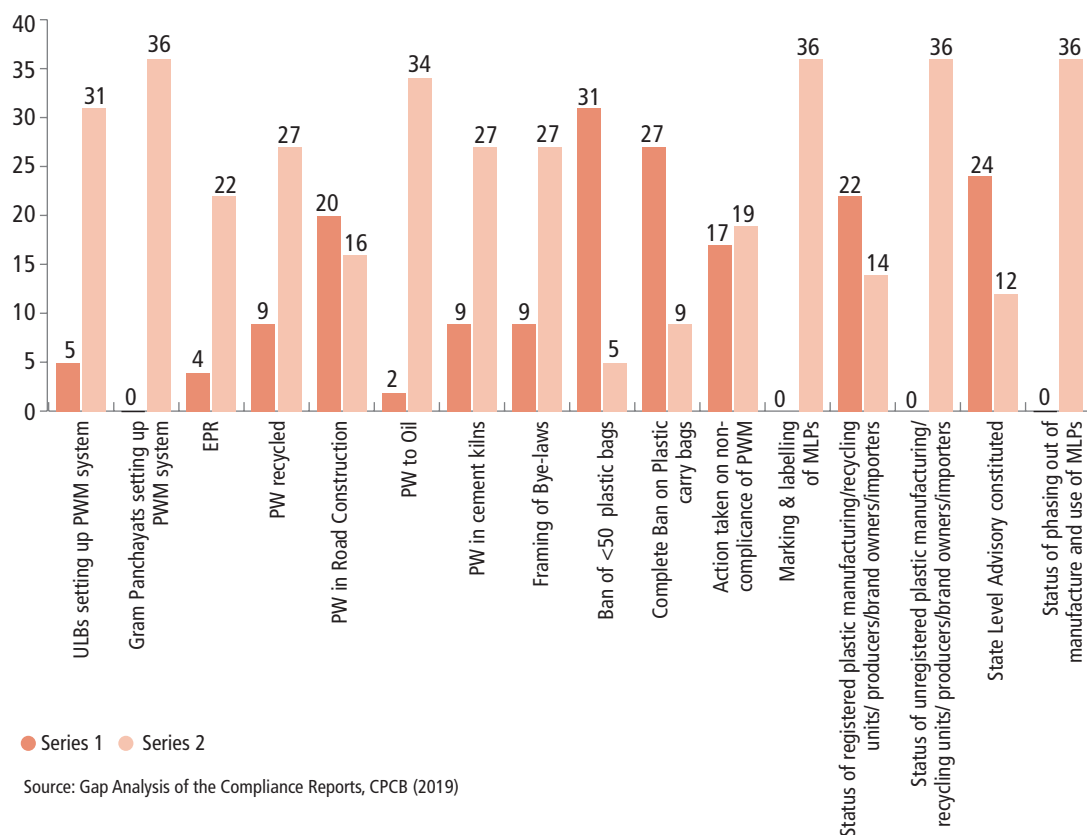
PET bottles have a high recycling value, as they are converted into pellets and polymers. However, other SUP products like multi-layered packaging, LDPE carry bags, foamed plastic products (polystyrene or Styrofoam cutlery) and package wrapping products have very low recycling value and only end up becoming nightmarish non-biodegradable waste.

Global action against single-use plastic

In May 2018, EU proposed a new law to ban 10 most common plastic waste items found on European beaches, namely cotton buds; cutlery; plates; straws and stirrers; sticks for balloons; food and beverage containers; cups for beverages; bags; crisp packets and sweet wrappers; and wet wipes and sanitary items.³ The bill will come into force in 2021 and incorporates 25 per cent reduction targets on plastic products (with no substitution), and initiatives with reference to cigarette filters and lost fishing gear. In order to make this policy sturdier, on 27 March 2019, European lawmakers voted overwhelmingly to ban top 10 disposable plastic products (plates, balloon sticks, food and beverage containers made from expanded polystyrene and all products made of oxo-degradable plastic) that are clogging the world's oceans. A classification has been done to make this phasing out

3. https://ec.europa.eu/commission/news/single-use-plastics-2018-may-28_en

Graph 3: Gap analysis of 2019 Plastic Waste Management Rules⁴



Source: Gap Analysis of the Compliance Reports, CPCB (2019)

smoother (see Table 2: Classification of single-use plastics as per EU).

Single-use plastic industry in India

It has been estimated that India’s SUP industry has a turnover of about 53,000 crores and provides 13 lakh jobs across 10,000 firms in the country. It is growing at an impressive rate of 20 per cent. Any plans to phase out SUPs must take into account the concerns of waste pickers whose livelihoods are associated with the sale of PET and other SUP products. They form nearly 30 per cent of India’s waste pickers’ population.

Plastics form the largest chunk of packaging material used across industries, and SUPs constitute a lion’s share of plastic packaging material. As per a 2013 FICCI report, packaging consumption of SUPs in India is 43 per cent, compared to the global average of 35 per cent.⁵

Policy responses and management in India

The first attempt to curb plastic pollution in India was made in the form of Plastic Waste (Management and Handling) Rules, 2011. These Rules were subsequently replaced in 2016 by stronger ones banning all plastics below 50 microns in thickness. The 2016 Rules also incorporated extended producer responsibility (EPR) and notified a phase-wise ban of multi-layered plastic products. A 2018 amendment to the 2016 Rules diluted the phasing out of multi-layered plastic products, providing producers an escape route by claiming that the packaging material, even if not recycled, can be put to some other use.

In June 2018, on the occasion of World Environment Day, the Prime Minister vowed to phase out single-use plastics by 2022, which was a shot in the arm for efforts

4. <http://www.indiaenvironmentportal.org.in/files/file/gap%20analysis%20of%20the%20compliance%20reports%20submitted%20by%20states.pdf>

5. <http://fikki.in/study-page.asp?spid=20396§orid=88>.



Table 3: Classification of plastics as per CPCB

Scientific name	Code	Examples of application
Polyethylene terephthalate (PET)	1	Water bottles, soft drink bottles, food jars, plastic films, sheets, furniture, carpet and panelling
High-density polyethylene (HDPE)	2	Milk pouches, bottles, carry bags, recycling bins and base cups
Polyvinyl chloride (PVC)	3	Pipes, hoses, sheets, wire cable insulation, multi-layer tubes, window profiles, fencing and lawn chairs
Low-density polyethylene (LDPE)	4	Plastic bags, various containers, and dispensing and wash bottles
Polypropylene (PP)	5	Disposable cups, bottle caps, straws, auto parts and industrial fibre
Polystyrene (PS)	6	Disposable cups, glasses, plates, spoons, trays, CD covers, cassette boxes and various foams
Others (O)	7	Thermoset plastics, multi-layer and laminates, Nylon, fibre-reinforced plastic, CD, melamine plates, helmets and shoe soles

Source: CPCB, 2017

to curb plastic use. However, as per a recent National Green Tribunal (NGT) order, India is yet to witness robust implementation of plastic waste management.⁶

Eighteen states and UTs have imposed a complete ban on plastic carry bags and products. Defaulters are issued fines, notices and closure directions in 17 states and UTs, including Chandigarh; Daman, Diu, Dadra and Nagar Haveli; Delhi, Gujarat, Himachal Pradesh, Jammu and Kashmir, and Ladakh etc. Six states and UTs (Andhra Pradesh, Gujarat, Jammu and Kashmir, Kerala, Ladakh and West Bengal) have imposed a partial ban on carry bags and products at religious and historical places. Seven states and UTs (Assam, Bihar, Goa, Manipur, Meghalaya, Puducherry and Telangana) have not imposed any ban on plastic carry bags and products. No information is available regarding the status of the plastic ban in five states and UTs (Andaman and Nicobar Islands, Arunachal Pradesh, Sikkim, Uttar Pradesh and Uttarakhand).

Ten states and UTs (Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh,

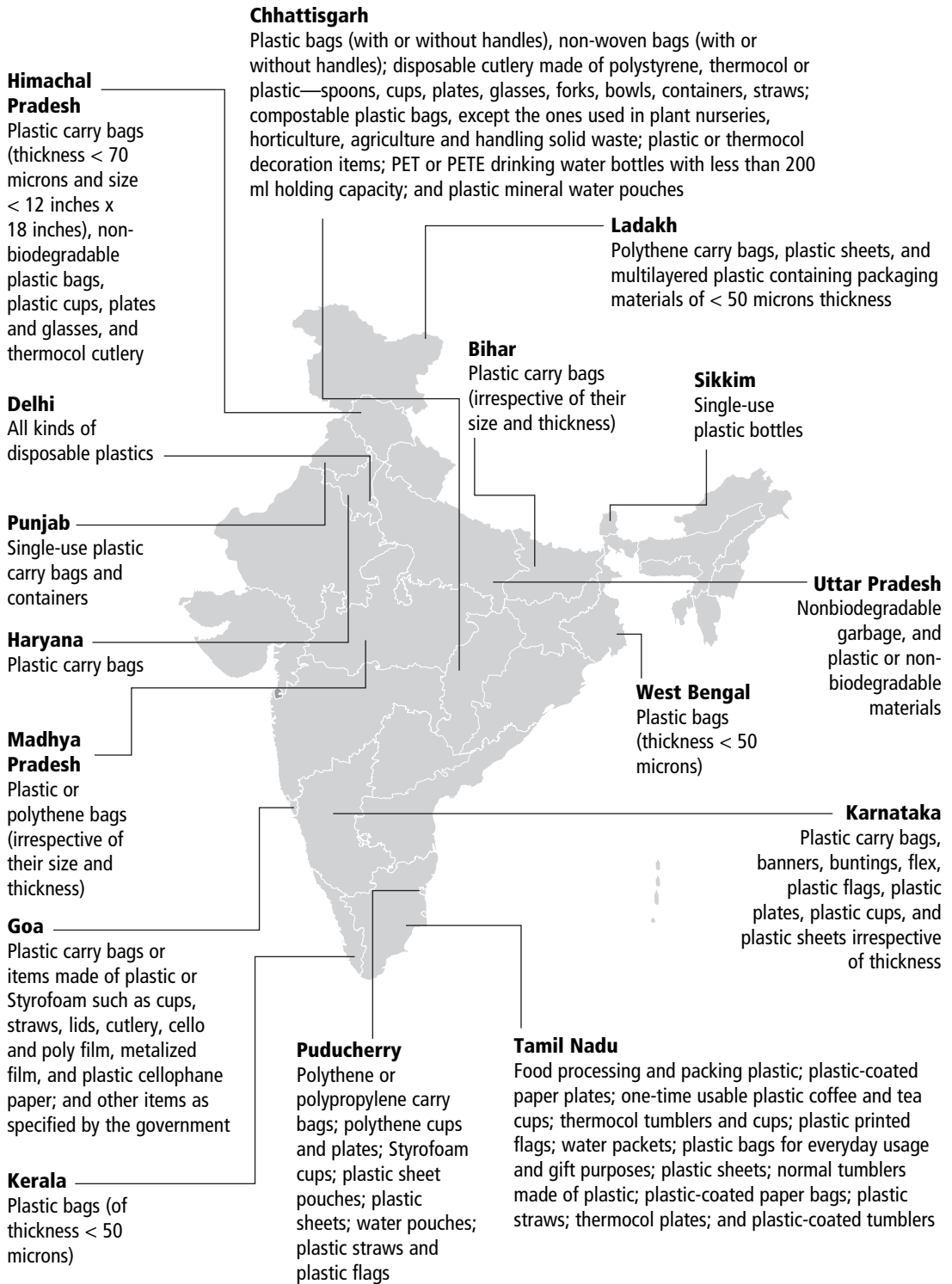
Meghalaya, Odisha, Rajasthan and Tamil Nadu) send plastic waste to cement plants for co-processing. Twelve states and UTs (Andhra Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Orissa, Nagaland, Tamil Nadu, Telangana, Puducherry and West Bengal) use plastic waste in polymer bitumen road construction. Four states and UTs (Chandigarh, Delhi, Karnataka and Madhya Pradesh) use plastic waste for waste-to-energy and oil production.

Central Pollution Control Board has recently remarked that states and UTs are not furnishing adequate information regarding plastic waste generation records, creation of state-level advisory bodies, framing of bye-laws, marking and labelling of multi-layered plastic, and the number of plastic manufacturing and recycling units within their jurisdiction. The board also rued the fact that there is dearth of concrete preventive and regulatory measures as envisaged under Plastic Waste Management Rules, 2016.

The Board has classified plastics in the hope that they will be managed better (see Table 3: Classification of plastics as per CPCB).

6. <http://www.indiaenvironmentportal.org.in/files/file/plastic-waste-rules-2016-NGT-order.pdf>.

Status of plastic ban in India



Source: CSE, 2019