



SCHOOL OF ENVIRONMENTAL  
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**ANIL AGARWAL DIALOGUE 2022**

# **PLASTICS FOR A CIRCULAR ECONOMY – WHY REGULATIONS NEED TO CHANGE**

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# Plastic and its recycling: key issues

1. We do not have data on the amount of plastic generated; and 'wasted'.
2. We are still not clear of how much of the waste can be recycled and how this can be done and by whom?
3. MOEF&CC has banned 'single-use' plastic – but categorization of what is single-use needs to be expanded, particularly to include MLP and other materials that cannot be recycled
4. MOEF&CC has issued notification for Extended Producer Responsibility (EPR) – under which every producer of plastic, including producers, importers, brand-owners have been given collection targets starting from 2021 and recycling targets from 2024 – is this an effective system for managing plastic waste?



# Data on plastic generation and recycling

- Data on generation the only source is CPCB
- Its 2015 estimate said that India produces 9.5 million tonnes/year and this has been revised downwards in 2020 to 3.3 million tonnes/year. CPCB's data is an aggregation of state pollution control boards submission annually
- Data on recycling capacity, human power and if this is done in the formal or informal business comes from PlastIndia Foundation (industry association).
- This data shows that this business has moved from formal to informal and that as much as 60% of the plastic generated is being “recycled” – the global rate of recycling is 9%.



## Data on plastic waste generation: is not clear

REPORT	SOURCE	YEAR OF PUBLICATION	PLASTIC WASTE GENERATION (tonnes per day)	ANNUAL PLASTIC WASTE GENERATION (in million tonnes)
Assessment and quantification of plastic waste generation in Major cities	Central pollution control board (CPCB)	2015	25,940	9.5
Plastic waste management Annual report-2018-19	Central pollution control board (CPCB)	2020	9,205	3.3
Plastic waste management Annual report-2019-20	Central pollution control board (CPCB)	2021	9,506	3.5



# Data on infrastructure and human resource

Only available data from industry & shows shift from organised to unorganised.

PARAMETER	2018 REPORT	2019 REPORT	PERCENTAGE GROWTH
Number of organized recycling units	3500	100	- 97%
Number of unorganized recycling units	4000	10000	60%
Direct manpower	600000	100000	- 83%
Indirect manpower (including waste pickers)	1 million	1- 1.5 million	50% (considering upper limit)
Quantum of plastic recycled	5.5 million metric tonnes	6 million metric tonnes	8.3%

Source: *PlastIndia Foundation, 2019*



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# How is plastic “recycled”?

CPCB has outlines 4 broad ways of recycling

- **Primary recycling** - can be used for same application (i.e: bottle to bottle)
- **Secondary recycling**- has to be used for an inferior application (i.e. bottle to pellets to fibre)
- **Tertiary recycling**- producing fuel /chemicals from waste (pyrolysis) (i.e: bottle to fuel but has high energy consumption)
- **Quaternary recycling**- incineration for energy (co-processing) (i.e: bottle used as fuel in an incinerator)



# Status of plastic waste-recycling-disposal

What are states doing (CPCB 2018-19)

1. **Bulk sending to 'recyclers' for processing (secondary recycling)**
2. Sending to cement plants for incineration
3. Sending for road-construction

But as bio-mining of landfills is finding that plastic is a major problem. So, we are not recycling enough.

The question then really is what is recycling all about? What can be recycled? How economical is it? Who does it? This is then the agenda for plastic waste management

**Table 2: Categories of plastic and their recycling potential**

Name of plastic	Code	Recyclable or not	Few applications	Type of recycling
Polyethylene Terephthalate (PET)	1	YES	Water bottles, soft drink bottles, food jars, films, sheets, furniture, carpets, paneling	Converted back to polymer and used for making apparel
High-density Polyethylene (HDPE)	2	YES	Milk pouches, bottles, carry bags, recycling bins, base cups	Converted to pellets and used to produce new HDPE
Polyvinyl Chloride (PVC)	3	YES	Pipes, hoses, sheets, wire cable insulations, multilayer tubes, window profile, fencing, lawn chairs	Pyrolysis, hydrolysis and heating are used to convert PVC waste into calcium chloride, hydrocarbon products and heavy metals. These are used to produce new PVC or as feed for other manufacturing processes or as fuel for energy recovery
Low-density Polyethylene (LDPE)	4	YES	Plastic bags, various containers, dispensing bottles, wash bottles	Converted to pellets and used to produce new LDPE
Polypropylene (PP)	5	YES	Disposable cups, bottle caps, straws, auto parts, industrial fibres	Converted to pellets and used to produce new PP
Polystyrene (PS)	6	NO	Disposable cups, glasses, plates, spoons, trays, CD covers, cassette boxes, foams	Not recyclable
Others (O)	7	NO	Thermoset plastics, multilayer and laminates, nylon SMC, FRP, CD, melamine plates, helmets, shoe soles	Not recyclable — however, multilayer packaging could be crushed and turned into sheets and boards for roofing, using adhesives

Sources: Columns 1 to 4 is sourced from the CPCB report titled Consolidated Guidelines for Segregation, Collection and Disposal of Plastic Waste; column 5 are based on data on recycling done in India (collated by CSE from various sources)

## 2. Plastic found in landfills is potentially recyclable

**2015 study of CPCB found that 94 per cent of the waste in landfills was thermoplastic (technically recyclable); of this, 67 per cent was HDPE/LDPE category**

**But when you “dig deeper” you find that the plastic in landfills and drains is of the kind that has either not been sorted; or cannot be sorted and is expensive to recycle**

**You find**

**Multilayered plastic**

**Gutka pouches**

**Mixed plastic waste; contaminated food waste plastic**

**Etc..etc**



# Politics of recycling

- Indian industry also argues that plastic is not a problem
- Why?
- Because 60 per cent of what we generate is recycled.
- But then why do we have a problem of plastic waste?
- Also why do we have large amount of plastic waste in our landfills?
- Is this because this 'waste' cannot be recycled?
- Does this then mean that we need to know what cannot be recycled so that it can be phased out?
















# Single-use plastic ban

- Single-use plastic is defined as a “plastic commodity intended to be used once for the same purpose before being disposed of or recycled”
- Indian government did an assessment of such products and classified them based on utility index and environmental impact
- What is interesting is that some items, like a small plastic bottle is seen to have low utility index but high environmental impact – but this has not been included in the phase-out list.
- In August 2021, government issued notification banning 20 items; including carry bags below 50 microns; carry bags will now have to be made of 120 microns

# Plastic Waste Management Amendment 2021






## STOP PLASTIC WHAT'S TO BE PHASED OUT

NAME OF THE PRODUCT	UTILITY INDEX	ENVIRONMENTAL IMPACT
 Carry bags- thin (less than 50 microns)	32	84
 Non-woven carry bags and covers (less than 80 gsm and 320 microns)	21	87
 Straws/ Stirrers	16	87
 Small Wrapping /Packing films	22	84
 Cutlery: Foamed cups, bowl and plates	23	91
 Cutlery: Laminated bowls and plates (non-foamed)	25	88

 Cutlery: Small plastic cups/ containers (less than 150 ml and 5g)	23	85
 Ear buds and plastic sticks for balloons, flags, candies etc	17	89
 EPS for decoration	23	85
 Plastic banners (less than 100microns)	22	64
 Cigarette overwrap film	46	62
 Disposable rigid cups, trays and containers	46	56
 wrapping films for food applications*	64	56

\*Only sweet boxes with wrapping films are listed for phasing out

## PLASTIC WHAT'S NOT TO BE PHASED OUT

NAME OF THE PRODUCT	UTILITY INDEX	ENVIRONMENTAL IMPACT
 CCigarette filters (non-biodegradable)	20	93
 Small plastic bottle for drinking water (<200 ml)	26	79
 Plastic bottles for non-food applications	59	40
 Plastic bottles for food and beverage (more than 200 ml)	74	36
 Multi-layered packaging (more than 36 cm2)	81	73



## **Ban on Carry bags : less than 50 microns banned in 2016; now bags have to be 120 microns**

- Carry bags are difficult to recycle
- Rules 2016 say that carry bags made of virgin or recycled plastic shall not be less than 50 micron in thickness
- States have found that it is not possible to ban based on thickness; impossible to enforce. As many as 32 states had put partial/ complete ban on carrybags
- Now it is hoped that this 'single-use' notification will create a uniform system and that bags below 120 micron cannot be manufactured

# EPR: effective or a way-out for big brands

- Companies have been given targets for collection and then later for recycling and also for reusing their own material for packaging
- The system however has the following problems:
  - We do not have good data on how much waste is produced by different companies (currently this is based on self-declaration); CPCB has working on a portal where this information will be made available but as yet nothing is in the public domain
  - We need to know what is this business of 'collection' – and because the targets for recycling or reuse have been delayed to 2024 it means that the companies are either storing or collecting and dumping the so-called recycled material



# Plastic Waste Management Amendment 2022 (EPR policy)

## • Collection targets

Plastic category	Year	Collection target
I- Rigid	2021-22	25%
II- Flexible	2022-23	70%
III- Multi-layer	2023-24	100%

## • Recycling Targets

Plastic category	2024-25	2025-26	2026-27	2027-28
I- Rigid	50%	60%	70%	80%
II- Flexible	30%	40%	50%	60%
III- Multi-layer	30%	40%	50%	60%
IV- Compost able	50%	60%	70%	80%



# Plastic Waste Management Amendment 2022 (EPR policy)

## • Use of Recycled content

Plastic category	2025-26	2026-27	2027-28	2028-29
I- Rigid	30%	40%	50%	60%
II- Flexible	10%	10%	20%	20%
III- Multi-layer	5%	5%	10%	10%

## • End of Life Disposal

Plastic category	2024-25	2025-26	2026-27	2027-28
I- Rigid	50%	40%	30%	20%
II- Flexible	70%	60%	50%	40%
III- Multi-layer	70%	60%	50%	40%
IV- Compost able	50%	40%	30%	20%



# Multi-layered plastic: big players and so no controls

- Plastic Waste Management Rules 2016: stipulated phase out but this was amended in 2018
- Manufacture and use of multi-layered plastic (*which is non-recyclable or non-energy recoverable or with no alternative use, if any*) should be phased out in 2 years time
- The fact is this waste cannot be recycled; technically yes, but practically no. But this allows for continued use.



THANK YOU!



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