



# MANAGING PLASTIC WASTE IN INDIA

CHALLENGES AND AGENDA

Ubiquitous and essential:  
but **really bad** for our environment



- Plastic use has gone up manifold across the world
- We thought problem of plastic waste had gone away – we had recycled it; or buried it; or shipped it to places where it would be handled
- **But no**
- Plastic waste today is a top environmental problem of the world; we are finding it even filling up our oceans; destroying marine life
- **The last frontier**

# India: plastic waste **is in our face**



- Plastic waste is everywhere
- It has literally become the sign of human activity in our country
- Our per capita use is growing; as we get richer we will get more plastic in our waste
- Government has put plastic on the top agenda
- PM has said that phasing out single-use plastic is necessary not just for the welfare of the environment but also for aquatic life
- **Question is what do we do to manage plastic waste? Are we doing enough? What should be our approach?**

# Q: How much do we generate?

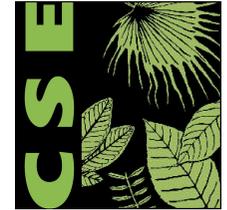


- Data on plastic consumption and on waste generation is weak
- CPCB Annual Report 2018-19 puts plastic waste generation as 3.3 million metric tonnes/annum. This data is from state boards (methodology not clear)
- Given that municipal solid waste generation is estimated to be 55-65 million metric tonnes, plastic waste is between 5-6% of total waste
- This 2018-19 estimate is lower than CPCB's estimate for 2015 – 5 million tonnes
- This methodology of estimating waste was to collect samples from landfills in 60 cities; extrapolate this in terms of plastic in terms of total waste; and extrapolate to entire country

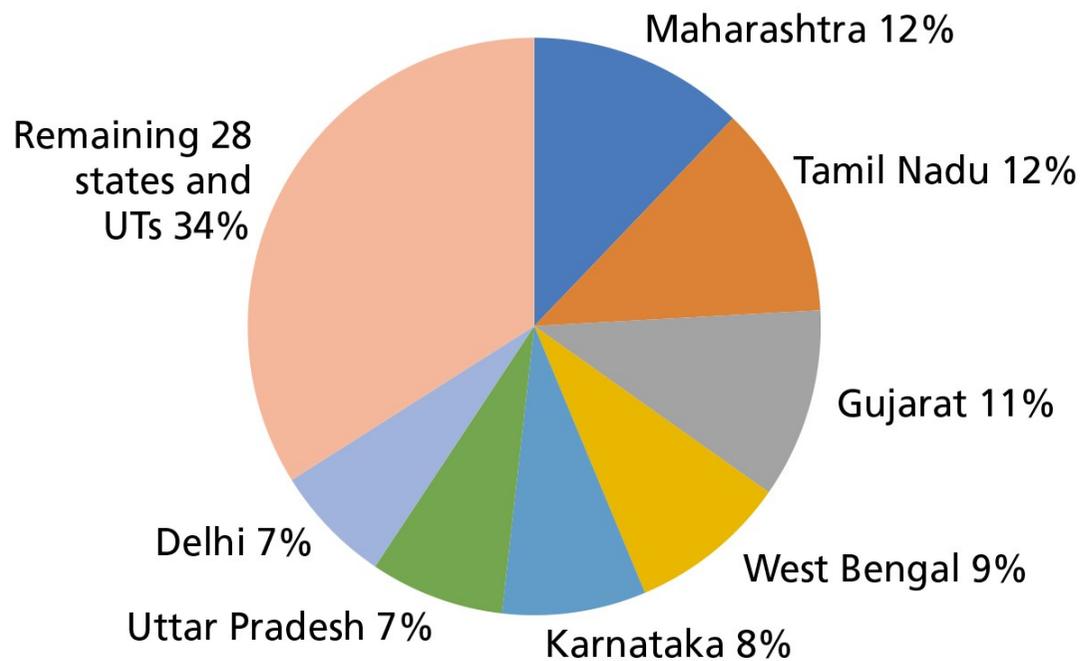
# What we know



- 1. Waste generation is increasing as states become richer
- Goa: 61 grams/per capita/day
- Delhi: 37 grams/per capita/day
- Tripura: 0.02 grams/per capita/day
- **National average: 7.6 grams/per capita/day**



**Graph 1: Top seven contributor states to total plastic waste generation in India — as of 2018-19, the country was producing 3.3 million metric tonnes a year**



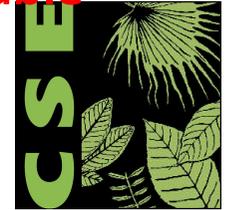
Source: Central Pollution Control Board, Annual Report (2018-19) on Implementation of Plastic Waste Management Rules, 2016

**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); 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**

# Agenda 1: Improve inventory of **waste**



- We need to understand what then is being ‘wasted’ and why
- This is more important than the absolute number of what we generate and how much we waste
- It is the **characteristic** of the plastic waste that will help us to work out its management; change what we must not produce; or change the way we produce packaging so that it can be recycled

## Agenda 2:

# Understand **material balance** of plastic



- Globally industry has managed to change the narrative on plastic by arguing that we can use; we can throw **and it will be recycled**
- Global material balance suggests that the roughly 80 per cent of the total plastic produced becomes waste at some time of its life; of the total produced in the world (some 8.3 billion tonnes from 1950-2015) only 9 per cent has been recycled
- Of the 9 per cent recycled; only 10 per cent recycled more than once; 12 per cent has been incinerated. As much as 80 per cent of the plastic manufactured in the world is in landfills; or waterbodies; **our oceans**

# Agenda 3: Understand **politics** of recycling



- Indian industry also argues that plastic is not a problem
- Why?
- Because 60 per cent of what we generate is recycled (70 per cent in registered facilities; 20 per cent by unorganized sector; 10 per cent by us at our homes)
- But then why do we have a problem of plastic waste?

# Recycling de-constructed



CPCB has outlined the various ways of recycling

- Primary recycling (products as good as original)
- **Secondary recycling (products less demanding performance) – bulk of the recycling is done in this way; sorted; melted; pellets made)**
- Tertiary recycling – producing fuel/chemicals from waste
- Quaternary recycling – incineration for energy

# Status of plastic waste-recycling-disposal



What are states doing (CPCB 2018-19)

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

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

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

# Agenda 4a: Ban/restrict what cannot be recycled: **Multi-layered plastic**



- 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. Therefore, our agenda has to be to phase out/ban these products

## Agenda 4b: Carry bags ban



- 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. Many states have put complete ban on carrybags
- States are also finding that they are being sold bio-bags (bags that can decompose) but that this is also difficult to monitor and enforce
- Needs to be enforced; need to understand enforcement in states where there is complete ban. Take it across the country

# Agenda 4c: Define and ban items of single-use plastic



- There is no universal definition of single-use plastic
- Australia/EU says: shopping bags, cups, straws and packaging – anything that is intended to be used once and discarded
- We have classified plastic waste, but not defined what we would call single-use plastic
- But states are defining what they mean by single-use plastic; are banning these items for use and this then improves their ability to manage plastic waste

# States (table 6/page 24-25)

## Items most banned



- 1. Plastic carry bags
- 2. Plastic cutlery
- 3. Plastic coated paper plates, paper bags, tea cups
- 4. Food processing and packaging plates used in hotels (TN)
- 5. Water packets (TN)
- 6. Plastic straw (TN/Maharashtra)
- 7. Plastic banner/flex/plastic flags (Kerala, Karnataka)
- 8. Packaged drinking water (in government meetings/bottles less than 200 ml)
- 9. Plastic sheets

# Agenda 5:

## EPR should be simple and enforceable



- Extended Producer Responsibility (EPR) is included in Plastic Rules 2016
- **To begin implementation**
- Collate data provided by companies to state pollution boards on how much waste produced and what they are doing to take it back and process it
- Understand the business of ‘taking it back’
- Understand the business of ‘processing’

Based on this make Rules mandatory; enforceable and make the producer of plastic pay for its disposal

# Agenda 6: Incentivize business/de-code recycling



- Currently we throw and forget
- Informal sector, collects, segregates, sorts and then sells
- We do not include this business in our land use; we do not incentivize it; we do not pay for it
- We treat it as illegal – dirty and polluting
- Need new approach for this
- Need to ensure that the informal (which is cost-effective) is part of the future policy. But it needs support so that it can ‘clean’ up
- Need also to know what cannot be recycled; toxic additives; multi-colour etc. **As we find out, we need to act on this**



# Agenda 7: Segregation at source

- Recycling only works when there is segregation
- This works best at the household level – at source – where it is produced
- So need to find ways that we can incentivize state/municipalities so that they can pay for this segregation; they can charge households; they can make the business chain work
- Need to include municipal governments in the discussions on plastic waste management. **They are where the action is**

# Plastic waste management needs



- Research
  - Data
  - Sharing on what is working
  - Sharing on what needs to be done
- 
- This is our agenda for the coming years
  - We will look forward to our/your engagement in this sector