

**ANIL AGARWAL**  
**DIALOGUE 2026**



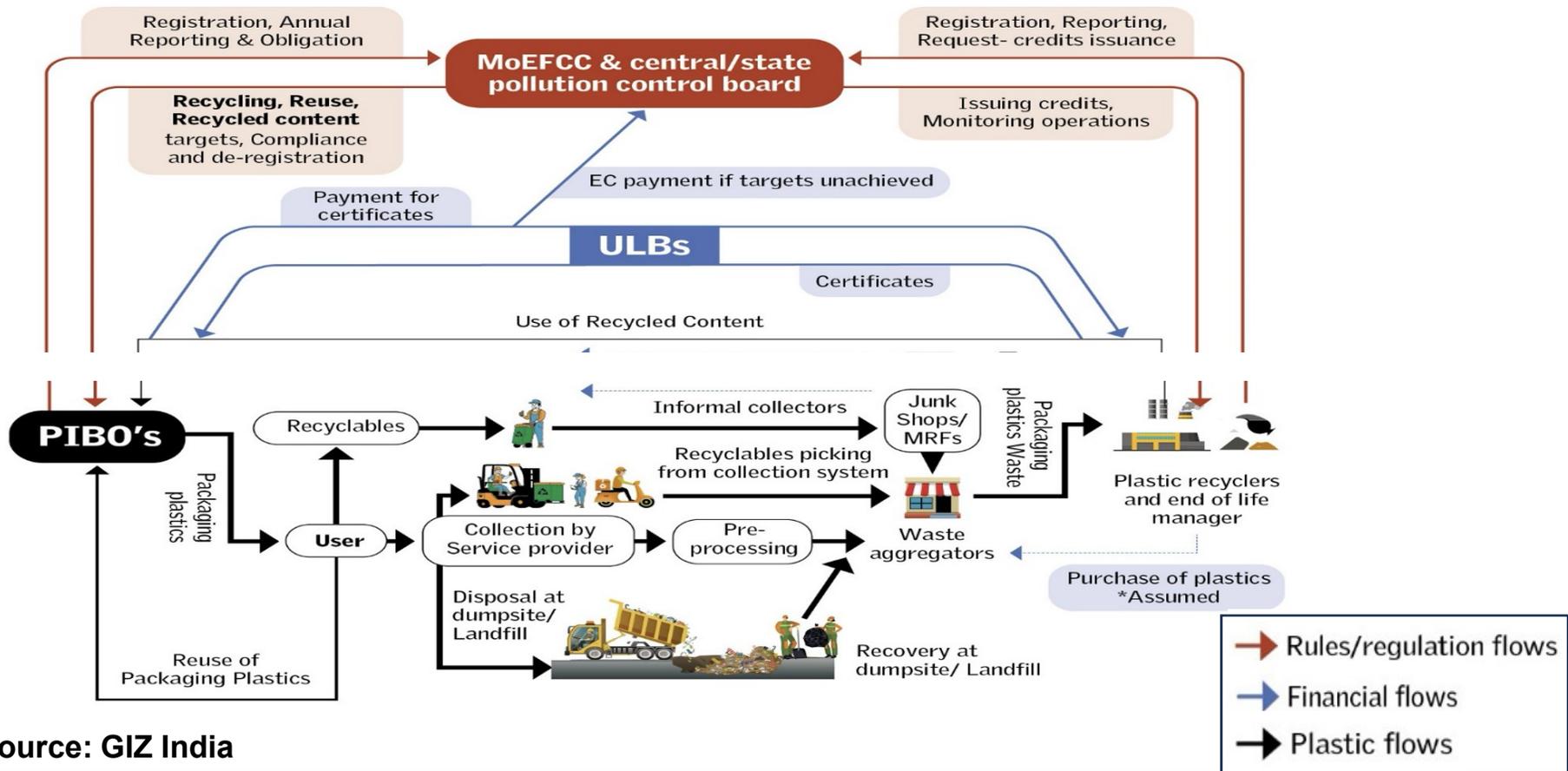
# Policy, Practice, and Plastic: Cost of Managing Plastic Waste in Indian Cities

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# EPR Process Flow



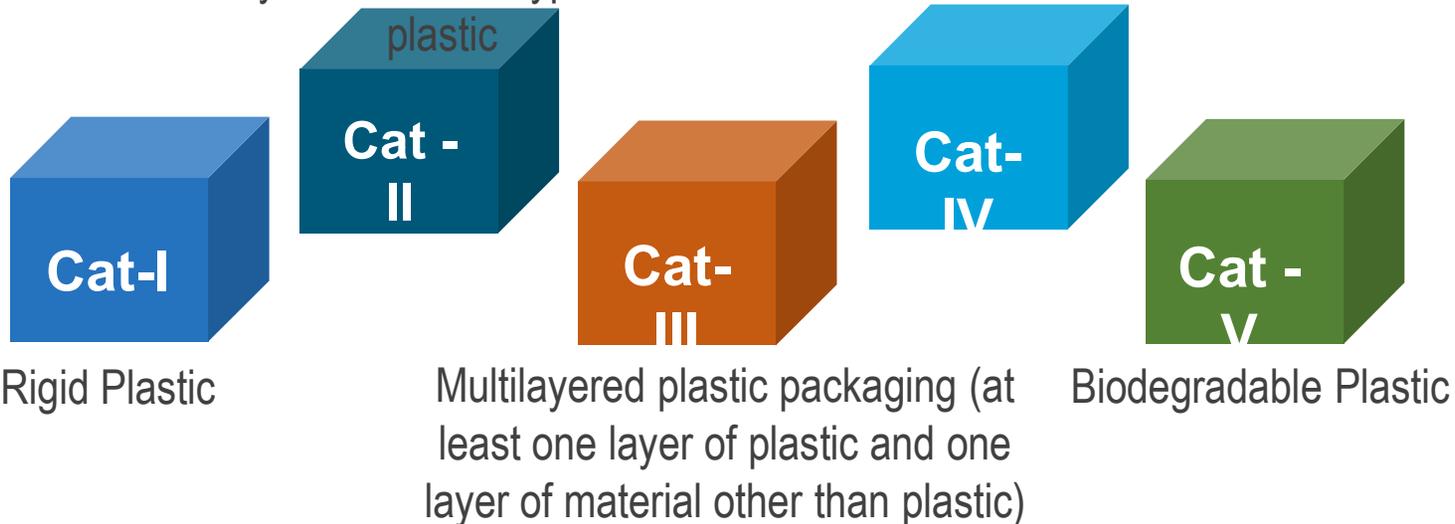
Source: GIZ India



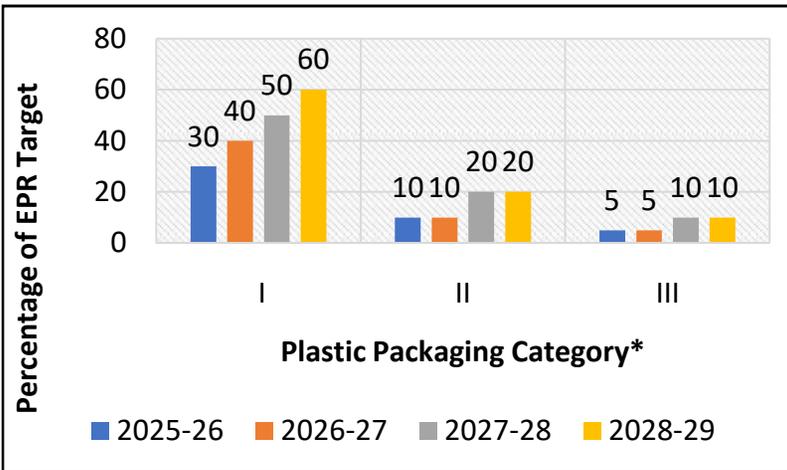
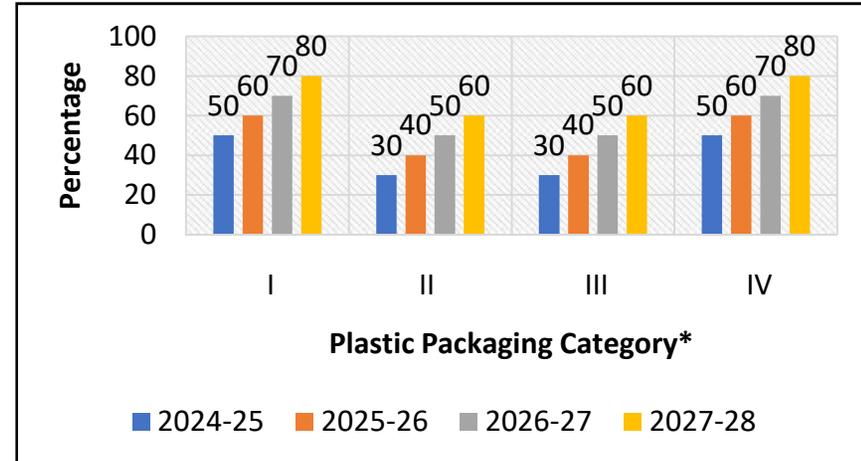
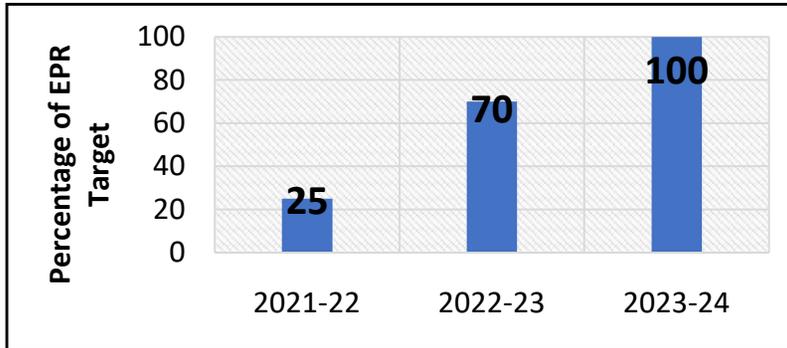
## Packaging Plastic Waste Categories

Flexible plastic (single-layer or multilayer) more than one layer of different types of

Compostable Plastic



It should be duly noted that while the EPR is specifically limited to plastic packaging. Category IV and V are exceptions, since carry bags and commodities made from such categories of plastics also fall under the scope of EPR for plastic packaging.

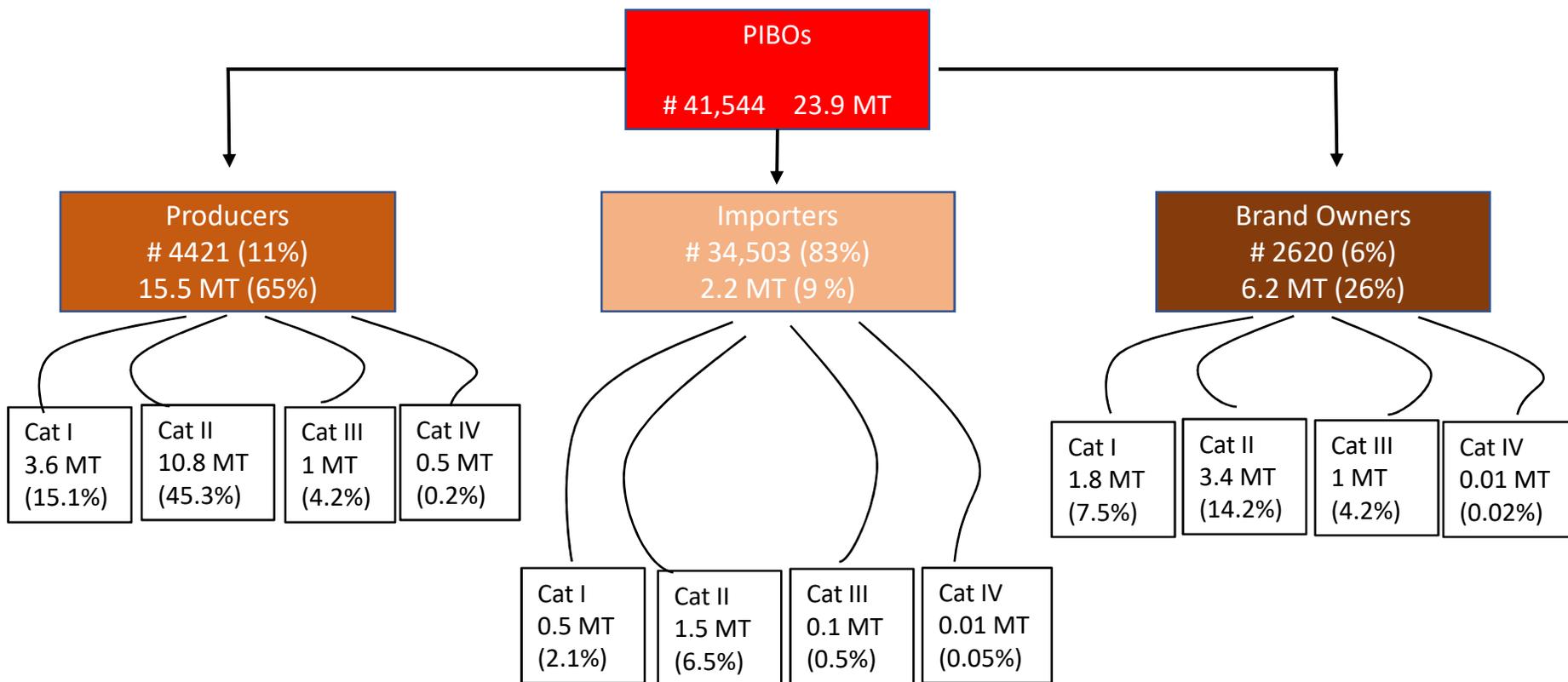


**Top left-** collection targets under EPR  
**Top right-** Recycling targets under EPR  
**Bottom left-** Targets for use of recycled plastic under EPR

**\*Plastic packaging category**  
 Category I- Rigid Plastic  
 Category II- Flexible Plastic  
 Category III- Multi-layered plastic  
 Category IV- Compostable Plastic



## KEY STATISTICS FROM THE EPR PORTAL





# PWPs

# 2492 25.4 MT

## Mechanical Recycling

# 3570 9.8 MT  
(38.5%)

### Cat I

# 1449  
5.4 MT (55%)

### Cat II

# 1756  
3.6 MT (37%)

### Cat III

# 365  
0.6 MT (6%)

## End of Life Disposal

#151 15.5 MT  
(61%)

Waste to oil  
# 38  
0.3 MT (2%)

Waste to Energy  
# 31  
3.9 MT (25%)

Co-processing  
# 81  
11 MT (73%)

Waste to oil  
Capacity utilization  
101%

Waste to Energy  
Capacity utilization  
59%

Co-processing  
Capacity utilization  
2942%

Pellets	Products	Pellets	Products	Pellets	Products
1143	306	1221	535	251	114
3.4MT	2 MT	3 MT	0.6 MT	0.4 MT	0.2 MT



## Recycling Targets Vs Recycling Capacity

Plastic Category	Recycling Targets (Million Tonnes)	Recycling Capacity (Million Tonnes)	Gap in Recycling Infrastructure (%)
Category I	2.96	5.51	+46%
Category II	4.74	3.68	-29%
Category III	0.6	0.63	+5%
Category IV	0.03	0.0036	-733%

Source: Centre for Science and Environment, 2024



## Policy vs Practice

**EPR is based on  
Polluter Pay Principle**

**EPR is Geographic  
Agnostic**



### **How Much are PIBOs Paying?**

Determine the actual amount PIBOs pay per kg of plastic waste.



### **Calculate the Actual Cost**

Understand the real cost for cities to manage plastic packaging waste.



### **Identify Burden Absorber**

Determine who absorbs the financial burden if there's a mismatch between the EPR credit cost vs actual cost.



### **Analyze Regional Variations**

What does it cost to manage plastic packaging waste in different regions?

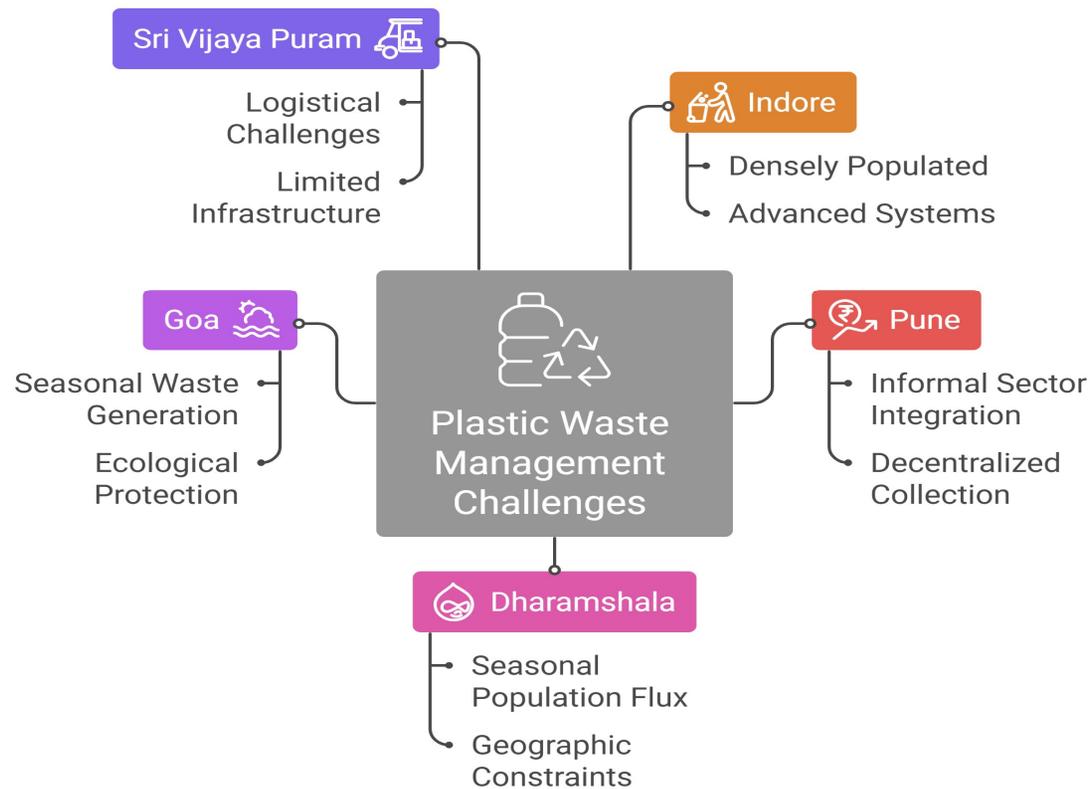




## Diverse Geography

## City Selection Framework

- Population density and urbanization level
- Topography and geographical context
- Waste generation pattern
- Informal sector engagement
- Ecological sensitivity
- Logistical complexity



### Stage 1 & 2: Generation and Primary Collection



#### Critical Source Segregation

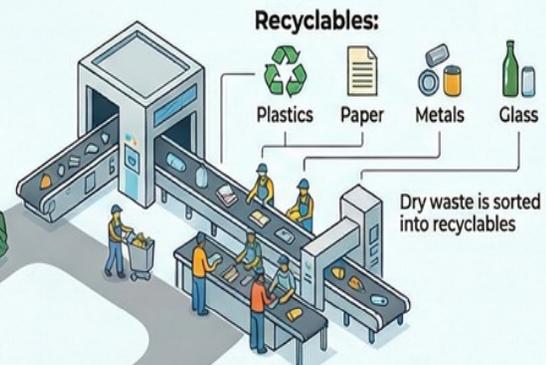
Waste is separated at the source into wet, dry, and domestic hazardous categories.

#### Stage 3: Secondary Transport

Small-scale collections are consolidated at transfer stations for bulk movement in larger vehicles.



### Stage 4: Material Recovery Facility (MRF)

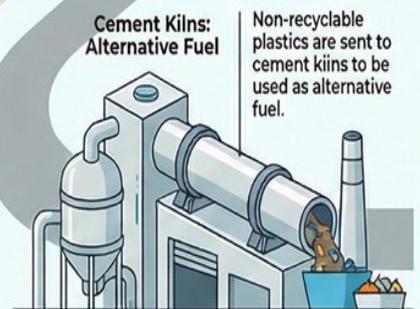


#### Recyclables:



Dry waste is sorted into recyclables

### Stage 5: Industrial Co-processing



#### Cement Kilns: Alternative Fuel

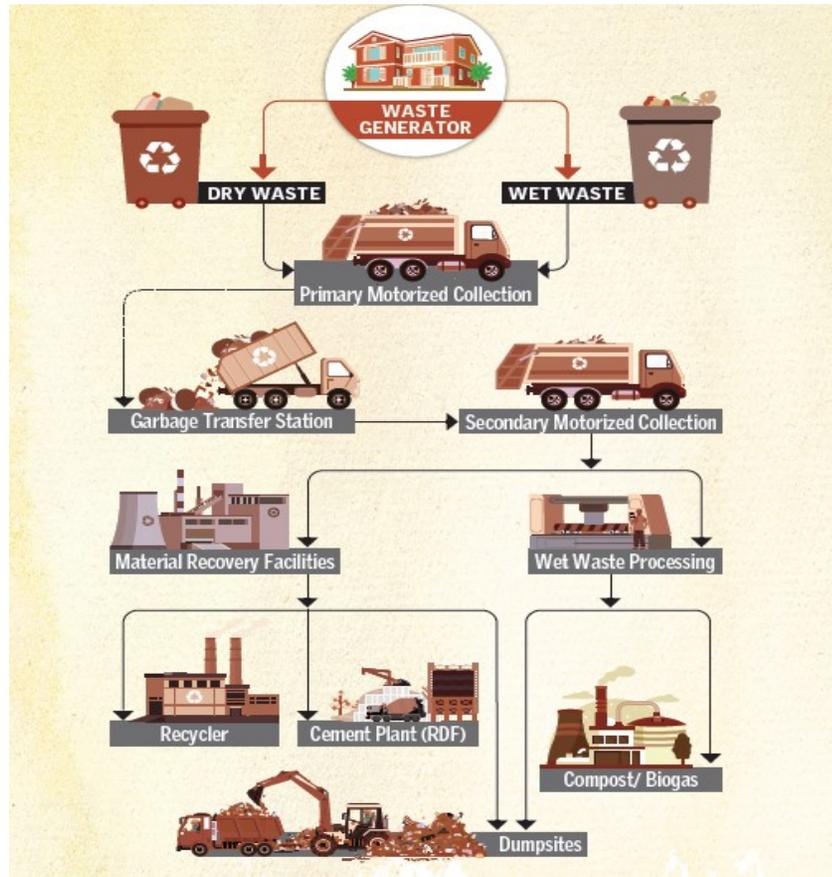
Non-recyclable plastics are sent to cement kilns to be used as alternative fuel.

Waste from households and markets is collected door-to-door using handcarts or small vehicles

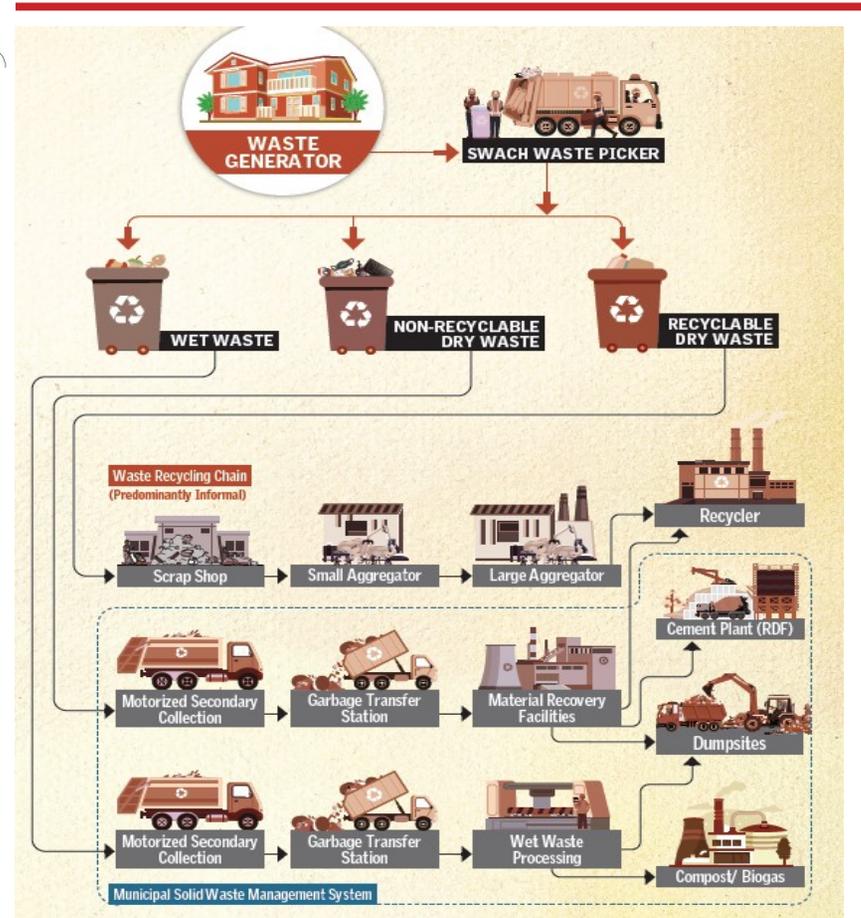


### Cost Considered

- Labor Cost
- Equipment Cost
- Operational Cost
- Infrastructure Cost
- RDF Transportation Cost
- Health & Safety Cost



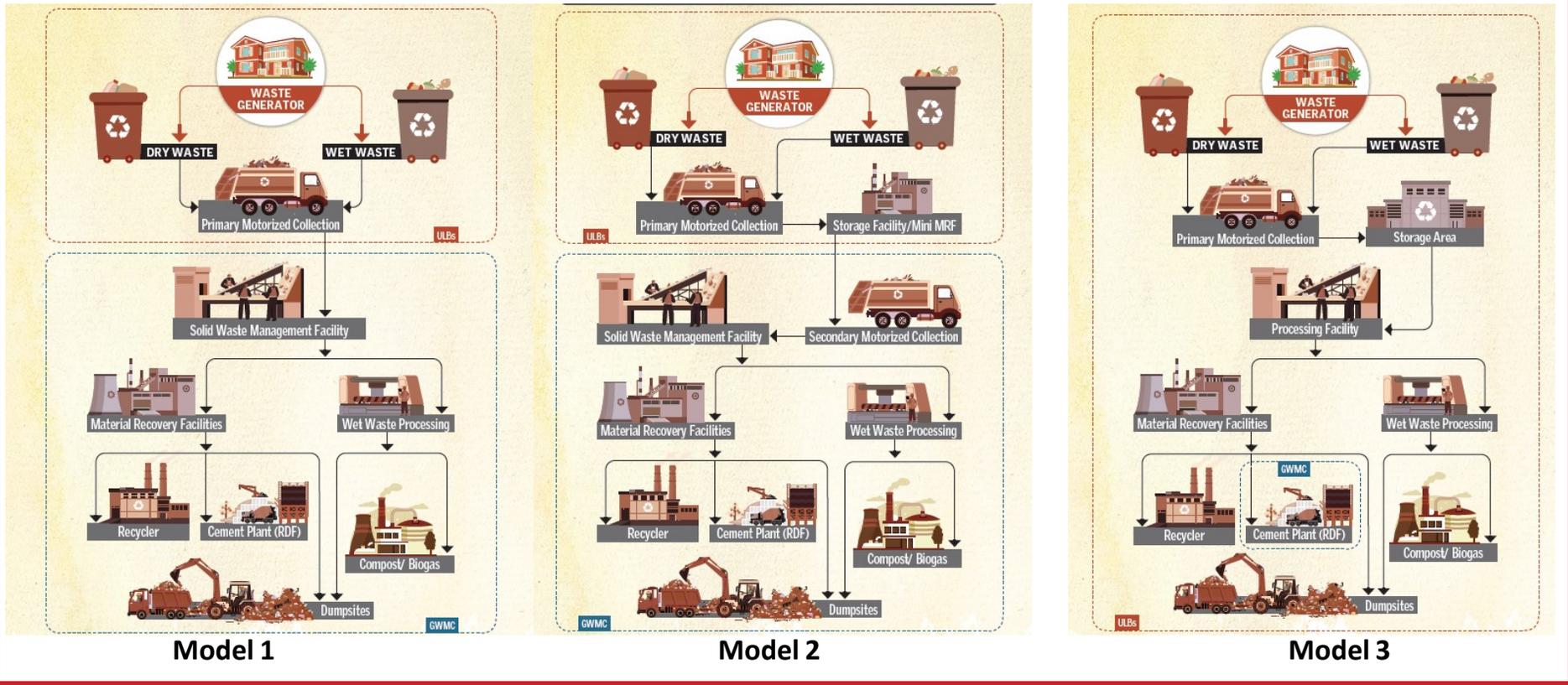
Indore

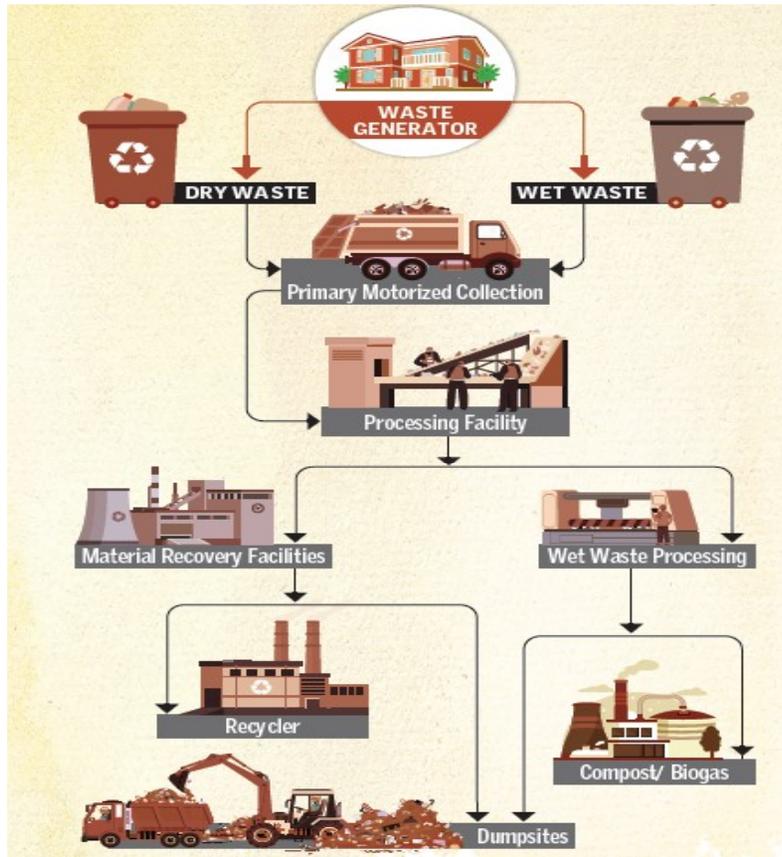


Pune

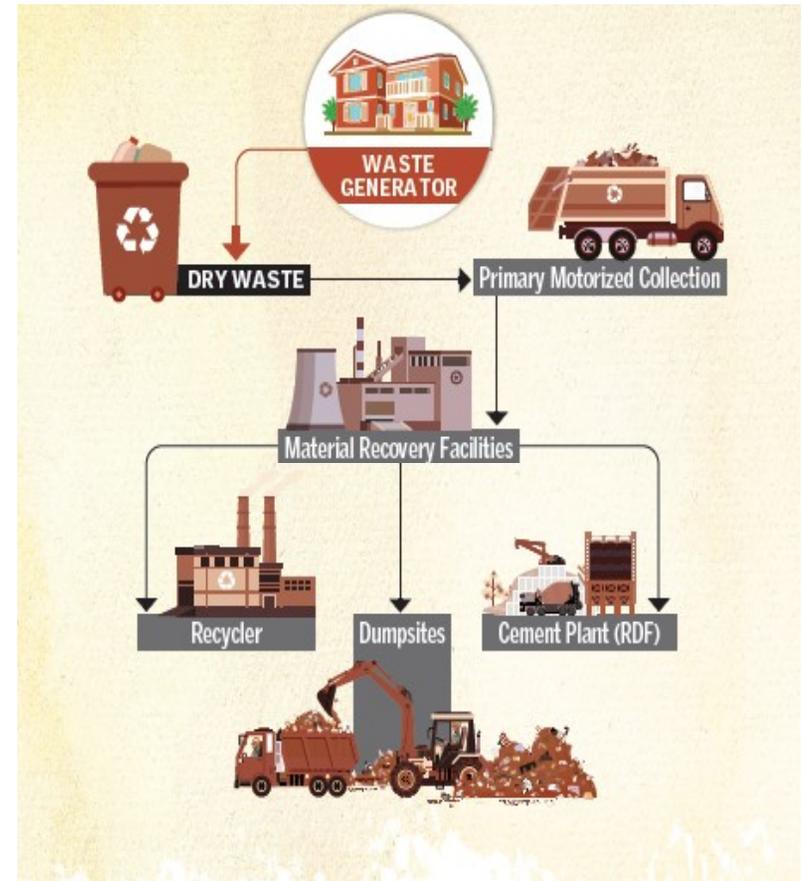


# Goa





Sri Vijaya Puram



Dharamshala



## Cost of Managing Dry Waste in Indian Cities

COMPONENT	INDORE	PUNE	GOA 1ST MODEL	GOA 2ND MODEL	GOA 3RD MODEL	DHARAMSHALA	SRI VIJAYA PURAM
<b>Primary Collection</b>	1.2 to 1.9	2.3 to 3.1	2.1 to 3.8	4.3 to 6.1	6.1 to 8.2	7.0 to 9.0	9.8 to 11.6
<b>Secondary Collection</b>	1.8 to 2.6	1.1 to 2.3	NA	NA	NA	NA	NA
<b>MRF</b>	1.6 to 2.4	1.7 to 2.2	2.9 to 3.7	2.9 to 3.7	NA	7.0 to 8.0	4.8 to 5.7
<b>RDF Transport</b>	0.5 to 1.1	0.7 to 1.3	2.5 to 3.1	2.5 to 3.1	2.5 to 3.1	3.5 to 4.5	11.4 to 13.8
<b>Overall Cost</b>	<b>5.1 to 8</b>	<b>5.8 to 8.9</b>	<b>7.5 to 10.6</b>	<b>9.7 to 12.9</b>	<b>8.6 to 11.3</b>	<b>17.5 to 21.5</b>	<b>26 to 31.1</b>



## Consolidated plastic packaging waste management cost

City	Dry waste management cost	Adjustment factor	% Plastic in dry waste (C3)	% Plastic packaging	Plastic packaging category I cost	Plastic packaging category II cost	Plastic packaging category III cost
	(C1)	(C2)		(C4)	(C5 = C1 * C2 * C3 * C4 * 0.2)	(C6 = C1 * C2 * C3 * C4 * 1.25)	(C7 = C1 * C2 * C3 * C4 * 2.7)
Indore	5.1–8.0	1.36	27%	46%	<b>0.17–0.27</b>	<b>1.09–1.70</b>	<b>2.35–3.67</b>
Pune	5.8–8.9	1.35	29%	46%	<b>0.21–0.32</b>	<b>1.31–2.01</b>	<b>2.71–4.34</b>
Goa (1st Model)	7.5–10.6	1.38	24%	46%	<b>0.23–0.32</b>	<b>1.44–2.03</b>	<b>3.10–4.38</b>
Goa (2nd Model)	9.7–12.9	1.38	24%	46%	<b>0.30–0.39</b>	<b>1.85–2.46</b>	<b>4.00–5.32</b>
Goa (3rd Model)	8.6–11.3	1.38	24%	46%	<b>0.26–0.34</b>	<b>1.65–2.15</b>	<b>3.56–4.65</b>
Sri Vijaya Puram	26.0–31.1	1.39	22%	46%	<b>0.73–0.88</b>	<b>4.57–5.48</b>	<b>9.87–11.83</b>
Dharamshala (Adjusted)	17.5–21.5	1.27	45%	46%	<b>0.55–0.67</b>	<b>3.45–4.23</b>	<b>7.45–9.15</b>



### **Current EPR credit trading rates**

**Category I:** INR 0.5–0.75 per kg

**Category II:** INR 0.75–1 per kg

**Category III:** INR 1–1.25 per kg

### **EPR trading rates as per CPCB**

**Category I (rigid plastics):** INR 0.87–2.9 per kg

**Category II (flexible plastics):** INR 1.5–5.00 per kg

**Category III (multilayered plastics or MLP):** INR 2.37–7.9 per kg



## Cost covered by prevailing EPR credit rates vs the cost of plastic packaging waste in different cities

City	Category	Actual cost (₹/kg)	Market EPR credit rate (₹/kg)	% Cost recovery (range)
Indore	Cat I	0.17–0.27	0.5–0.75	294% – 278%
	Cat II	1.09–1.70	0.75–1.0	69% – 59%
	Cat III	2.35–3.67	1.0–1.25	43% – 34%
Pune	Cat I	0.21–0.32	0.5–0.75	238% – 234%
	Cat II	1.31–2.01	0.75–1.0	57% – 50%
	Cat III	2.71–4.34	1.0–1.25	37% – 29%
Goa (Model 1)	Cat I	0.23–0.32	0.5–0.75	217% – 234%
	Cat II	1.44–2.03	0.75–1.0	52% – 49%
	Cat III	3.10–4.38	1.0–1.25	32% – 29%
Goa (Model 2)	Cat I	0.30–0.39	0.5–0.75	167% – 192%
	Cat II	1.85–2.46	0.75–1.0	41% – 41%
	Cat III	4.00–5.32	1.0–1.25	25% – 23%
Goa (Model 3)	Cat I	0.26–0.34	0.5–0.75	192% – 221%
	Cat II	1.65–2.15	0.75–1.0	45% – 47%
	Cat III	3.56–4.65	1.0–1.25	28% – 27%
Sri Vijaya Puram	Cat I	0.73–0.88	0.5–0.75	68% – 85%
	Cat II	4.57–5.48	0.75–1.0	16%–18%
	Cat III	9.87–11.83	1.0–1.25	10%–11%
Dharamshala	Cat I	0.55–0.67	0.5–0.75	91%–112%
	Cat II	3.45–4.23	0.75–1.0	22%–24%
	Cat III	7.45–9.15	1.0–1.25	13%–14%

- **Rigid plastic (Cat I) is well compensated**
- **Flexible & multilayer plastic (Cat II & III) are under-compensated**
- **These are the hardest-to-recycle plastics**
- **In difficult geographies, companies are paying only 10% of the actual cost**



## Cost covered by CPCB recommended EPR credit cost vs the cost of plastic packaging waste in different cities

City	Category	Actual cost (₹/kg)	CPCB EPR credit rate (₹/kg)	% Cost recovery (range)
Indore	Cat I	0.17–0.27	0.87–2.9	512%–1074%
	Cat II	1.09–1.70	1.5–5	138%–294%
	Cat III	2.35–3.67	2.37–7.9	101%–215%
Pune	Cat I	0.21–0.32	0.87–2.9	414%–906%
	Cat II	1.31–2.01	1.5–5	115%–249%
	Cat III	2.71–4.34	2.37–7.9	87%–182%
Goa (Model 1)	Cat I	0.23–0.32	0.87–2.9	378%–906%
	Cat II	1.44–2.03	1.5–5	104%–246%
	Cat III	3.10–4.38	2.37–7.9	76%–180%
Goa (Model 2)	Cat I	0.30–0.39	0.87–2.9	290%–744%
	Cat II	1.85–2.46	1.5–5	81%–203%
	Cat III	4.00–5.32	2.37–7.9	59%–148%
Goa (Model 3)	Cat I	0.26–0.34	0.87–2.9	335%–853%
	Cat II	1.65–2.15	1.5–5	91%–233%
	Cat III	3.56–4.65	2.37–7.9	67%–170%
Sri Vijaya Puram	Cat I	0.73–0.88	0.87–2.9	119%–330%
	Cat II	4.57–5.48	1.5–5	33%–91%
	Cat III	9.87–11.83	2.37–7.9	24%–67%
Dharamshala	Cat I	0.55–0.67	0.87–2.9	158%–433%
	Cat II	3.45–4.23	1.5–5	43%–118%
	Cat III	7.45–9.15	2.37–7.9	32%–86%

- Flexible and MLP still are undercompensated in difficult geographies
- Regional cost variation is ignored



## Key Findings



### Data Disclosure

ULBs often fail to report waste management costs.



### Plastic Reclassification

Amendment may dilute EPR responsibilities for multilayered plastics.



### Low Credit Rates

EPR credit rates are significantly lower than actual waste management costs.



### Broken Market

On-ground EPR trading rates are below notified rates and actual costs.



### Rate Inequities

Uniform EPR rates cause geographic and operational inequities.

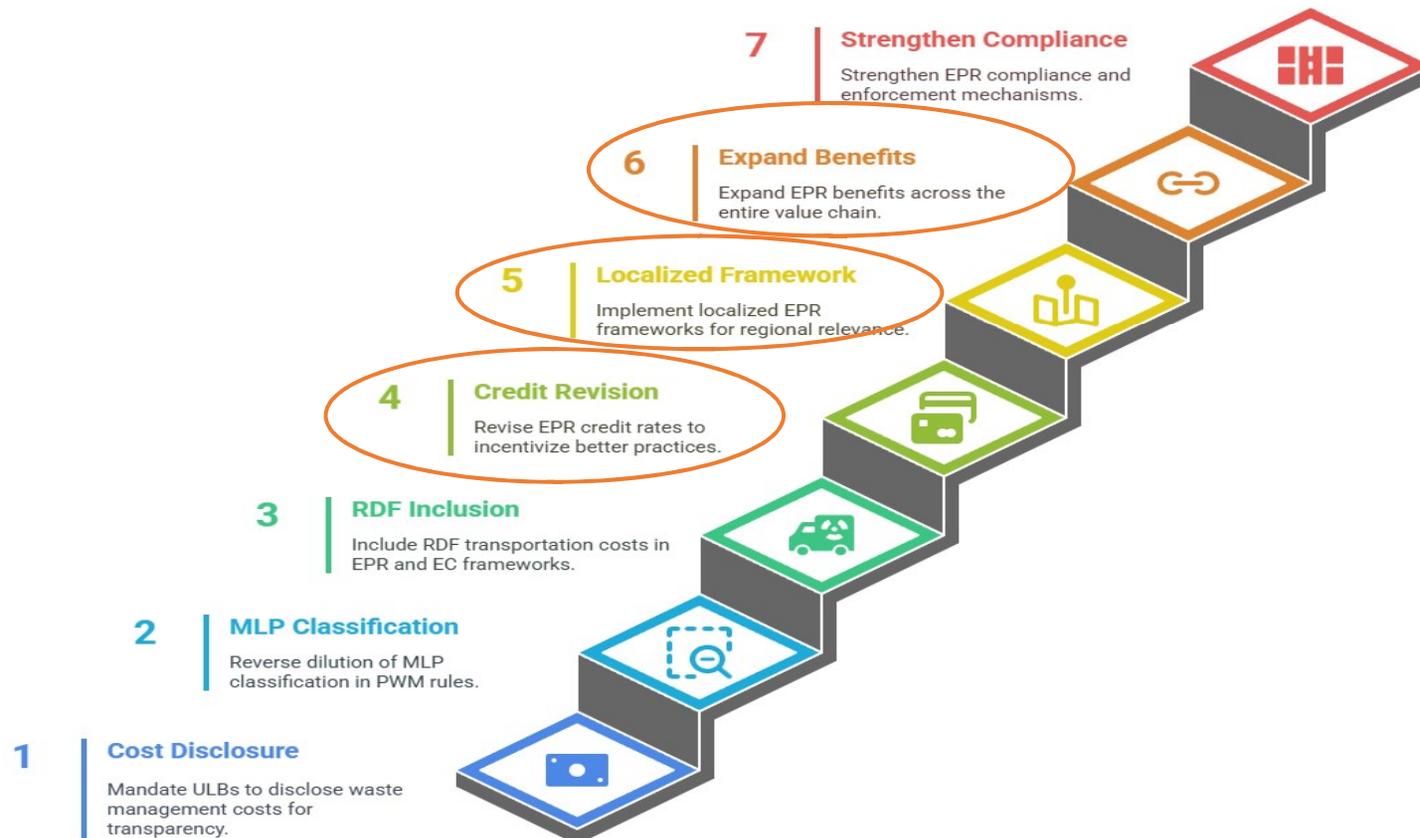


### Informal Sector

Informal sector provides subsidized services but is not accounted for.



# Recommendation





Thank You

“Plastic isn’t just waste. It’s a policy challenge, a budget burden, and an environmental emergency.”