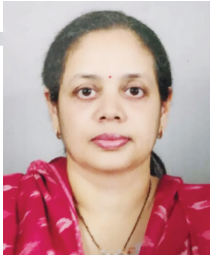


# Plastic Waste Management Rules in India – Perspectives on Overcoming Implementation Challenges

As per the Annual Report 2020-21 on Implementation of PWM Rules, 2016, compiled by Central Pollution Control Board, estimated plastic waste generation during the year 2020-21 was approximately 41,26,997 TPA. The CSE Report on Managing Plastic Waste in India: Issues and Challenges of 2020 mentions that Industry reports that 60% of the plastic waste in India is recycled, which is much higher than the global average of plastic recycling of 20%.



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## INTRODUCTION

In today's society, plastic is all pervasive. Right from items of personal use like plastic toothbrush and toothpaste in a plastic tube to plastic automotive components, there is hardly any aspect of our life, which has not been touched by plastic. Increasing plastic usage and consumption has resulted in phenomenal growth in the plastic industry, and plastic use is projected to triple, from 460 MT in 2019 to 1321 MT in 2060<sup>1</sup>. However, this has correspondingly resulted in an increase in plastic waste resulting in littering, mismanaged plastic waste, marine pollution and harmful effects on the environment.

During the year 2021-22, the demand for plastics in India was 20.89 million tonnes<sup>2</sup>. India's per capita per annum plastic consumption in FY 2021-22 was 15 kg as against that of USA (112 kg) and China (62.4 kg)<sup>3</sup>. Of this total plastic consumption, the packaging industry has the lion's share, where nearly 59% is used in different packaging items<sup>4</sup>.

As per the Annual Report 2020-21 on Implementation of PWM Rules, 2016, compiled by Central Pollution Control Board, estimated plastic waste generation during the year 2020-21 was approximately 41,26,997 TPA<sup>5</sup>. The CSE Report on Managing Plastic Waste in India: Issues and Challenges of 2020<sup>6</sup> mentions that Industry

reports that 60% of the plastic waste in India is recycled, which is much higher than the global average of plastic recycling of 20%. The report further goes on to state that the source of this data put forth by the industry is unclear and not supported by the reality of plastic waste littered across the country. Even assuming the data is correct, 40% of the plastic waste, estimated at 16,50,798 TPA is left untreated in landfills, which is a huge quantum of plastic waste. India is currently ranked 12<sup>th</sup> among the countries with mismanaged plastic waste and is expected to reach the 5<sup>th</sup> position by the year 2025<sup>7</sup>. From the data, it is clear that plastic waste management is an increasing cause for concern and needs immediate attention from all the stakeholders involved in the plastic value chain.

## LEGAL FRAMEWORK FOR MANAGEMENT OF PLASTIC WASTE

### Early development of Plastic Waste Management rules

The law related to environment in general is governed by an umbrella legislation, the Environment Protection Act, 1986 ("EPA 1986") and the rules made thereunder. The initial journey in the management of plastics in India started in the year 1998 when the Recycled Plastics Usage Rules were notified inviting public comments. Thereafter, the Plastics Manufacture, Sale and Usage Rules, 1999 were notified by the Ministry of Environment and Forests. This 1999 regulation was confined to manufacture of plastic carry bags or containers and there was no focus of policy makers on the disposal aspect of plastics or plastic packaging. Thereafter in the year 2011, the Ministry of Environment and Forests notified the Plastic Waste (Management and Handling) Rules, 2011. The term "Extended Producer Responsibility" was first defined in the plastic waste management framework as under:

*"Extended Producer's Responsibility (EPR)" means the responsibility of producer or manufacturer of plastic carry bags and multi-layered plastic pouches or packages for the environmentally sound management of the product until the end of its life. This responsibility also applies to all manufacturers using such packaging.*

The 2011 Rules recognised the need to address management of plastic packaging in addition to carry bags and containers. It also defined the terms Plastic Waste to mean:

*“any plastic product such as carry bags, pouches or multi-layered packaging, which have been discarded after use or after their intended life is over.*

It can be seen from the above that between 1999 and 2011, the focus of the plastic waste rules became more inclusive with coverage of recycling as well as all plastic packaging apart from carry bags and containers. The concept of EPR was also introduced in the rules, though the concept of producer was not defined.

### Plastic Waste Management Rules, 2016

In 2016, with an intention to revamp different waste management systems, the new Plastic Waste Management Rules 2016 were notified on 18<sup>th</sup> March 2016. The 2016 Rules increased the scope of the plastic waste regulatory structure and recognised the different stakeholders involved in the plastic waste management framework. Some of the major changes in the 2016 Rules were as under:

- 1) The definition of plastic waste was amended to cover any plastic discarded after use or after the intended use is over, thus extending its scope.
- 2) The responsibility for waste management was extended from the municipal corporations for urban areas to Gram Panchayats for rural areas in recognition that plastic waste had spread to rural areas and needed to be managed properly.
- 3) The different stakeholders like producers, manufacturers, importers, brand owners were defined and included within the scope of applicability of the plastic waste rules. For the first time the role of waste generators was recognised in the rules.
- 4) A collect back or take back system was introduced as a part of responsibility of the Producers. Primary responsibility of plastic waste collection was that of Producers, Importers and Brand Owners. This bifurcation of parties ensured coverage of all legs of the production cycle – Producers (include manufacturer or importer of plastic), Importers and Brand Owners (seller of commodity under a brand label).
- 5) Definition of EPR was amended as under, to make it more inclusive:

*“Extended producer’s responsibility” means the responsibility of a producer for the environmentally sound management of the product until the end of its life.*

In 2016, with an intention to revamp different waste management systems, the new Plastic Waste Management Rules 2016 were notified on 18<sup>th</sup> March 2016. The 2016 Rules increased the scope of the plastic waste regulatory structure and recognised the different stakeholders involved in the plastic waste management framework.

- 6) One of the important provisions was regarding phasing out of manufacture / use of multi-layered plastic. However, in the year 2018, the provision was amended to cover multi-layered plastic which is non-recyclable / non energy recoverable / with no alternate use, resulting in dilution of the provisions.
- 7) The options for use of plastic waste for road construction, waste to energy plants, etc., that is re-use of plastic waste, were recognised.
- 8) Registration was introduced for Producers, Recyclers as well as Manufacturers with a provision for them to file an Action Plan (to be endorsed by Secretary in-charge of Urban Development).

Thus, the Plastic Waste Management Rules 2016 intended to focus on minimisation of plastic waste, source segregation, recycling of plastic waste, and inclusion of all stakeholders including generators (parties who create waste), manufacturers (parties who introduce waste in the market) and implementors (parties who operationalise the rules in practice) in the plastic waste management framework.

### Recent amendments to the PWM Rules 2016

In the years 2021 to 2023, there has been substantial work done on plastic waste rules framework, with multiple amendments to the rules. A summary of the recent amendments is given below:

Amendment reference	Details of changes
Amendment dated 12-08-2021	Ban on manufacturing, import, stocking, distribution, sale and use of Single Use Plastic with low value and high littering potential w.e.f. 1 <sup>st</sup> July 2022  Increase in thickness of plastic carry bags to encourage reuse.
Amendment dated 17-09-2021	Recycled plastic allowed for foodstuff as per prescribed standards by Food Safety and Standards Authority of India.

Amendment dated 16-02-2022	<p>Schedule II was introduced with the Guidelines for Extended Producer Responsibility for Plastic Packaging. The guidelines specified the following:</p> <p>i) The Product coverage under the PWM Rules, 2016 was clarified to cover plastic packaging classified in four categories like Rigid packaging, Flexible packaging, Multi-layered packaging and Plastic Sheets &amp; Carry bags.</p> <p>ii) The term Obligated Entities under the PWM Rules, 2016 was specified to include Producers, Importers, Brand Owners and Plastic Waste Processors. The term Brand Owner was defined to include online platforms and super markets. The registration obligations of all the obligated entities are specified in the guidelines.</p> <p>iii) The detailed EPR targets specified category wise for Producers, Importers and Brand Owners. For Producers &amp; Importers - the targets are separately specified for EPR responsibility (for collection of plastic packaging) and Recycling responsibility (ensuring recycling of collected plastic packaging). The targets are also specified for minimum use of recycled content in plastic packaging applicable from FY 2024-25. In case where the Producer is unable to meet the obligation for minimum recycled content, the Producer would need to buy plastic credit certificates. In case of Brand Owners, targets are specified for EPR responsibility, Reuse responsibility, disposal and use of recycled plastic content.</p> <p>The Guidelines also provide for imposition of Environmental Compensation in case of non-fulfilment of EPR targets specified.</p>
5 <sup>th</sup> Amendment dated 06-07-2022	The definition of terms like bio-degradable plastics, importer, end-of-life disposal, Plastic Waste Processors, etc., were added to bring more clarity to the PWM Rules, 2016.

6 <sup>th</sup> Amendment dated 27-04-2023	Clarity in labelling requirements for different types of packaging. Further clarity was provided in procedural requirements mentioned in Schedule II.
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## IMPLEMENTATION DATA RELATING TO PWM RULES 2016

The CPCB Annual Report for the year 2020-21<sup>8</sup> on Implementation of Plastic Waste Management Rules (As per Rule '17(4)' of PWM Rules, 2018) shows the following data on waste generation and processing in different states.

Sr. No.	State	Plastic Waste generated (TPA)	Plastic Waste processed (TPA)
1	Andaman & Nicobar Islands	492.34	83.70
2	Andhra Pradesh	39,626.45	NA
3	Arunachal Pradesh	3,755.90	150.00
4	Assam	58,765.00	9,490.00
5	Bihar	74,263.60	7,673.60
6	Chandigarh	13,107.00	1,544.15
7	Chhattisgarh	47,450.00	NA
8	Daman, Diu, Dadra Nagar Haveli	4,726.00	NA
9	Delhi	3,45,000.00	1,150.00
10	Goa	29,440.90	NA
11	Gujarat	3,37,693.96	65,420.00
12	Haryana	1,85,167.90	735.00
13	Himachal Pradesh	6,206.78	828.60
14	Jharkhand	20,263.40	9,185.20
15	Jammu & Kashmir	51,710.60	NA
16	Karnataka	3,68,080.00	14,400.00
17	Kerala	1,20,063.87	75,215.50
18	Lakshwadeep	523.00	NA
19	Madhya Pradesh	1,38,483.58	1,18,989.00
20	Maharashtra	3,11,254.00	1,98,368.00
21	Manipur	10,303.00	182.50
22	Meghalaya	191.00	NA
23	Mizoram	1,514.51	6.75
24	Nagaland	565.00	0.70
25	Odisha	51,269.90	48,545.00
26	Punjab	1,08,332.00	NA
27	Puducherry	12,754.00	4,812.00
28	Rajasthan	66,324.57	265.84
29	Sikkim	82.75	NA
30	Tamil Nadu	4,30,107.00	3,82,557.00
31	Telangana	4,72,675.00	NA
32	Tripura	61.65	57.50
33	Uttarakhand	18,647.70	12,173.00
34	Uttar Pradesh	3,75,950.00	10,252.00
35	West Bengal	4,17,925.00	1,47,095.00
		<b>41,22,777.36</b>	<b>11,09,180.04</b>

Source: Data-compilation based on CPCB Annual Report for FY 2020-21



The table indicates that the waste processed amounts to 26.90% of the total plastic waste generation.

The said CPCB Annual Report for the year 2020-21 further provides the following data regarding implementation of the PWM Rules 2016:

- i) The estimated total plastic waste generation during 2020-21 is approximately 41,26,997 TPA, with maximum plastic waste generation in Telangana (12%), Tamil Nadu (10%) and West Bengal (10%).
- ii) One alarming fact stated in the report is that per capita plastic waste generation has grown almost 2.5 times during the period between 2015-16 to 2020-21.
- iii) In terms of data monitoring, in most of the states, the Urban Local Bodies (ULBs) have given their annual report on plastic waste monitoring to the SPCBs / PCCs, however capturing of information at the Village Panchayat level needs to be strengthened for getting a proper region wise picture of the status of plastic waste.
- iv) The total quantum of plastic waste processed has been stated at 11,09,180 TPA. However, there is no uniformity of data provided by the states in this regard and the information collection needs to be strengthened to get a true picture of waste processing in the country.
- v) There are 615 unregistered plastic manufacturing units and the total number of registered plastic manufacturing units amounts to 5939. This translates to ~ 9.5% of the total units being unregistered and unmonitored.
- vi) In this report, the performance of States / UTs has been assessed and ranked on the basis of their overall performance in the areas of; a) Per capita plastic waste Generation; b) Number of Unregistered plastic units; c) Implementation of marking and labelling requirements; d) Action Plan for Plastic Waste Management; and e) Compostable plastic units. In this Environmental Performance Rating, the States of Maharashtra obtained the highest score followed by Odisha and Pondicherry.

#### Recommendations in CPCB Annual Report for better implementation

The said report has given the following recommendations for improving the implementation of rules:

- i. Proper information flow from local bodies to the SPCBs/PCCs and further on to the CPCB. It should be ensured that complete information is provided at every level for a correct picture of implementation of the PWM rules.
- ii. Ensure setting-up of collection, source-segregation & disposal system for plastic waste management by States / UTs in each and every ULB and Gram Panchayat / Village Panchayat.
- iii. It should be ensured that no unregistered plastic manufacturing/recycling units remain in operation in the states. Bringing all units under registration will ensure proper monitoring and ensure that all units conform to the PWM Rules.
- iv. Though this report does mention data on plastic waste sent for processing in terms of recycling, these details are reported sporadically by the States which does not give a complete picture of plastic waste processing in different parts of the country.
- v. Increased engagement and co-ordination is required between SPCBs/PCCs and ULBs / GPs to ensure proper channelization of plastic waste for disposal or recycling and to ensure implementation of ban on single use plastics.

- vi. Data provided by ULBs/GPs needs to be validated by random inspection by SPCBs/ PCCs to verify the validity of the data.

## CHALLENGES IN IMPLEMENTATION OF PWM RULES, 2016

One of the biggest challenges that India faces with plastic waste management is the lack of public awareness on disposal of plastic waste<sup>9</sup>. As of today, though source segregation is mandated in the waste management rules (Solid Waste Management Rules 2016), it is practiced sporadically in some urban areas like Bangalore, Mumbai, Indore and other places. But such practice is an exception rather than the rule, which indicates ignorance of the general public of the importance of such practice.

Lack of an efficiently functioning solid waste management mechanism is another major challenge as this affects the separate collection of plastic waste. This results in contamination of plastic waste with other types of waste due to improper source segregation. As per data given on the UNDP website relating to Plastic Waste Management, India generates 15 million tonnes of plastic waste every year but only one fourth of this is recycled due to lack of a functioning solid waste management system<sup>10</sup>.

In their paper, “Challenges and strategies for effective plastic waste management during and post COVID-19 pandemic”<sup>11</sup>, Vanapalli K.R. et. al., have pointed out the need to incentivise recycling industry in India by incentivizing sustainable technologies. The authors have also suggested imposition of a separate tax on plastic waste with low recyclability, to promote use of homogenous plastic materials which can be recycled easily.

Center for Science and Environment (CSE), in their report, Plastic Recycling: Decoded<sup>12</sup>, have highlighted the limitation of the informal sector’s capacity to make investments in infrastructure and equipment for effective plastic waste recycling, due to which a symbiotic relationship has emerged between the formal sector and informal sector.

Challenges in terms of efficient recycling of mixed Plastic waste needs to be addressed by the Indian Recycling Sector. Improving the recovery and recycling of plastic waste volumes needs to be addressed by increased capital investment in the recycling sector by investing in technology and specialised equipment<sup>13</sup>.

## CONCLUSION AND SUGGESTIONS

It is evident that plastic waste is a burgeoning problem which needs to be addressed at all levels and by all the stakeholders involved. While the Government of India is putting in all efforts to provide for the legal mechanism to control and manage plastic waste in the country through its responsiveness to changes required in the PWM Rules, the effective implementation of these rules will require attacking problems at each stage of the plastic waste cycle

at the same time so that we can see a visibly efficient plastic waste management infrastructure in the next 5-10 years. Different measures are needed to be taken both at the Upstream level (consisting of Manufacturers, Producers and Brand Owners, who have control over the product design) and Downstream level (consisting of the Consumers and Recyclers, tasked with the responsibility of waste segregation, collection, sorting, processing and recycling), so that all aspects of the challenges faced in effective plastic waste management are addressed at the same time. Some of the measures which can be explored are suggested below:

### Upstream Measures:

- 1) **Incentives for reducing plastic packaging content**– It is suggested that a positive encouragement to the Upstream players, in the form of incentive to the upstream players is more likely push the players to ensure introduction of lower impact products in the market.
- 2) **Research and Innovation in alternative packaging or improved recycling technologies** – The current policy framework needs to encourage research in alternative packaging options as well as improved recycling technology which can recycle the mixed waste efficiently. Alternatives like tax breaks for R&D in recycling technology and alternative packaging as well as capital subsidy for encouraging investment in recycling can be explored.

### Downstream Measures:

- 1) **Increase in Public awareness** – Steps for increase in consumer awareness need to be undertaken which will result in tackling of the root of the problem of unsegregated plastic waste. Introduction to Waste Management and its impact in the School Curriculum and engagement of the local NGOs to conduct awareness campaigns in colleges and offices can result in increased public awareness.
- 2) **Incentives for low value waste collection** – Low value and flexible packaging are largely used by brand owners and producers and it gets littered due to its non-collection by waste pickers as it is not sufficiently remunerative for collection<sup>14</sup>. As pointed out in the TERI report - Circular Economy for Plastics in India: A Roadmap, there is a lack of economic incentives that can encourage collection of low value waste and prevent the leakage of these low value plastic waste items into the environment. Alternative collection mechanism can be looked at by establishing collection centers at schools, colleges, malls and other public places, where people can deposit low value plastic waste.
- 3) **Integration of informal sector into the formal plastic waste management infrastructure** – Though Rule, 11(1)(c) of the Solid Waste Management Rules, 2016<sup>15</sup> suggest about acknowledgement of the role of informal sector players in waste collection, there

is lack of a structured approach for such integration of informal sector in the formal plastic waste management value chain<sup>16</sup>. This link needs to be worked upon as the strong collection systems are already in place through the network of informal waste collectors.

- 4) **Incentives for upgradation of existing recycling centers** – As per research done by United Nations Human Settlements Programme, out of the 33% of waste processed, only 7% is handled by the formal sector<sup>17</sup>. Considering the informal sector is handling majority of the recycling, it is important to institute a mechanism for upgradation of infrastructure available for the informal recycling units, so that there is minimum impact on the environment and safer practices.
- 5) **Lack of proper data** - As pointed out in the CPCB Annual Report 2020-21, the data provided by ULBs/GPs should be complete and uniform so that the impact of various policy measures on the plastic waste generation and processing can be properly mapped. The information flow can be improved by identifying and providing training to the concerned SPCB office with respect to the necessity and way of filling up the annual reports so that the same will be easily available.

The above measures may be considered for improving and strengthening the plastic waste management value chain. More than anything, all the stakeholders in the plastic waste value chain will be required to work in collaboration and co-operation with each other to improve the implementation of the PWM Rules, 2016.

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