STATE POLICY AND STRATEGY ON PLASTICS WASTE MANAGEMENT FOR URBAN AREAS OF WEST BENGAL

Prepared by

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Foreword

I am delighted to present the Policy and Strategy Paper on Plastics Waste Management for Urban Areas of West Bengal. It describes the strategy to deal with Plastic Wastes in Urban West Bengal for sustainable environment as well as for benefits to our economy and social wellbeing.

Waste management including Plastic Waste Management is a mammoth task, which stands complicated with the increase in urbanization, changing lifestyles, and increase in consumer behaviour. The practice of uncontrolled dumping of plastics wastes in open areas in towns/cities creates serious environmental and public health problems. Financial constraints, institutional weaknesses, insufficient manpower and collection systems, lack of technology, and lack of awareness of common mass towards municipal plastic wastes have contributed to make the situation worse.

Environmental, economic and social imperatives now require us to go further and to be even more challenging and ambitious. The environmental consequences of our unsustainable use of plastic wastes have been brought sharply to our attention, our economy depends upon a secure supply of affordable resources which is under threat, and social justice is threatened when the environment deteriorates and resources become limited. The need to do more to tackle plastic waste has never been so important.

This policy and strategy document details high level outcomes, policies and targets, and forms part of a suite of documents that together comprise the National Plastic Waste Management actions for Urban West Bengal. Collectively this approach will make a significant contribution to achieve our vision of a sustainable Plastics Waste Management that we have set out in our Policy and Strategy Paper on Solid Waste Management and Mission Nirmal Bangla Programme.

Towards Zero Plastic Waste provides us with the opportunity to confirm that the outcomes that we are aiming to achieve are: o A sustainable environment, where the impact of plastics waste in Urban West Bengal is reduced to within our environmental limits by 2030. This means that plastic waste production and management will only be at ULB levels. o A prosperous society, with a sustainable, resource efficient economy. o A fair and sustainable society, in which all citizens can achieve their full human potential and contribute to the wellbeing of Urban West Bengal through actions on plastic waste prevention, reuse and recycling.

Behaviour change is the key for success. We now need people to rethink why they are producing so much plastic waste in the primary place. We only consider what we buy, use and throwaway. We need to think about whether we really need some things in the primary place and be more selective about what and how much we consume. We need to think about keeping the products we buy for longer and reusing them or passing them on when we no longer want or need them. We also need a truly comprehensive recycling society, where everyone can recycle where ever they are at home, at leisure or at work. We will support Urban businesses to take up the significant opportunities to save money by reducing waste. We will encourage them to eco-design their products and packaging. This should help to create the competitive edge in an ever demanding market place where green purchasing and supply chain improvements are now an important business imperative.

This new overarching plastics waste strategy document is bold and ambitious. It sets out our goals for 2030, and outlines how we propose to achieve them. We want Urban West Bengal to lead by example. Together with the detailed action plans, the new strategy document will build on the foundations set by Wise About plastic Waste, and will take us towards a truly sustainable approach to managing our waste.

Hence to provide proper guidance to the Urban Local Bodies of West Bengal on Technical Viability, and improving Managerial, Administrative and adequate Institutional Arrangement, this State Policy & Strategy on Plastics Waste Management for the Urban Areas of West Bengal is being published.

I am confident that the Urban Local Bodies and other service providers will find this policy and strategy paper very useful for discharging their functions in a more effective, efficient and sustainable manner with respect to Municipal Plastics Waste Management and will be successful on the effort of creating the cities plastic Waste free through recycling and other measures.

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Introduction

1. Plastics are non-biodegradable, synthetic polymers derived primarily from petro-fossil feedstock and made-up of long chain hydrocarbons with additives and can be moulded into finished into finished products (excluding compostable plastic or polymer confirming IS/ISO:17088:2008) [Reference: Text Book on Plastic Material by Prof. J. A. Brydson]. These polymers are broken in presence of suitable catalyst, into monomers such as ethylene, propylene, vinyl, styrene and benzene. These monomers are then chemically polymerized into different categories of plastics.

2. Categories of Plastics as per Bureau of Indian Standard (BIS) Classification:

A. Recyclable Plastics (Thermoplastics):

Sl No.	Short Name	Scientific Name	Used In
1	PET	Polyethylene Terephthalate	Water Bottles, PET Bottles etc.
2	HDPE	High Density Polyethylene	Milk/Detergent Bags, Carry Bags, Containers etc.
3	PVC	Polyvinyl Chloride	Cables, Pipes, Floorings etc.
4	LDPE	Low Density Polyethylene	Carry Bags, films
5	PP	Polypropylene	Medicine Bottles, Cereal liners, Packing films etc.
6	PS	Polystyrene	Foam Packing, Tea Cups, Ice Cream Cups etc.

B. Non-Recyclable Plastics (Thermoset & others):

Sl No.	Short Name	Scientific Name	Used In
7	O	Others	Thermoset plastics, Multilayer & Laminated Plastics, PUF, Bakelite, Polycarbonate, Melamine, Nylon etc.

3. Plastic products have become an integral part in the daily life of human as a basic need. It produced on a massive scale world wide and its production crosses 150 million tonnes per year globally. It is worth to mention that usage of plastic packaging's and products has increased multi-fold in the last one decade due to its low price and convenience, however, general public is not aware about its impact on the human and environment on littering or dumping.

4. In India approximately, 12 Million Tonnes plastic products are consumed every year, which is expected to rise further. It is also known that 50-60% of its consumption is converted into waste. Main usage of plastic is in the form of carry bags, packaging films, wrapping materials, fluid containers, clothing, toys, household applications, industrial products, engineering applications, building materials etc. It is true that conventional (petro-based) plastic waste is non-biodegradable and remains on landscape for several years polluting environment ethics because life cycle of plastic waste is incomplete and ultimately it is dumped on the land-fill sites. It is also well established that all types of plastic wastes can not be recycled, therefore, it accumulated into open drains, low-lying areas, river banks, coastal areas, sea-beaches etc.

5. As per study conducted by CPCB in collaboration with CIPET, Ahmedabad on 'Qualification and Characterisation of Plastic Waste Generation in 60 Major Cities (2010-12)' in the country , the percentage of plastic waste present in the Municipal Solid Waste (MSW) of the cities is ranging from 3.10% to 12.47%. The critical issues for disposal of plastics wastes are:

- No organized/systematic system has been developed by the Municipal Authorities for collection, segregation, transportation and disposal of plastic wastes. The so-called, rag-pickers are not authorised by any agency or department, they voluntarily for their own interest, pick-up only value added plastic wastes, however, municipal authority has no data that how much and what type of plastic waste is picked up by them and where it goes? Besides, the rag-pickers leave the littered waste including non-recyclable and low value plastic wastes.

- Indiscriminate littering and non-biodegradability of plastic waste raise several environmental issues, such as, choking of drains, making land infertile and on ingestion by cattles lead to death.

- During polymerization process toxic fugitive emissions are released.

- During product manufacturing various types of fugitive toxic gases are released.

- Open burning of plastic waste is very common phenomenon in the cities/towns, which generates toxic emissions, such as Carbon Monoxide, Chlorine, Hydrochloric Acid, Dioxin & Furans, Amines, Nitrides, Styrene, Benzene, 1, 3-Butadiene, CCL4, and Acetaldehyde are emanates and pollute the environment.

- Lead, and Cadmium & DEHP (phthalates) commonly used in LDPE, HDPE, PP, PET etc. and other metal based additives, which are used during manufacturing and recycling of plastics, are toxic and known to leach out in the environment.

- Non-recyclable plastic wastes such as multi-layered & metalized pouches/sachets and thermoset plastic like SMC/FRP etc. pose several disposal problems.
- Sub-standard plastic carry bags, packaging filns etc. (40μ) etc. pose several problems in collection and recycling and ultimately dumped elsewhere.
- Littered plastic waste, especially plastic carry bags/films give anaesthetic look in the city, choke the drain and may cause flood during monsoon.
- Garbage mixed with plastic waste interferes in recycling and solid waste processing facilities and also causes problem in landfill operations.
- Unregistered plastic waste recycling industries operating in non-conforming areas (Residential) are posing threat to environment due to unsound recycling practices.

6. A Glimpse of Initiatives taken by the Government time to time for Plastic Waste Control:

- National Plastics Waste Management Task Force of the Ministry of Environment and Forest, Government of India, has recommended a strategy and action programme of Plastics Waste Management in India.
- Ministry of Environment and Forest, Government of India has issued criteria for labelling 'plastic products' as 'Environmental Friendly' under its 'Ecomark' Scheme, in association with the Bureau of Indian Standards. One of the requirements for plastic products, is that the material used for packaging shall be recyclable or biodegradable.
- The Bureau of India Standard (BIS), New Delhi has issued guidelines on recycling of plastics waste including code of practices for collection, sorting through conventional practices continue to be adopted and accepted.
- The Prevention of Food Adulteration Department of the Government of India has issued directives to various catering establishments to use only food-grade plastics, while selling or serving food items. Rules have specified use of 'foodgrade plastic' which meets certain essential requirements and is considered safe, when in contact with food. The intention is to check possible contamination, and to avert the danger from use of recycled plastic.
- The Ministry of Environment, Forests & Climate Change, Government of India has issued the Plastic Waste (Management & Handling) Rules, 2011 and after that with several modification published Plastic Waste Management Rules, 2016.
- Himachal Pradesh Non-biodegradable Garbage (Control) Act, 1995 and Non-biodegradable Garbage Bill (1997) envisage prohibition of throwing or depositing plastic articles in public

places and to facilitate the collection through garbage in identifiable and marked garbage receptacles for non-biodegradables, placed at convenient places.

- In West Bengal, the State Pollution Control Board has issued ban order on the entry, use, sale of plastic carry bags in several heritage/tourist places. The West Bengal Plastic Carry Bags and Garbage Control Bill introduced in the State prohibit manufacture, storage, transport and use of plastics made of recycled plastics. Thickness of plastic carry bags should not be less than 20 microns and for cups and tumblers are to be with 40 microns thickness. The Board has also taken several initiatives for awareness generation.

- The West Bengal Municipal Act, 1993 and West Bengal Municipal Corporation Act, 2006 in Section 340(f) and 96N respectively, are stating : "Prohibition against defiling of water of public and private tanks and uses and throwing of plastic in the public streets and tanks, whether private or public - No person shall..(f) use, sale and distribute plastic within the municipal area or throw plastic in the public streets and tanks, whether private or public and defile water of public and private tanks." The Sections are also stating: " For the purpose of this Section 'plastic' means virgin and recycled plastic carry bags, cups and any other materials made of plastic of size less than 8" x 12" and less than 20 microns in thickness".

- The Urban Development & Municipal Affairs Department, Government of West Bengal has published the State Policy and Strategy on Solid Waste Management for Urban Areas of West Bengal on 2017 in line with the Solid Waste Management Rules 2016 of the Ministry of Environment, Forests & Climate Change, Government of India where necessary provisions/procedure have been kept for plastic waste management in Municipal Areas.

Need for Strategy in Urban West Bengal

7. As with many other States, the State of West Bengal also faces similar challenges in terms of constraints of revenue adequacy, resources of land, technology, manpower and other wherewithal. There are a total of 125 Urban Local Bodies within the State, of which seven are Municipal Corporations, while the remaining are large to small categories of municipalities. Some of the areas (particularly Corporations) are also part of larger developmental areas, governed by Development Authorities, constituted under the West Bengal Town and Country (Planning & Development) Act, 1979. Four municipalities - Darjeeling, Kurseong, Mirik and Kalimpong, lie in the autonomous hill districts of Darjeeling and Kalimpong, while remaining municipal entities lie in the plains. The municipalities in the hilly areas are also tourist destinations and accordingly have a significant amount of floating population. Some of the municipalities situated in plains, such as Bolpur, Tarakeswar, Nabadwip, Krishnanagar etc. also experience seasonal increases in

floating population on account of being places of religious significance, or being near to places of religious significance.

8. A rapid assessment of Urban Local Bodies has been conducted at the time of preparing this State Policy and Strategy on Plastic Waste Management.

9. Most municipal bodies regularly engage in collection of waste (alongwith plastic waste) from households, markets and sweep streets on a regular basis, most of the processes are not compliant to the Rules. In addition, supplemental processes such as transport, treatment and disposal are taken up on a very ad-hoc basis, and in most instances, waste is simply 'dumped' in an uninhabited or low lying area.

10. Such unorganised disposal of solid waste (alongwith plastic waste) in the cities and towns of West Bengal poses considerable risk to natural resources, particularly ground water. West Bengal is also largely affected with arsenic contamination in ground water reserves, and leachate contamination from unscientific dumping poses risk to the reserves that are so far unaffected. Dumping of waste (alongwith plastic waste) on riversides and other surface water streams also poses risk of leachate apart from chemical contamination of the water stream. Likewise, certain forms of inorganic waste that degrade over time, particularly plastics, electronic waste, ceramics, metal scrap etc. where unclaimed or not removed from land, leaves residual chemical impacts on land, often changing soil pH irreversibly, leaving the area barren and unable to support vegetation.

11. The primary purpose of this strategy is to identify sources (in the form of practices) where such contamination occurs, and recommend measures that would lead to reduction of such instances. At the same time, a rapid analysis of the plastic waste stream indicates that there is significant diversity within the plastic waste constituents - with considerable amount of inert waste that does not react with any known biological or naturally occurring agent, as well as large amount of recyclable matter. Both streams offer considerable opportunities for economic activities. The second purpose of this strategy is to identify such opportunities and to suggest ways and means to capitalise upon them. The overall management of plastic waste generated from urban areas rests with municipal bodies, but with a poor revenue base and managerial capabilities, most municipal bodies treat this responsibility as an overhead and cost centre as opposed to a business opportunity. The third purpose of this strategy is to showcase the process of plastic waste management in West Bengal as a progressive and active business opportunity, one that can be invested into not only by the municipality, but jointly and severally by private sector and community based groups alike.

12. In order to rise up to the challenges and to capitalise upon the opportunities, this strategy is hereby proposed. It enshrines four fundamental ideas:

- Reinforcement of the three 'R's - Reduce, Reuse and Recycle.

- Clubbing or grouping of certain functions within the plastic waste management value chain so that municipalities can share resources, leading to lower costs and an increased scale of economy.
- Plastic Waste management is a service, and therefore needs being professionally managed; such expertise can come from private sector as well as civil society or community based organisations, and there is no one model that fits all such situations.
- The generation of plastic waste has negative externalities, and therefore the 'polluter pays' principle must be applied.

Current Situation

13. Use of plastic in various goods and carry bags are growing across the country for sake of convenience enjoyed by the citizens in using plastic products. The average per capita consumption of plastic in India is 9.7 kg. Plastic products are popular as daily use items and cover almost every sphere of life like clothing, housing, construction, furniture, automobiles, household items, agriculture, horticulture, irrigation, packaging, medical appliances, electronics and electrical etc. However, it has been reported by FICCI that the extent of consumption of plastic products suggests that consumption pattern varies from one region to the other. The west consumes 47% of plastic products, north, south and east account for 23%, 21% and 9% of consumption respectively. A detail inventory for West Bengal would provide more accurate idea about plastic usage in the state.

14. A rapid study on presence of plastic waste in MSW in few municipalities by Municipal Engineering Directorate in North 24 Parganas, Jalpaiguri, Bankura and Purulia municipalities suggest that percentage of plastic waste in MSW vary widely (4% to 24%) depending upon extent of segregation of other recyclables like glass, metal etc by rag pickers for selling to recyclers. The municipalities have been classified into clusters and individual municipalities. While Table 1 and Table 2 below shows the differences in plastic content in two clusters comprising of municipalities of similar geographical area and similar lifestyles, Table 3 below indicates variations in plastic content in individual municipality. Table 4 below also suggest that the plastic waste content in two municipalities of dry area in western part of the state also vary widely.

Table-1: Composition of Waste in a Cluster 1 of Municipalities in North 24 Parganas

Municipality	Tare Weight (KG)	Full Weight (KG)	Waste Total	Plastic	Metal	Glass	Paper	Biodegradable (KG)	Biodegradable (%)	Plastic (%)
North Dum Dum	660	1920	1260	80			27	1153	92	6.3
South Dum Dum	6060	13460	7400	122				7278	98	1.6
Dum Dum	5960	12740	6780	105				6675	98	1.5
Batranagar	2990	5120	2130	85			12	2033	95	4
Cluster Total	**15670**	**33240**	**17570**	**392**			**39**	**17139**	**98**	**2.2**

Table-2: Composition of Waste in a Cluster 2 of Municipalities in North 24 Parganas

Municipality	Tare Weight (KG)	Full Weight (KG)	Waste Total	Plastic	Metal	Glass	Paper	Biodegradable (KG)	Biodegradable (%)	Plastic (%)
Ashoknagar Kalyangarh	4150	6060	1910	220				1690	88	11.5
Habra	3190	4560	1370	190				1180	86	13.9
Cluster Total	**7340**	**10620**	**3280**	**410**				**2870**	**88**	**12.5**

Table-3: Composition of Waste in Individual Municipalities in Jalpaiguri & Nadia Districts

Municipality	Tare Weight (KG)	Full Weight (KG)	Waste Total	Plastic	Metal	Glass	Paper	Biodegradable (KG)	Biodegradable (%)	Plastic (%)
Jalpaiguri	3645	4890	1245	244	25	42	62	872	70	19.6
Krishnanagar	2950	5670	2720	690				2030	75	25.4
Nabadwip	2240	4110	1870	520				1350	72	27.8
Santipur	**3480**	**5990**	**2510**	**460**				**2050**	**82**	**18.3**

Table-4: Composition of Waste in two Municipalities in Western part of West Bengal

Municipality	Tare Weight (KG)	Full Weight (KG)	Waste Total	Plastic	Metal	Glass	Paper	Biodegradable (KG)	Biodegradable (%)	Plastic (%)
Bankura	4030	8510	4480	268	Nil	Negligible	90	4121	92	6
	1340	4740	3430	172			34	3224	94	5
	12610	23800	11190	447			112	10630	95	4
				Mainly Soil, about 15% Plastic, Metal, Glass, Paper etc.						
	4310	12770	8460							
Purulia	**2950**	**5670**	**2720**	**690**				**2030**	**74.6**	**25.4**

15. A NEERI 2009 study mentions the percentage of plastic and 'others', which include synthetic material or material resistant to biodegradation for Kolkata and Howrah are 0.65% and 3% in MSW of Kolkata and Howrah. Appropriate identification of plastic wastes by the rag pickers is also a challenging task.

16. The composition of municipal waste appears to be largely constant in terms of constituents, with percentages varying between smaller and larger towns. A broad understanding of the blended mix observed within the towns of KMA would be as follows:

Table-5: Physical composition and chemical parameters of waste sampled in KMA

Physical Parameters (all values in % by weight)		Chemical Parameters	
Biodegradable	41.0	pH	7.31
Green Coconut Shells	4.95	Organic Carbon (OC) %	19.58
Paper	3.18	Moisture %	42.84
Plastic	0.65	K_2O%	0.40
Metals	0.66	P_2O_5 %	0.57
Glass & Crockery	0.58	N %	0.55
Spent coal/wood embers	8.08	C/N Ratio	35.6
Inert*	37.9	Calorific Value K Cal/Kg	549.32
Others**	3.00	Loss on Ignition (LOI) %	35.24

* Inert includes mud/earth, street sweeping and waste from construction and demolition excluding steel, ceramics and polymers (plastic).

** Others include synthetic material or material resistant to biodegradation.

Source: NEERI, 2009 for Kolkata and Howrah, interpolated and compiled by authors for remainder of KMA territory.

17. Status of use of Plastic Carry Bags and impact of imposition of Bags: M/s Toxicslink conducted a study in Kolkata to review the status of implementation of ban on use of plastic carry bags (less than 40μ thickness) as per Plastic Waste Management Rules 2011. Results of the study can also help in forming an idea about possible adherence to the current legislation. The study outcome shall provide as idea about the extent of adherence to regulations. The sample size was 940 people (630 consumers and 310 vendors) from different parts of the city. The distribution of vendors in survey was as follows:

- 54% of the vendors and 58% of the consumers interviewed during the survey were using plastic bags with thickness of less than 40 microns.
- Milk booth and small food joints were the largest users of thinner plastic carry bags (100% and 82% respectively) followed by the fish and poultry shops (69%), vegetable and fruit shop (67%) and medicine shops (65%).

- This survey also attempted to find out the awareness of the citizens about disposal practices and 56% of the consumers reported that plastic carry bags are thrown in to bins. 35% of consumers reuse the bags and only 10% has mentioned that it is given to registered recyclers.

- The study reported the degree of adherence to minimization of waste generation and not to litter by individual waste generator depends on the level of awareness as well as types of facilities provided by the municipalities.

18. The experience of West Bengal Pollution Control Board on different market places and municipalities also suggest that the level of awareness vary widely among the people. Frequent raids in market place's and active intervention by the municipal authorities used to improve the market response on use of plastic carry bags on temporary basis. However, this provision of raid by WBPCB is not available in the Plastic Waste Management Rules 2016. The other provisions of Plastic Waste Rules 2016 like use of plastic of certain specifications are yet to be popularised.

19. The WBPCB has issued notifications under Recycled Plastic Manufacture & Usage Rules 1999, vide no. 3401-46L/WPB-2003(Part-1) dated 7.03.2006, for restricting use of plastic in different locations like Sundarban, hilly region of Darjeeling, coastal zone, entire Siliguri Subdivision, forest areas, Visva Bharati, Santiniketan and following 39 heritage sites:

1	Indian Botanical Garden, Shibpore	21	Eden Garden, Kolkata
2	Zoological Garden, Kolkata	22	Nehru Children Museum, Kolkata
3	Subhas Sarobar, Kolkata	23	Birla Industrial and Technological Museum, Kolkata
4	Rabindra Sarobar, Kolkata	24	Barrackpore Gandhi Ghat, Barrackpore
5	Victoria Memorial Hall, Kolkata	25	New Digha Paryatan Kendra, Hooghly
6	National Library, Kolkata	26	Soakhal Energy Park, Hooghly
7	Bandel Church, Bandel	27	Energy Education Park, Kolkata
8	Belurmath, Belur	28	Citizen Park, Kolkata
9	Hazarduari Palace, Murshidabad	29	Deshapriya Park, Kolkata
10	Millenium Park, Kolkata	30	Padmapukur (Lansdowne), Kolkata
11	Strand Road (including Church Road, Chandernagore, Hooghly	31	Allen Park, Kolkata
12	Chhuti Amusement Park, Chandernagore	32	Macpherson Square, Kolkata

13	KMDA Park, Chandernagore	33	Victoria Park, Kolkata
14	Banabitan, Salt Lake	34	Leonard Square, Kolkata
15	Science City Complex, Kolkata	35	College Square, Kolkata
16	Nicco Park, Kolkata	36	Hedua, Kolkata
17	Nalban Boating Complex, Kolkata	37	Deshbandhu Park, Kolkata
18	Swabhumi, Kolkata	38	Shraddhananda Park, Kolkata
19	Indian Museum, Kolkata	39	Tala Park
20	Birla Planetarium, Kolkata		

Collection of Solid Waste alongwith Plastic Waste: Existing Situation

20. The amount of waste collected was reported by all municipalities based on the capacity of their collection vehicles - specifically the ones that go to the disposal site. Assuming that there is 25% loss between first collecting the waste and the amount that is loaded on to the trucks that reach the disposal site, most cities reported this figure within the range of 50% to 85%. Bhatpara, Barasat and Titagarh municipalities reported efficiencies greater than 75%, while Chandrakona, Ramjibanpur and Uluberia reported efficiencies of less than 60%, with two not even exceeding 20%.

21. Door to door collection was found to be practiced, either partially or fully, practiced across 60% municipalities. 30% of these reported carrying out complete door to door collection. Most of the waste collection happens within the period of 0700 HRS through 1000 HRS, and the preferred modes of collection include wheelbarrows (for narrow streets), and tricycles and push-carts (for streets capable of supporting such widths). Most of these collection vessels are not compartmentalised, i.e. waste cannot be segregated and stored in a segregated manner. Each worker engaged in collection of waste from households is assigned a 'beat', or a sequence of streets which are to be covered until the vessel (tricycle, pushcart or wheelbarrow) is fully filled. The number of households covered by such a collector in one beat varies from as low as 10 households to 60 households, depending on the size of the beat. Usually, for beats as large as 60 households, the preferred vehicle is a cycle rickshaw or even a motorised cycle rickshaw, with a carriage space of about 25 cubic feet. The number of staff engaged in door to door collection varied from as low as 13% of required numbers to 90% of required capacity. The use of protective gear is also restricted largely to Municipal Corporations and municipalities of category A or B.

22. Street sweeping is carried out in most municipalities; all Corporations, and most category A to C municipalities organise street sweeping at least once a day; the others organise it about once in two days.

23. The waste collected from households and shops/commercial establishments is agglomerated at designated common points within the collection area comprising of several beats, either into a larger vehicle such as a dump truck or a tipper anchored to a tractor. At none of the points is the waste segregated.

24. In cities where municipal bodies do not have custody of roads, door to door collections is erratic and is carried out only in certain parts of the city. In the other areas, residents have engaged private individuals to collect and dispose of household waste to 'commonly accepted' (though not officially designated) places from where municipal staff picks up such waste.

25. Community bins, although provided are largely absent (stolen) and most of the informal 'agglomeration' of waste is done by citizens or private persons engaged by citizens to dump waste collected from households in open plots, which are socially and commonly acknowledged as places to dump waste. Many of these are cleaned up the subsequent morning by the municipal staff, but in many places - especially, large vacant tracts of land with shrubbery, the waste simply accumulates. The reasons for absence of community bins, as explained by municipal resources ranges from theft to vandalism and physical damage.

Sorting, Storage and Transportation of Solid Waste: Existing Situation

26. Informal sector rag-pickers tend to separate, at the first point of agglomeration, certain salvageable items such as plastics, metal scraps etc. However, since this is not an 'accounted for' or expected phenomena, the waste collection process does not account for the time taken to sort and sift through waste at the first point of agglomeration. The sorting and sifting usually takes place in extremely limited and sub-optimal space, leading to only a portion of recyclables being actually claimed. Lack of formal linkages between the recycling industry and the waste management process also implies that a very limited portion of recyclable matter (viz. plastic containers that are intact, metal scraps above a certain size or weight) actually ends up at recycling.

27. It is observed that the Individual Vendors generally comes to the households and shops for purchasing recyclable plastics and other materials and sell the same to the deals or contractors.

28. The system of providing two-bin systems (which are increasingly being adopted in other countries) has largely not been taken up in the State of West Bengal. Some of the municipalities, such as Budge Budge, utilise pick-up bins (designed for pick up and dumping into tipper or compactors), while some other use masonry enclosures for intermediate storage of waste, essentially with the idea that waste collected from households by local labour will be dumped in such places, and will be cleared from the same.

29. Transfer stations have been largely used in piecemeal manner, with municipalities within KMA showing more of them than non-KMA. In certain cases, transfer stations have been combined with a waste processing facility. Waste compactors are present in all the municipalities mostly mobile compactors. Static compactors are installed mainly at transfer stations.

Treatment and Recycling: Existing Situation

30. As indicated in the study of Central Pollution Control Board, the estimated Plastic Waste generation in West Bengal is 200750 tons/annum. As segregation at source is not in practice, very few of the plastic wastes be recycled. There are 46 registered plastic manufacturing/recycling units and 14 multi-layered plastic firms in the state, besides 378 unregistered plastic manufacturing/recycling units operating in some area.

Stakeholder/Public Awareness: Existing Situation

31. There is a lack of comprehensive awareness campaign for Solid Waste Management vis-a-vis Plastic Waste Management. State Government has taken initiatives to aware all the stakeholders in the Urban Local Bodies through the District Administration. ICT based awareness and management tools have been developed by North 24 Parganas District Administration as a pilot initiative in the cities where Integrated Solid Waste Management Projects under Mission Nirmal Bangla (Urban) is under implementation.

Proposed Policy and Strategy on Plastics Waste Management for Urban Areas of West Bengal

Proposed Action(s)

32. The processes will be taken up in the following order: (i) generation, (ii) collection, (iii) segregation at source, (iv) sorting, division and transportation, (v) Recycling, and (vi) disposal.

33. For the purposes of this plan, the clustering approach has been considered with respect to three parameters, namely:

- Distance between cities.
- Waste generated by cities.
- Per capita waste generation.

34. Based on the above, this action plan proposes the following arrangement of municipal bodies:

Total 22 Cluster Projects and 64 Standalone Projects:

Table-6: Standalone and Cluster-oriented Projects

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
Kolkata	1	Kolkata Municipal Corporation	1876	MC	4496694	141	187.50		Standalone
Alipurduar	2	Alipurduar Municipality	1957	D	65232	20	9.57	4	Standalone
Bankura	3	Bankura Municipality	1865	C	137386	23	19.06	8	Standalone
Bankura	4	Bishnupur Municipality	1873	D	67783	19	22.01	4	Standalone
Bankura	5	Sonamukhi Municipality	1886	E	29085	15	11.65	2	Standalone
Birbhum	6	Suri Municipality	1876	D	67864	18	10.25	4	Cluster
Birbhum	7	Dubrajpur Municipality	1977	D	38041	16	16.84	3	
Birbhum	8	Rampurhat Municipality	1950	D	57833	17	6.25	4	Cluster
Birbhum	9	Nalhati Municipality	2001	D	41534	15	12.00	3	
Birbhum	10	Bolpur Municipality	1950	D	80210	19	13.13	5	Standalone
Birbhum	11	Sainthia Municipality	1987	D	44601	16	10.00	3	Standalone
Paschim Burdwan	12	Asansol Municipal Corporation	1994	MC	791151	106	322.11	42	Standalone
Paschim Burdwan	13	Durgapur Municipal Corporation	1962	MC	566517	43	154.20	30	Standalone
Purba Burdwan	14	Burdwan Municipality	1865	A	314265	35	26.30	17	Standalone
Purba Burdwan	15	Kalna Municipality	1869	D	56722	18	10.10	4	Standalone
Purba Burdwan	16	Katwa Municipality	1859	D	81615	19	7.93	5	Cluster
Purba Burdwan	17	Dainhat Municipality	1969	E	24397	14	10.36	2	

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
Purba Burdwan	18	Gushkara Municipality	1988	D	35388	16	17.08	3	Standalone
Purba Burdwan	19	Memari Municipality	1995	D	41451	16	8.84	3	Standalone
Cooch Behar	20	Dinhata Municipality	1973	D	36124	15	4.55	3	Standalone
Cooch Behar	21	Cooch Behar Municipality	1946	D	77935	20	8.29	5	Standalone
Cooch Behar	22	Mathabhanga Municipality	1986	E	23890	12	3.71	2	Cluster
Cooch Behar	23	Mekliganj Municipality	1987	E	9127	9	3.88	2	
Cooch Behar	24	Haldibari Municipality	1984	E	14404	11	10.00	2	
Cooch Behar	25	Tufanganj Municipality	1983	E	20998	12	2.49	2	
Dakshin Dinajpur	26	Balurghat Municipality	1951	C	151299	25	10.56	8	Standalone
Dakshin Dinajpur	27	Buniyadpur Municipality	2015	E	32315	17	24.49	3	Standalone
Dakshin Dinajpur	28	Gangarampore Municipality	1993	D	56217	18	10.29	4	Standalone
Darjeeling	29	Siliguri Municipal Corporation	1994	MC	513264	47	41.90	27	Standalone
Darjeeling	30	Darjeeling Municipality	1850	A	118805	32	7.43	7	Standalone
Darjeeling	31	Kurseong Municipality	1879	D	42446	20	7.50	3	Standalone
Darjeeling	32	Mirik Notified Area Authority	1984	E	11513	9	6.50	2	Standalone
East Midnapore	33	Tamralipta Municipality	1864	D	65306	20	17.86	4	Cluster
East Midnapore	34	Panskura Municipality	2002	D	57932	17	19.94	4	
East Midnapore	35	Contai Municipality	1958	C	92226	20	14.25	6	Standalone
East Midnapore	36	Egra Municipality	1993	E	30148	14	17.21	3	Standalone
East Midnapore	37	Haldia Municipality	1983	B	200827	26	109.65	11	Standalone

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
Hooghly	38	Chandannagar Municipal Corporation	1880	MC	166867	33	22.03	9	Cluster
Hooghly	39	Hooghly Chinsurah Municipality	1864	B	177259	30	17.29	10	
Hooghly	40	Champdany Municipality	1917	C	111251	22	6.59	6	
Hooghly	41	Bhadreswar Municipality	1869	C	101477	22	8.28	6	
Hooghly	42	Bansberia Municipality	1869	C	103920	22	9.07	6	
Hooghly	43	Serampore Municipality	1842	B	181842	29	17.60	10	Cluster
Hooghly	44	Baidyabati Municipality	1869	C	121110	22	12.03	7	
Hooghly	45	Rishra Municipality	1944	C	124577	23	4.48	7	
Hooghly	46	Konnagar Municipality	1944	D	76172	20	4.67	5	
Hooghly	47	Uttarpara-Kotrung Municipality	1853	C	159147	24	12.56	9	
Hooghly	48	Arambagh Municipality	1886	D	66175	18	34.75	4	Cluster
Hooghly	49	Tarakeswar Municipality	1975	E	30947	15	3.88	3	
Hooghly	50	Dankuni Municipality	2008	C	94936	21	19.50	6	Standalone
Howrah	51	Howrah Municipal Corporation	1984	MC	1077075	66	51.74	57	Standalone
Howrah	52	Uluberia Municipality	1982	A	222240	29	33.72	12	Standalone
Jalpaiguri	53	Mal Municipality	1989	E	25218	15	7.50	2	Standalone
Jalpaiguri	54	Jalpaiguri Municipality	1885	C	107341	25	12.98	6	Standalone
Jalpaiguri	55	Dhupguri Municipality	2002	D	44719	16	14.99	3	Standalone
Kalimpong	56	Kalimpong Municipality	1945	C	49403	23	8.68	3	Standalone

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
Malda	57	English Bazar Municipality	1868	B	205521	29	13.25	11	Cluster
Malda	58	Old Malda Municipality	1869	D	84012	18	9.58	5	
Murshidabad	59	Berhampore Municipality	1876	B	195223	28	31.42	11	Cluster
Murshidabad	60	Murshidabad Municipality	1869	D	44019	16	16.40	3	
Murshidabad	61	Jiaganj Azimganj Municipality	1896	D	51790	17	11.66	4	Standalone
Murshidabad	62	Kandi Municipality	1869	D	55632	17	12.97	4	Standalone
Murshidabad	63	Jangipore Municipality	1877	C	88165	20	8.20	5	Cluster
Murshidabad	64	Dhulian Municipality	1909	C	95706	19	6.25	6	
Murshidabad	65	Domkal Municipality	2015	C	96949	21	89.84	6	Standalone
Murshidabad	66	Beldanga Municipality	1981	E	29205	14	3.98	3	Standalone
Nadia	67	Krishnagar Municipality	1864	C	153062	24	15.96	9	Standalone
Nadia	68	Nabadwip Municipality	1869	C	125543	24	11.66	7	Standalone
Nadia	69	Santipur Municipality	1853	C	151777	24	25.88	8	Standalone
Nadia	70	Birnagar Municipality	1869	E	30799	14	5.52	3	Standalone
Nadia	71	Ranaghat Municipality	1864	D	75365	19	7.72	5	Standalone
Nadia	72	Chakdah Municipality	1886	C	95203	21	15.36	6	Cluster
Nadia	73	Taherpur Notified Area	1993	D	20894	13	2.01	2	
Nadia	74	Coopers' Camp Notified Area	1997	E	18843	12	1.50	2	
Nadia	75	Kalyani Municipality	1995	C	100575	20	29.21	6	Cluster
Nadia	76	Gayeshpur Municipality	1995	D	58998	18	30.00	4	
Nadia	77	Haringhata Municipality	2014	D	46236	14	27.11	3	

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
North 24 Parganas	78	Bidhannagar Municipal Corporation	2015	MC	618358	60	60.00	33	Standalone
North 24 Parganas	79	Ashokenagar-Kalyangarh Municipality	1968	C	121592	22	20.64	7	Cluster
North 24 Parganas	80	Habra Municipality	1979	C	147221	24	21.80	8	
North 24 Parganas	81	Baduria Municipality	1869	D	52493	17	22.43	4	Cluster
North 24 Parganas	82	Basirhat Municipality	1869	C	125254	22	22.05	7	
North 24 Parganas	83	Taki Municipality	1869	D	38263	16	12.97	3	
North 24 Parganas	84	Baranagar Municipality	1869	A	245213	34	7.62	13	Cluster
North 24 Parganas	85	Dum Dum Municipality	1929	C	114786	22	9.73	7	
North 24 Parganas	86	North Dum Dum Municipality	1870	A	249142	31	26.45	14	
North 24 Parganas	87	South Dum Dum Municipality	1870	A	403316	35	17.96	22	
North 24 Parganas	88	Barasat Municipality	1869	A	278435	32	34.50	15	Standalone
North 24 Parganas	89	Madhyamgram Municipality	1993	B	196127	25	21.56	11	Cluster
North 24 Parganas	90	New Barrackpore Municipality	1965	D	76846	20	6.89	5	
North 24 Parganas	91	Bhatpara Municipality	1899	A	383762	35	32.50	21	Standalone
North 24 Parganas	92	Naihati Municipality	1869	A	217900	31	11.81	12	Standalone
North 24 Parganas	93	Bongaon Municipality	1954	C	108864	22	14.27	6	Standalone
North 24 Parganas	94	Gobardanga Municipality	1870	D	45377	17	13.50	3	Standalone
North 24 Parganas	95	Garulia Municipality	1904	C	85336	20	6.48	5	Standalone
North 24 Parganas	96	North Barrackpore Municipality	1869	C	132806	23	12.22	7	Standalone
North 24 Parganas	97	Halisahar Municipality	1903	C	124939	23	8.29	7	Standalone

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
North 24 Parganas	98	Kanchrapara Municipality	1917	C	120345	24	9.07	7	Standalone
North 24 Parganas	99	Panihati Municipality	1900	A	377347	35	19.38	20	Standalone
North 24 Parganas	100	Kamarhati Municipality	1899	A	330211	35	10.96	18	Cluster
North 24 Parganas	101	Khardah Municipality	1920	C	108496	22	6.87	6	
North 24 Parganas	102	Barrackpore Municipality	1916	C	152783	24	10.61	9	Cluster
North 24 Parganas	103	Titagarh Municipality	1895	C	116541	23	3.28	7	
Purulia	104	Purulia Municipality	1876	C	121067	22	14.00	7	Standalone
Purulia	105	Jhalda Municipality	1888	E	19544	12	3.34	2	Standalone
Purulia	106	Raghunathpur Municipality	1888	E	25561	13	12.95	2	Standalone
South 24 Parganas	107	Rajpur-Sonarpur Municipality	1876	A	424368	35	49.26	23	Standalone
South 24 Parganas	108	Baruipur Municipality	1869	D	53128	17	9.50	4	Standalone
South 24 Parganas	109	Joynagar-Mazilpur Municipality	1869	E	25922	14	5.81	2	Standalone
South 24 Parganas	110	Diamond-Harbour Municipality	1982	D	41802	16	10.89	3	Standalone
South 24 Parganas	111	Maheshtala Municipality	1993	A	448317	35	47.30	24	Cluster
South 24 Parganas	112	Budge Budge Municipality	1900	D	76837	20	9.06	5	
South 24 Parganas	113	Pujali Municipality	1996	D	37047	15	8.32	3	
Uttar Dinajpur	114	Raiganj Municipality	1952	B	183612	25	10.76	10	Cluster
Uttar Dinajpur	115	Kaliaganj Municipality	1987	D	53530	17	11.67	4	
Uttar Dinajpur	116	Islampore Municipality	1988	D	54340	17	11.40	4	Standalone
Uttar Dinajpur	117	Dalkhola Municipality	2003	D	36930	16	15.95	3	Standalone

District	Sl. No.	Name of Urban Local Body	Year of Establishment	Category	Population (2011 Census)	No. of Ward	Area (in Sq. KM)	Minimum Land Requirement for Processing & Dumping (in Area)	Cluster/ Standalone Mode Project
West Midnapore	118	Midnapore Municipality	1865	C	169264	25	18.36	9	Standalone
West Midnapore	119	Kharagpur Municipality	1954	B	207604	35	103.35	11	Standalone
West Midnapore	120	Ghatal Municipality	1869	D	54591	17	10.40	4	Cluster
West Midnapore	121	Chandrakona Municipality	1869	E	23629	12	16.58	2	
West Midnapore	122	Ramjibanpur Municipality	1876	E	19611	11	15.83	2	
West Midnapore	123	Khirpai Municipality	1876	E	16384	10	11.65	2	
West Midnapore	124	Kharar Municipality	1888	E	12118	10	10.26	2	
West Midnapore	125	Jhargram Municipality	1982	D	61712	18	21.40	4	Standalone
					20596409	**2913**			

Note: Subject to the suitability of Land clubbing nature of ULBs for Cluster PWM Projects may be changed.

Generation: Proposed Action Plan

35. While it may or may not be possible to control public behaviour to an extent that it would lead to changes in consumption habits, certain social and cultural phenomena may themselves lead to overall reduction of plastic waste material from certain sources, such as:

- Promotion of reusable bags for carrying goods, reducing the amount of polyethylene bags.
- Promotion of recycled paper bags as an alternative to polyethylene bags. At present, many stores charge a premium on polyethylene bags; under the proposed arrangement, such stores will now offer only recycled paper, reusable HDPE or cloth bags on a premium basis.
- Promotion of at least one marketplace in each municipality which observes a no-plastic zone.
- Offset savings in processing costs for plastic waste in the form of other incentives.

36. While this would not per se reduce the incidence of plastic waste from municipal areas, efforts can be made to change the plastic waste composition in a manner such that (i) plastic waste can be reclaimed, and (ii) it is possible to segregate plastic waste at source. Some of the measures to be followed are as follows:

- Introduction of local collection/deposition bins for plastic waste at markets.

- Street vendors plastic items disposable can be safely and separately stored in common bins.
- Prominent display and announcements to guide users to use the appropriate bins for disposal of plastic waste items.

37. Research shows that public at large participates willingly if the overall purpose of plastic waste management is explained to them. The above processes must be supplemented by a series of ICT materials, which may be produced locally or at a State level. These materials may be used to convey the following messages:

- "There is nothing called waste. Everything is reusable. Help us re-use everything."
- "A small item that you throw today becomes a larger problem for all of us tomorrow."

38. Such materials could also be used as supplementary learning material for children studying at schools, particularly municipal schools. Supplementary channels and modes of dissemination may include posters (including roadside poster painting), radio jingles, strip advertising on major advertisement sites, shorts prior to exhibition of cinematic or theatrical performances, ticker advertisements on local cable television etc.

39. The Expertise and Services of State Government's in-house Departments like I&CA Department, IT Department etc./agency will be utilized for advertising and visual publicity to develop semi-customised software (costs to be shared between State Government and municipality, plus any sponsor).

Collection: Proposed Action Plan

40. Collection will be carried out from specific premises in modified trolleys/push-carts, with two or three chambers - one for biodegradable waste, the other for non-biodegradeable waste, and (preferably) a third for non-standard waste such as electronic waste or such other streams that cannot be mixed up with either of the two. While it will be desirable for citizens to keep two bins for storage of waste within premises, considerable behavioural change communication will be required for this.

41. For larger complexes with multiple tenements, the Association of Apartment Owners (as per the provisions of the West Bengal Apartment Ownership Act, 1972), will be responsible for primary collection of the plastic waste, and deposition of the same at a designated point of the site. Building bye-laws for such complexes will be amended to include such a facility with separate bins for biodegradable, non-biodegradable and non-standard waste.

42. Municipal bodies may be encouraged to provide two bins to poorer households, while manufacturers may be encouraged to produce two or three chamber bins for household use.

43. Planning standards and development control rules would be amended to include one pair of bins (one for biodegradable, the other for non-biodegradable waste, each with capacity of 1 cubic meter) for every 50 houses, as part of the standard street section. These community bins would be emptied at least once or even twice every day, depending on the location and usage. As a general principle, these could be affixed to bus shelters, decorative plantations and landscaping to make these look less obtrusive or offensive.

44. Secondary collection would be created, where possible, for 500 to 1000 households. These would be in the form of storage cells, each containing 8 tipping bins, which can be picked up and tipped directly into a compactor device. Four of these would be used to tip garbage from community bins containing biodegradable or compostable waste, while the rest can be used for non-biodegradable and inert waste. Door to door waste collectors would also tip their collected waste into these bins.

45. While existing municipal staff will not be removed till retirement, contractual staff will be phased out in favour of a new arrangement. As per this, self-help groups active in a ward or a group of wards may federate into a cooperative society, which may enter into a hybrid contract with the municipality. The Municipality/Society/Self Help Group, whoever is managing the waste management shall sell out the recyclable Plastic Waste Materials on the spot/Secondary Transfer Station. For this Municipality will enlist some individual vendors/contractors who purchase these recyclable materials. The Individual Household or Para Committee may sell those to them directly on the spot. In transfer stations, Municipality or its agency will sell it. In such case priority should be given to the Rag-pickers and municipality should take an initiative to make them organized and will provide them all sorts of livelihood and social security support available in the Government Sector.

Transportation: Proposed Action Plan

46. The non-recyclable plastic items to be transported to the landfill site through SWM vehicles.

Capacity Building and Technology Support for Recycling: Proposed Action Plan

47. Capacity building and technology support issues are important in ensuring that the appropriate plastic waste recycling solutions are used in industrial, manufacturing and market activities, and technologies used have a minimum impact on the environment, producing the least amount of plastic wastes possible. This will also include building of human resources, policy and decision-making capabilities, and other inputs. These issues are also primarily the responsibility of Urban Local Bodies in association with business associations, business intermediary organizations, and professional engineering and research institutes. The component activities include:

- Undertaking of a Technology Needs Assessment.
- Development of a data bank of plastic waste recycling technologies and contacts of technology suppliers.

- Learning about collection, transportation, treatment and disposal of plastic wastes.
- Training of youth groups in techno managerial skills and technology upgrading.
- Setting up of a plastic waste recycling technology service centre.
- Organization of study tours to plastic waste recycling plants of excellence.
- Setting up demonstration projects that will show the economic and environmental efficacy of plastic waste recycling.
- Publishing a waste minimization, reuse, and recycling guide for plastic waste generators.
- Setting up and distributing calendars and leaflets containing appropriate messages to households.
- Development of an inventory of health and safety concerns of plastic waste management.
- Develop appropriate technologies for collection, sorting, transportation, recycling and selling of plastic wastes.
- Development of appropriate posters for prominent locations.
- Strengthening the techno-managerial and infrastructural capacity of the ULBs.
- Establishment of Plastic waste recycling network based on a Sound Material Cycle Society.

Setting up of Plastic Waste Recycling Demonstrations

48. Demonstration projects will be used by this strategy for purposes of demonstrating the profitability of plastic waste recycling in the cities. The feedback obtained during this piloting phase will be used to improve the effectiveness of the scheme during the up scaling phase that will target the remaining cities. The activities for this component are:

- Secure adequate land for the proposed plastic waste recycling activities.
- Test the ability of the proposed incentive scheme in attracting informal waste recyclers to collect plastic waste from the environment for recycling.
- Mobilization of city residents to form active neighbourhood associations and youth groups.
- Urban local bodies increase their involvement in neighbourhood associations.
- Professional groups and associations, research institutes, and universities to strengthen their links with grass root environmental issues at neighbourhood level.

- To build capacity and commitment through plastic waste recycling knowledge management.
- To create lessons that will make informed input into the development of an enabling policy framework for furthering the 3R concept including economic and market based instruments.
- To facilitate and provide accurate and timely access to information by all stakeholders.
- Document best practices and techniques for replication.
- Design and development of indigenous technologies for plastic waste recycling.
- Document the challenges of plastic waste recycling in West Bengal.

Management and Responsibility of Stakeholders : Proposed Action Plan as per Plastic Waste Management Rules, 2016:

49. Prescribed Authority:

- The State Pollution Control Board shall be the authority for enforcement of the provisions of this Strategy and the Plastic Waste Management Rules, 2016 relating to registration, manufacture of plastic products and multilayered packaging, processing and disposal of plastic wastes.
- The Secretary, Urban Development & Municipal Affairs Department of the State shall be the authority for enforcement of the provisions of this Strategy and PWM Rules 2016 relating to waste management by waste generator, use of plastic carry bags, plastic sheets or like, covers made of plastic sheets and multilayered packaging.
- The abovementioned authorities shall take the assistance of the District Magistrate within the territorial limits of the jurisdiction of the concerned district in the enforcement of the provisions of this strategy and PWM Rules.

50. Responsibility of Urban Local Body:

- Every local body shall be responsible for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its own or by engaging agencies or producers.
- The local body shall be responsible for setting up, operationalisation and co-ordination of the waste management system and for performing the associated functions, namely:

  (a) Ensuring segregation, collection, storage, transportation, processing and disposal of plastic waste;

(b) Ensuring that no damage is caused to the environment during this process;

(c) Ensuring channelization of recyclable plastic waste fraction to recyclers;

(d) Ensuring processing and disposal on non-recyclable fraction of plastic waste in accordance with the guidelines issued by the Pollution Control Board;

(e) Creating awareness among all stakeholders about their responsibilities;

(f) Engaging civil societies or groups working with waste pickers; and

(g) Ensuring that open burning of plastic waste does not take place.

- The local body for setting up of system for plastic waste management shall seek assistance of producers and such system shall be set up within one year from the date of final publication of this Strategy.

51. The plastic waste management by the urban local bodies in their respective jurisdiction shall be as under:

- Plastic waste, which can be recycled, shall be channelized to registered plastic waste recycler and recycling of plastic shall conform to the Indian Standard: IS 14534:1998 titled as Guidelines for Recycling of Plastics, as amended from time to time.
- Urban local bodies shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Road Congress guidelines or energy recovery or waste to oil etc. The standards and pollution control norms specified by the prescribed authority for these technologies shall be complied with.
- Thermoset plastic waste shall be processed and disposed off as per the guidelines issued from time to time by the Pollution Control Board.
- The inert from recycling or processing facilities of plastic waste shall be disposed of in compliance with the Solid Waste Management Rules, 2016 or as amended from time to time.

52. Responsibility of Waste Generator:

- The Waste Generator shall :
  - Take steps to minimize generation of plastic waste and segregate plastic waste at source in accordance with the Solid Waste Management Rules, 20 or as amended from time to time.
  - Not litter the plastic waste and ensure segregated storage of waste at source and handover segregated waste to urban local body or agencies appointed by them or registered waste pickers, registered recyclers or waste collection agencies

- All institutional generators of plastic waste, shall segregate and store the waste generated by them in accordance with the Municipal Solid Waste Management Rules, 2016 or amendment from time to time and handover segregated wastes to authorized waste processing or disposal facilities or deposition centers either on its own or through the authorized waste collection agency.
- All waste generators shall pay such user fee or charge as may be decided by the local bodies for plastic waste management such as waste collection or operation of the facility thereof, etc.
- Every person responsible for organising an event in open space, which involves service of food stuff in plastic or multilayered packaging shall segregate and manage the waste generated during such events in accordance with the Municipal Solid Waste Management Rules, 2016 or amendment from time to time.
- The Waste Generator may be charged Polluter pay by the Urban Local Body if it creates environmental and health hazards.

53. Conditions:

- The manufacture, importer stocking, distribution, sale and use of carry bags, plastic sheets or like, or cover made of plastic sheet and multilayered packaging, shall be subject to the following conditions, namely:

  (a) Carry bags and plastic packaging shall either be in natural shade which is without any added pigments or made using only those pigments and colourants which are in conformity with Indian Standard : IS 9833:1981 titled as "List of pigments and colourants for use in plastics in contact with foodstuffs, pharmaceuticals and drinking water", as amended from time to time;

  (b) Carry bags made of recycled plastic or products made of recycled plastic shall not be used for storing, carrying, dispensing or packaging ready to eat or drink food stuff;

  (c) Carry bag made of virgin or recycled plastic, shall not be less than fifty (50) microns in thickness;

  (d) Plastic sheet or like, which is not an integral part of multilayered packaging and cover made of plastic sheet used for packaging, wrapping the commodity shall not be less than fifty (50) microns in thickness except where the thickness of such plastic sheets impair the functionality of the product;

  (e) The manufacturer shall not sell or provide or arrange plastic to be used as raw material to a producer, not having valid registration from the State Pollution Control Board;

(f) Sachets using plastic material shall not be used for storing, packing or selling gutkha, tobacco and pan masala;

(g) Recycling of plastic waste shall conform to the Indian Standard: IS 14534:1998 titled as Guidelines for Recycling of Plastics, as amended from time to time;

(h) The provision of thickness shall not be applicable to carry bags made up of compostable plastic. Carry bags made from compostable plastics shall conform to the Indian Standard: IS 17088:2008 titled as Specifications for Compostable Plastics, as amended from time to time. The manufacturers or seller of compostable plastic carry bags shall obtain a certificate from the Central Pollution Control Board before marketing or selling; and

(i) Plastic material, in any form including Vinyl Acetate - Maleic Acid - Vinyl Chloride Copolymer shall not be used in any package for packaging gutkha, pan masala and tobacco in all forms.

54. Protocols for Compostable Plastic Materials:

Determination of the degree of degradability and degree of disintegration of plastic material shall be as per the protocols of the Indian Standards as per Schedule below:

1	IS/ISO 14851:1999 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium-Method by measuring the oxygen demand in a closed Respirometer
2	IS/ISO 14852:1999 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium-Method by analysis of evolved carbon dioxide
3	IS/ISO 14853:2005 Plastics- Determination of the ultimate anaerobic biodegradation of plastic materials in an aqueous system-Method by measurement of biogas production
4	IS/ISO 14855-1:2005 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions-Method by analysis of evolved carbon dioxide (Part-1 General method)
5	IS/ISO 14855-2:2007 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions-Method by analysis of evolved carbon dioxide (Part-2: Gravimetric measurement of carbon dioxide evolved in a laboratory- scale test)
6	IS/ISO 15985:2004 Plastics- Determination of the ultimate anaerobic biodegradation and disintegration under high-solids anaerobic digestion conditions- Methods by analysis of released biogas
7	IS/ISO 16929:2002 Plastics- Determination of degree of disintegration of plastic materials under defined composting conditions in a pilot - scale test
8	IS/ISO 17556:2003 Plastics- Determination of ultimate aerobic biodegradability in soil by measuring the oxygen demand in a Respirometer or the amount of carbon dioxide evolved
9	IS/ISO 20200:2004 Plastics- Determination of degree of disintegration of plastic materials under simulated composting conditions in a laboratory - scale test

55. Responsibility of Producers, Importers and Brand Owners:

- The producers, within a period of six months from the date of publication of these rules, shall work out modalities for waste collection system based on Extended Producers Responsibility and involving Urban Development & Municipal Affairs Department, either individually or collectively, through their own distribution channel or through the local body concerned.
- Primary responsibility for collection of used multi-layered plastic sachet or pouches or packaging is of Producers, Importers and Brand Owners who introduce the products in the market. They need to establish a system for collecting back the plastic waste generated due to their products. This plan of collection to be submitted to the State Pollution Control Board while applying for Consent to Establish or Operate or Renewal. The Brand Owners whose consent has been renewed before the notification of these rules shall submit such plan within one year from the date of notification of this strategy and implement within two years thereafter.
- Manufacture and use of non- recyclable multilayered plastic if any should be phased out in Two years time.
- The producer, within a period of three months from the date of final publication of this strategy shall apply to the Pollution Control Board for grant of registration.
- No producer shall on and after the expiry of a period of Six Months from the date of final publication of this strategy manufacture or use any plastic or multilayered packaging for packaging of commodities without registration from the State Pollution Control Board.
- Every producer shall maintain a record of details of the person engaged in supply of plastic used as raw material to manufacture carry bags or plastic sheet or like or cover made of plastic sheet or multilayered packaging.

56. Registration of Producer, Recyclers and Manufacturer:

- No person shall manufacture carry bags or recycle plastic bags or multilayered packaging unless the person has obtained a registration from the State Pollution Control Board, prior to the commencement of production.
- Every producer shall, for the purpose of registration or for renewal of registration, make an application to the State Pollution Control Board in Form I of Plastics Waste Management Rules 2016.
- Every person recycling or processing waste or proposing to recycle or process plastic waste shall make an application to the State Pollution Control Board for grant of registration or renewal of registration for the recycling unit, in Form II of Plastics Waste Management Rules 2016.

- Every manufacturer engaged in manufacture of plastic to be used as raw material by the producer shall make an application to the State Pollution Control Board for the grant of registration or for the renewal of registration, in Form III of Plastics Waste Management Rules 2016.
- The State Pollution Control Board shall not issue or renew registration to plastic waste recycling or processing units unless the unit possesses a valid consent under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) along with a certificate of registration issued by the District Industries Centre or any other Government agency authorised in this regard.
- The State Pollution Control Board shall not renew registration of producer unless the producer possesses an action plan endorsed by the Secretary, Urban Development & Municipal Affairs Department for setting of plastic waste management system. The modalities for effective cooperation between Urban Development & Municipal Affairs Department and West Bengal Pollution Control Board will be worked out by the two Departments after publication of this policy.
- On receipt of the application complete in all respects for the registration for recycling or processing of plastic waste in Form-II, the State Pollution Control Board may, after such inquiry as it considers necessary and on being satisfied that the applicant possesses appropriate facilities, technical capabilities and equipment to handle plastic waste safely, may grant registration to the applicant on fulfilment of the conditions as may be laid down in terms of registration.
- State Pollution Control Board shall take a decision on the grant of registration within ninety days of receipt of an application which is complete in all respects.
- The registration granted under this strategy and PWM rules 2016 shall initially be valid for a period of one year, unless revoked, suspended or cancelled and shall subsequently be granted for three years.
- State Pollution Control Board shall not revoke, suspend or cancel registration without providing the opportunity of a hearing to the producer or person engaged in recycling or processing of plastic wastes.
- Every application for renewal of registration shall be made at least one hundred twenty days before the expiry of the validity of the registration certificate.

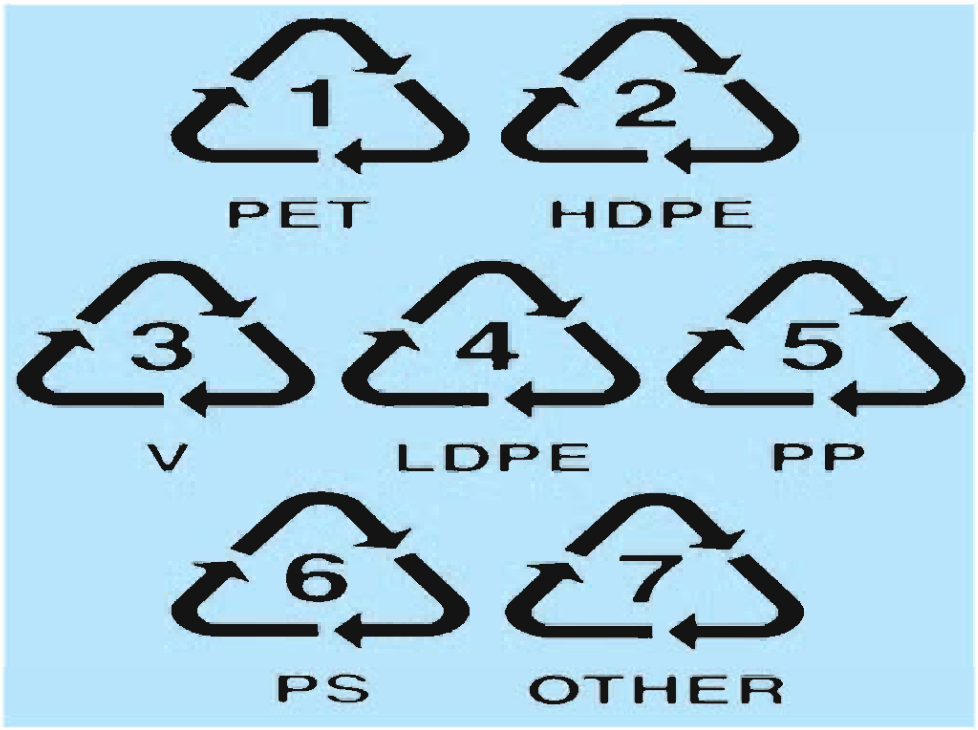
57. Responsibility of Retailers and Street Vendors:

- Retailers or street vendors shall not sell or provide commodities to consumer in carry bags or plastic sheet or multilayered packaging, which are not manufactured and labelled or marked, as per prescribed under this strategy and PWM rules 2016.

- Every retailers or street vendors selling or providing commodities in plastic carry bags or multilayered packaging or plastic sheets or like or covers made of plastic sheets which are not manufactured or labelled or marked in accordance with these rules shall be liable to pay such fines as specified in the Board of Council's Resolution of the local bodies.

58. Marking or Labelling:

- Each plastic carry bag and multilayered packaging shall have the following information printed in English namely -
  - name, registration number of the manufacturer and thickness in case of carry bag
  - name and registration number of the manufacturer in case of multilayered packaging; and
  - name and certificate number in case of carry bags made from compostable plastic
- Each recycled carry bag shall bear a label or a mark "recycled" as shown below and shall conform to the Indian Standard: IS 14534: 1998 titled as "Guidelines for Recycling of Plastics", as amended from time to time;



NOTE:

PET-Polyethylene terephthalate, HDPE-High density polyethylene, V-Vinyl (PVC), LDPE- Low density polyethylene, PP-Polypropylene, PS-Polystyrene and Other means all other resins and multi-materials like ABS (Acrylonitrile butadiene styrene), PPO (Polyphenylene oxide), PC (Polycarbonate), PBT (Polybutylene terephalate) etc.

Each carry bag made from compostable plastics shall bear a label "compostable" and shall conform to the Indian Standard : IS or ISO 17088:2008 titled as Specifications for "Compostable Plastics".

59. Explicit Pricing of Carry Bags:

- The shopkeepers and street vendors willing to provide plastic carry bags for dispensing any commodity shall register with local body. The local body shall, within a period of six months from the date of final publication of this strategy, by notification or an order under their appropriate state statute or byelaws shall make provisions for such registration on payment of plastic waste management fee such as rupees forty eight thousand @ rupees four thousand per month. The concerned local body may prescribe higher plastic waste management fee, depending upon the sale capacity. The registered shop keepers shall display at prominent place that plastic carry bags are given on payment.

- Only the registered shopkeepers or street vendors shall be eligible to provide plastic carry bags for dispensing the commodities.

- The local body shall utilize the amount paid by the customers for the carry bags exclusively for the sustainability of the waste management system within their jurisdictions.

60. Monitoring and Reporting:

- State Level Monitoring Committee: State Government shall constitute for the purpose of effective monitoring of implementation of this strategy and PWM rules 2016, a State Level Advisory Committee under the Chairmanship of the Secretary, Urban Development & Municipal Affairs Department consisting of the members as prescribed in the PWM Rules 2016. The State Level Advisory Body shall meet at least once in Six Month and may invite experts, if it considers necessary.

- Annual Reports :

  - Every person engaged in recycling or processing of plastic waste shall prepare and submit an annual report in Form - IV of PWM Rules 2016 to the local body concerned under intimation to the State Pollution Control Board by the 30th April, of every year.

  - Every local body shall prepare and submit an annual report in Form - V of PWM Rules 2016 to the Secretary, Urban Development & Municipal Affairs Department under intimation to the State Pollution Control Board by the 30th June, every year.

  - State Pollution Control Board shall prepare and submit an annual report in Form - VI of PWM Rules 2016 to the CPCB on the implementation of this Strategy and PWM Rules 2016 by the 31st July, of every year.

- The CPCB shall prepare a consolidated annual report on the use and management of plastic waste and forward it to the Central Government along with its recommendations before the 31st August of every year.

61. Time Frame for Implementation:

The Plastic waste management system for all of the municipalities has been started from 1st April, 2015 alongwith the Solid Waste Management. The target for establishing the system in all the 125 ULBs is March 2030.

NOTES

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