

Draft
**Assam Urban Solid Waste
Management Policy, 2018**

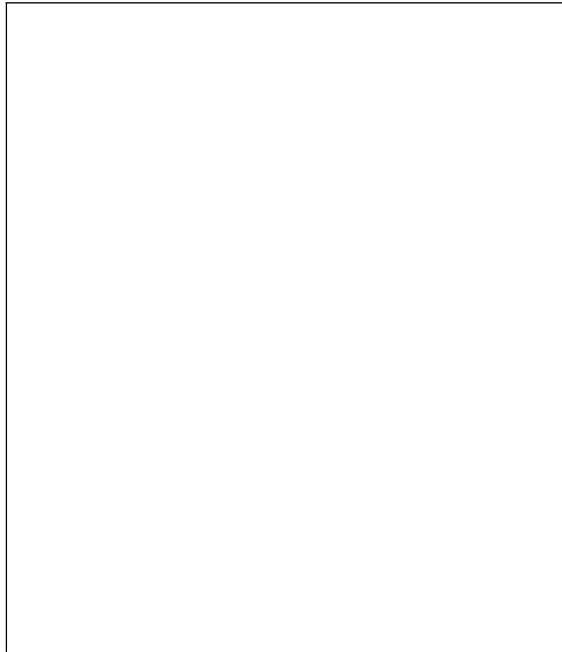


Table of Contents

1.	Introduction		Pages
	1.1	Swachh Bharat Mission	2
	1.2	Municipal Solid Waste Management Scenario in India	2
	1.3	Present Solid Waste Management Scenario in Assam	3
	1.4	Generation of Solid Waste in Urban Areas in Assam (As per 2011 census)	4
	1.5	Rule 11 & Rule 15 of the Solid Waste Management Rules,2016	6
2.		Approaches for Solid Waste Management	14
	2.1	Decentralized Vs. Centralized Approach	14
	2.2	Management of Multiple Solid Waste Streams	15
	2.3	Hierarchy of Waste Management- 5Rs (Reduce, Reuse ,Recycle,Recover and Remove)	15
3.		Vision Goals and Principles of Policy	16
	3.1	Vision	16
	3.2	Goal	16
	3.3	Principles	16
4.		Strategic Interventions:	18
	i.	Door to door Collection of Waste Generated	18
	ii.	Waste minimization and promotion of recycling of waste	18
	iii.	Engaging Stakeholders in Implementation	19
	iv.	Processing, Treatment and Disposal of Waste	20
	v.	Strengthening the Capacity of ULBs	21
	vi.	State Level Institutional Arrangements and Program Support	22

1. Introduction

Solid waste management is one of the most essential services for maintaining the quality of life in the urban areas and for ensuring better standards of health and sanitation. In India, this service falls short of the desired level as the systems adopted are outdated and inefficient. Institutional weakness, shortage of human and financial resources, improper choice of technology, inadequate coverage and lack of short and long term planning are responsible for the inadequacy of services.

For maximizing efficiency and effectiveness of this service, it is necessary to tackle this problem systematically by going into all aspects of the “Solid Waste Management” (SWM) and devise cost effective system which may ensure adequate level of SWM services to all class of citizens along with collection, transportation and disposal of waste in an environmentally acceptable manner in terms of the new Solid Waste Management, Rules 2016.

The need of the hour is to devise an efficient solid waste management system where in decision-makers and waste management planners can deal with the increase in complexity, and uncertainty. The Solid Waste Management Rules, 2016 issued by the Ministry of Environment and Forests, Government of India, under the Environment (Protection) Act, 1986, prescribe the manner in which the Authorities have to undertake collection, segregation, storage, transportation, processing and disposal of the municipal solid waste (the ‘MSW’) generated within their jurisdiction under their respective governing legislation.

In this context, there is need to revisit, develop, and implement appropriate strategy framework to guide the urban local bodies for effectively handling MSW in order to comply with the Solid Waste Management Rules, 2016 notified by the Ministry of Environment & Forest, Government of India and related regulations. The framework will guide and support the urban local bodies in the state for managing the solid waste scientifically and cost effectively.

1.1 Swachh Bharat Mission

Swachh Bharat Mission (SBM) was launched with a vision to ensure hygiene, waste management and sanitation across the nation. This mission will be implemented across all the cities of India and will be a tribute to Mahatma Gandhi on his 150th birth anniversary to be celebrated in the year 2019. The objectives of the mission are as follows:

- Elimination of open defecation
- Eradication of Manual Scavenging
- Modern and Scientific Municipal Solid Waste Management
- To effect behavioral change regarding health sanitation practices
- Generate awareness about sanitation and its linkage with public health
- Capacity augmentation for ULBs to create an enabling environment for private sector participation in Capex (capital expenditure) and Opex (operation and maintenance)

1.2 Municipal Solid Waste Management Scenario in India

Currently of the estimated 62 Million tonnes of MSW generated annually by 377 million people in the urban areas, more than 80% is disposed of indiscriminately at dump yards in an unhygienic manner by the municipal authorities leading to problems of health and environmental degradation. The untapped waste has a potential of generating 439 MW of power from 32,890 TPD of combustibles wastes including Refuse Derived Fuel (RDF), 1.3 Million cubic meter of biogas per day or 72 MW of electricity from biogas and 5.4 million metric tonnes of compost annually to support agriculture. The existing, policies, programmes and management structure do not adequately address the imminent challenge of managing this waste which is projected to be 165 million tonnes by 2031 and 436 million tonnes by 2050.

Further, if the current 62 million tonnes annual generation of MSW continues to be dumped without treatment, it will need 3, 40,000 cubic meter of landfill space everyday (1240 hectares per year). Considering the projected waste generation of 165 million tonnes by 2031, the requirement of land for setting up landfill for 20 years (considering 10 meter high waste pile) could be high as 66 thousand hectares of precious land, which our country cannot afford to waste. The Task Force (TF) has taken a serious view and considers it imperative to minimize the wastes going to landfill by at least 75% through processing of MSW using appropriate technologies.

India still has an enormous gap between the rich and poor masses. Over the years, there has been a continuous migration of people from rural and semi-urban areas to towns and cities. The number of class I cities has been increased from 212 to 300 during 1981-1991, while class II cities have increased from 270-345 during the same period. The increase in the population in class I cities is very high as compared to that in class II cities. The uncontrolled growth in urban areas has left many cities deficient in infrastructure services such as water supply, sewerage and municipal solid waste management.

In general all Indian cities face similar problems with their solid waste management. Amounts and contents of the generated solid waste may differ among different cities but problems related to collection, transport and disposal are the same. Generated solid waste is not fully collected and sizable quantity of waste remains uncollected at the streets, road sides, open places etc., which pollute the environment and cause health problems. Solid waste is collected and transported in an inefficient way using outdated equipment and techniques. Generally the collected municipal solid waste is disposed by uncontrolled land filing at the outskirts of the city. Personnel from sweeper to manager share a lack of motivation, working in an unpopular public sector with a dirty image.

Most urban areas in the country are plagued by acute problems related to solid waste. Due to lack of serious efforts by city/town authorities, solid waste and its management has become a serious problem and due to this the largest part of municipal expenditure is allocated to it. It is estimated that 20%-30% of the total budget of Urban Local Bodies (ULBs) is allocated to solid waste management. Despite this, there has been a progressive decline in the standards of services with respect to collection and disposal of municipal solid waste including bio-medical waste and industrial wastes, as well as measures for ensuring adequacy of environmental, sanitation and public hygiene. In many cities 20% to 40% of generated solid waste remains unattended, giving rise to insanitary conditions.

1.3 Present Solid Waste Management Scenario in Assam

Assam State Urban Part, with population of about 44 lakh is [India's](#) the 12th least urban populous state. Total geographical area of Assam state urban part is 1260 km² and it is the 12th smallest urban state by area in the country. Population density of the state is 3491 persons per km². There are 32 districts in the state, among them Kamrup Metropolitan Urban is the most populous district with urban population of about 10.4 lakh and Baksa Urban is the least populous district with urban population of about 12 thousand. Kamrup Metropolitan Urban is the biggest district in the state with an urban area of 262 km² and Baksa Urban is the smallest with 6 km².

The state is home to about 44 lakh people, among them about 22.6 lakh (51%) are male and about 21.4 lakh (49%) are female. Urban population density of Assam state urban part is 3491 persons per km². Population of the state has increased by 27.9% in last 10 years. In 2001 census total population here were about 34.4 lakh. Female population growth rate of the state is 33.5% which is 10.5% higher than male population growth rate of 23%. General caste population has increased by 25.3%; Schedule caste population has increased by 49%; Schedule Tribe population has increased by 42.2% and child population has increased by 14.5% in the state since last census.

The ULBs in the Assam state on an average generates about 1124 Tonnes of waste per day. The quantities of waste are growing at the rate of 3% annually with the increasing per capita generation and change in the living standards especially in the bigger cities. Government of Assam has been working in order to improve the solid waste management scenario of the state. Despite of the efforts, the success has been limited to only few cities of the state but a great deal is still to be achieved to comply with the SWM Rules, 2016 totality especially in relation to the treatment and disposal of waste. At present, there is 1 centralized waste to compost plant of 60 TPD each and 03 Nos of decentralized waste to compost plant in the state. The state is focusing on various other options of waste processing including waste to energy, RDF etc.

1.4 Generation of Solid Waste in Urban Areas in Assam (As per 2011 census)

Sl No.	Name of ULB	Population (2011)	Total Waste Generation (MT per day)
1	GMC	963429	396
2	North Guwahati T.C.	10379	4
3	Rangia M.B.	27584	11
4	Palasbari M. B.	4930	2
5	Nalbari M.B.	27608	11
6	Tihu T.C.	4588	2
7	Barpeta M.B.	42663	18
8	Barpeta Rd. M.B.	35489	15
9	Sarthebari T.C.	6909	3
10	Sorbhog T.C.	8105	3
11	Pathsala T.C.	18223	7
Sl No.	Name of ULB	Population (2011)	Total Waste Generation (MT per day)
12	Patacharkuchi TC	5230	2
13	Howli T.C.	18312	8
14	Mangaldai M.B.	25835	11

15	Kharupetia T.C	18558	8
16	Dhubri M.B.	61660	25
17	Gauripur T.C.	25109	10
18	Bilasipara T.C.	37412	15
19	Chapar T.C.	20320	8
20	Sapatgram T.C.	12166	5
21	Goalpara M.B.	53455	22
22	Lakhipur T.C.	15642	6
23	Bongaigaon M.B.	68934	28
24	Abhayapuri T.C.	15576	6
25	Morigaon M.B	29812	12
26	Nagaon M.B.	116355	48
27	Kampur T.C.	10352	4
28	Roha T.C	11167	5
29	Dhing M.B	19210	8
30	Lanka M.B.	36803	15
31	Hojai M.B.	36544	15
32	Doboka T.C.	13122	5
33	Lumding M.B.	31283	13
34	Tezpur M.B.	58016	24
35	Dhekiajuli M.B.	21375	9
36	Rangapara T.C.	18412	8
37	Gohpur T.C.	12214	5
38	B. N. Chariali M.B	18462	8
39	Golaghat M.B.	41991	17
40	Dergaon M.B.	20097	8
41	Bokakhat T.C.	10143	4
42	Sarupathar T.C.	9916	4
43	Borpathar T.C.	7712	3
44	Jorhat M.B.	71398	29
45	Mariani T.C.	20762	9
46	Titabor T.C	17562	7
47	Teok T.C	8806	4
48	Majuli TC	10643	4
49	Sivasagar M.B.	50595	21
50	Nazira M.B.	13299	5
51	Amguri M.B	8007	3
52	Demow TC	10228	4
53	Simaluguri T.C.	8285	3
54	Sonari M.B.	19792	8
55	Moran T.C.	5669	2
56	N. Lakhimpur M.B.	59793	25

Sl No.	Name of ULB	Population (2011)	Total Waste Generation (MT per day)
57	Bihpuria M.B	11997	5
58	Dhakuakhana T.C.	13508	6

59	Narayanpur T.C.	5998	2
60	Dibrugarh M.B.	138661	57
61	Naharkatia T.C.	18924	8
62	Chabua T.C.	8788	4
63	Namrup T.C.	15483	6
64	Tinsukia M.B.	98798	41
65	Makum T.C.	16875	7
66	Doom-Dooma T.C.	21469	9
67	Digboi T.C.	21791	9
68	Marghetia T.C.	26913	11
69	Chapakhowa TC	10302	4
70	Hailakandi M.B.	33671	14
71	Lala T.C.	11771	5
72	Silchar M.B.	172709	71
73	Lakhipur M.B	10943	4
74	Sonai TC	17677	7
75	Karimganj M.B.	57585	24
76	Badarpur T.C.	13235	5
77	Dhemaji T.C	12823	5
78	Silapathar T.C.	25640	11
79	Kokrajhar MB	34202	14
80	Gossaigaon TC	9139	4
81	Basugaon TC	13853	6
82	Bijni TC	13249	5
83	Kajalgaon TC	26487	11
84	Udalguri TC	15268	6
85	Tangla TC	17195	7
86	Haflong TC	42972	18
87	Umrangshu TC	9894	4
88	Mahur TC	2121	1
89	Maibong TC	6240	3
90	Diphu TC	63654	26
91	Dokmoka TC	4761	2
92	Donkamokam TC	9121	4
93	Hamren TC	8694	4
94	Howraghat TC	5430	2
95	Bokajan TC	19936	8
96	Bakalia TC	9625	4
97	Goreswar TC	5000	2

Total Waste Generated(MT per day)

1411 MT per day

1.5. Rule 11 & Rule 15 of the Solid Waste Management Rules, 2016

11. Duties of the Secretary-in-charge, Urban Development in the States and Union territories.-

(1) The Secretary, Urban Development Department in the State or Union territory through the Commissioner or Director of Municipal Administration or Director of local bodies shall-

- (a) Prepare a State Policy and Solid Waste Management Strategy for the State or the Union territory in consultation with stakeholders including representative of waste pickers, self help group and similar groups working in the field of waste management consistent with these rules, national policy on solid waste management and national urban sanitation policy of the ministry of urban development, in a period not later than one year from the date of notification of these rules;
- (b) While preparing State Policy and Strategy on solid waste management, lay emphasis on waste reduction, reuse, recycling, recovery and optimum utilization of various components of solid waste to ensure minimisation of waste going to the landfill and minimise impact of solid waste on human health and environment;
- (c) State Policies and Strategies should acknowledge the primary role played by the informal sector of waste pickers, waste collectors and recycling industry in reducing waste and provide broad guidelines regarding integration of waste picker or informal waste collectors in the waste management system.
- (d) Ensure implementation of provisions of these rules by all local authorities;
- (e) Direct the town planning department of the State to ensure that master plan of every city in the State or Union territory provisions for setting up of solid waste processing and disposal facilities except for the cities who are members of common waste processing facility or regional sanitary landfill for a group of cities; and
- (f) Ensure identification and allocation of suitable land to the local bodies within one year for setting up of processing and disposal facilities for solid wastes and incorporate them in the master plans (land use plan) of the State or as the case may be, cities

through metropolitan and district planning committees or town and country planning department;

- (g) Direct the town planning department of the State and local bodies to ensure that a separate space for segregation, storage, decentralized processing of solid waste is demarcated in the development plan for group housing or commercial, institutional or any other non-residential complex exceeding 200 dwelling or having a plot area exceeding 5,000 square meters;
- (h) Direct the developers of Special Economic Zone, Industrial Estate, Industrial Park to earmark at least five percent of the total area of the plot or minimum five plots or sheds for recovery and recycling facility.
- (i) Facilitate establishment of common regional sanitary land fill for a group of cities and towns falling within a distance of 50 km (or more) from the regional facility on a cost sharing basis and ensure professional management of such sanitary landfills;
- (j) Arrange for capacity building of local bodies in managing solid waste, segregation and transportation or processing of such waste at source;
- (k) Notify buffer zone for the solid waste processing and disposal facilities of more than five tons per day in consultation with the State Pollution Control Board; and
- (l) Start a scheme on registration of waste pickers and waste dealers.

15. Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations.- The local authorities and Panchayats shall,-

- (a) Prepare a solid waste management plan as per state policy and strategy on solid waste management within six months from the date of notification of state policy and strategy and submit a copy to respective departments of State Government or Union territory Administration or agency authorized by the State Government or Union territory Administration;
- (b) Arrange for door to door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other non residential premises. From multi-storage buildings, large commercial complexes, malls,

housing complexes, etc., this may be collected from the entry gate or any other designated location;

- (c) Establish a system to recognise organizations of waste pickers or informal waste collectors and promote and establish a system for integration of these authorized waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste;
- (d) Facilitate formation of Self Help Groups, provide identity cards and thereafter encourage integration in solid waste management including door to door collection of waste;
- (e) Frame bye-laws incorporating the provisions of these rules within one year from the date of notification of these rules and ensure timely implementation;
- (f) Prescribe from time to time user fee as deemed appropriate and collect the fee from the waste generators on its own or through authorized agency;
- (g) Direct waste generators not to litter i.e throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink cans, tetra packs, fruit peel, wrappers, etc., or burn or burry waste on streets, open public spaces, drains, waste bodies and to segregate the waste at source as prescribed under these rules and hand over the segregated waste to authorized the waste pickers or waste collectors authorized by the local body;
- (h) Setup material recovery facilities or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorized waste pickers and waste collectors to separate recyclables from the waste and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, textile from the source of generation or from material recovery facilities; Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be printed white and those for storage of other wastes shall be printed black;

- (i) Establish waste deposition centres for domestic hazardous waste and give direction for waste generators to deposit domestic hazardous wastes at this centre for its safe disposal. Such facility shall be established in a city or town in a manner that one centre is set up for the area of twenty square kilometers or part thereof and notify the timings of receiving domestic hazardous waste at such centres;
- (j) Ensure safe storage and transportation of the domestic hazardous waste to the hazardous waste disposal facility or as may be directed by the State Pollution Control Board or the Pollution Control Committee;
- (k) Direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and handover to the waste collectors or agency authorized by local body;
- (l) Provide training on solid waste management to waste-pickers and waste collectors;
- (m) Collect waste from vegetable, fruit, flower, meat, poultry and fish market on day to day basis and promote setting up of decentralized compost plant or bio-methanation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions;
- (n) Collect separately waste from sweeping of streets, lanes and by-lanes daily, or on alternate days or twice a week depending on the density of population, commercial activity and local situation;
- (o) Set up covered secondary storage facility for temporary storage of street sweepings and silt removed from surface drains in cases where direct collection of such waste into transport vehicles is not convenient. Waste so collected shall be collected and disposed of at regular intervals as decided by the local body;
- (p) Collect horticulture, parks and garden waste separately and process in the parks and gardens, as far as possible;
- (q) Transport segregated bio-degradable waste to the processing facilities like compost plant, bio-methanation plant or any such facility. Preference shall be given for on site processing of such waste;

- (r) Transport non-bio-degradable waste to the respective processing facility or material recovery facilities or secondary storage facility;
- (s) Transport construction and demolition waste as per the provisions of the Construction and Demolition Waste management Rules, 2016;
- (t) Involve communities in waste management and promotion of home composting, bio-gas generation, decentralized processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facility;
- (u) Phase out the use of chemical fertilizer in two years and use compost in all parks, gardens maintained by the local body and wherever possible in other places under its jurisdiction. Incentives may be provided to recycling initiatives by informal waste recycling sector.
- (v) Facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own or with private sector participation or through any agency for optimum utilization of various components of solid waste adopting suitable technology including the following technologies and adhering to the guidelines issued by the Ministry of Urban Development from time to time and standards prescribed by the Central Pollution Control Board. Preference shall be given to decentralized processing to minimize transportation cost and environmental impacts such as-
 - (a) Bio-methanation, microbial composting, vermi-composting, anaerobic digestion or any other appropriate processing for bio-stabilization of biodegradable wastes;
 - (b) Waste to energy processes including refused derived fuel for combustible fraction of waste or supply as feedstock to solid waste based power plants or cement kilns;

(w) Undertake on their own or through any other agency construction, operation and maintenance of sanitary landfill and associated infrastructure as per Schedule 1 for disposal of residual wastes in a manner prescribed under these rules;

(x) Make adequate provision of funds for capital investments as well as operation and maintenance of solid waste management services in the annual budget ensuring that funds for discretionary functions of the local body have been allocated only after meeting the requirement of necessary funds for solid waste management and other obligatory functions of the local body as per these rules;

(y) Make an application in Form-I for grant of authorization for setting up waste processing, treatment or disposal facility, if the volume of waste is exceeding five metric tones per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee, as the case may be;

(z) Submit application for renewal of authorization at least sixty days before the expiry of the validity of authorization;

(za) Prepare and submit annual report in Form IV on or before the 30th April of the succeeding year to the Commissioner or Director, Municipal Administration or Designated Officer;

(zb) The Annual Report shall then be sent to the Secretary -in-Charge of the State Urban Development Department or Village Panchayat or Rural Development Department and to the respective State Pollution Control Board or Pollution Control Committee by the 31st May of every year;

(zc) Educate workers including contract workers and supervisors for door to door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facility;

(zd) Ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand gloves, raincoats, appropriate foot wear and masks to all workers handling solid waste and the same are used by the workforce;

(ze) Ensure that provisions for setting up of centers for collection, segregation and storage of segregated wastes, are incorporated in building plan while granting approval of building plan of a group housing society or market complex; and

(zf) Frame bye-laws and prescribe criteria for levying of spot fine for persons who litters or fails to comply with the provisions of these rules and delegate powers to officers or local bodies to levy spot fines as per the bye laws framed; and

(zg) Create public awareness through information, education and communication campaign and educate the waste generators on the following; namely:-

- (i) Not to litter
- (ii) Minimise generation of waste;
- (iii) Reuse the waste to the extent possible;
- (iv) Practice segregation of waste into bio-degradable, non-biodegradable (recyclable and combustible), sanitary waste and domestic hazardous wastes at source;
- (v) Practice home composting, vermi-composting, bio-gas generation or community level composting;
- (vi) Wrap securely used sanitary waste as and when generated in the pouches provided by the brand owners or a suitable wrapping as prescribed by the local body and place the same in the bin meant for non- biodegradable waste
- (vii) Storage of segregated waste at source in different bins.
- (viii) Handover segregated waste to waste pickers, waste collectors, recyclers or waste collection agencies.
- (ix) Pay monthly user fee or charges to waste collectors or local bodies or any other person authorised by the local body for sustainability of solid waste management.
- (zh) Stop land filling or dumping of mixed waste soon after the timeline as specified in Rule 23 for setting up and operationalization of sanitary landfill is over.
- (zi) Allow only the non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive inert waste and pre-processing rejects and residues from waste processing

facilities to go to sanitary landfill and the sanitary landfill sites shall meet the specifications as given in Schedule–I, however, every effort shall be

made to recycle or reuse the rejects to achieve the desired objective of zero waste going to landfill;

(zj) Investigate and analyse all old open dumpsites and existing operational dumpsites for their potential of bio-mining and bio-remediation and wheresoever feasible, take necessary actions to bio-mine or bio-remediate the sites;

(zk) In absence of the potential of bio-mining and bio-remediation of dumpsite, it shall be scientifically capped as per landfill capping norms to prevent further damage to the environment.

2. Approaches for Solid Waste Management

2.1 Decentralized Vs. Centralized Approach

MSW Management project can be centralized or decentralized waste management system depending upon the profile of the locality in terms of composition of waste, availability of land for processing waste, market linkages, health risks and extent of in formalization of the waste management system.

Centralized PPP models are suitable for urban areas where significant economies of scale are possible and the composition of waste allows for greater extraction of value from the waste through technological solutions. Health hazards due to inefficient waste disposal and non-availability of land in close proximity of localities are other two important factors to be considered while choosing a centralized waste management system. Centralized waste management systems at the city level are being practiced in Bangalore, Hyderabad and Chennai, among others. Regional level MSW management facilities have come up in Tamil Nadu and Gujarat.

The decentralized method of managing a city's waste involves management of municipal waste by various small waste management centers within the locality. This allows PPPs at the unit level where micro-entrepreneurs can work with the ULBs to produce compost or other value added products from the waste and the ULBs either on its own or through a bigger private partner manages the collection of refuse and maintenance of landfill sites.

Decentralized process of collection and processing of wastes, avoids the carting of wastes too far off dumping sites. It reduces the expenditure of imported diesel, consequent traffic congestions, air pollution and road maintenance costs. It also reduces the contamination of ground water through the seepage of leachate. Cities like Namakkal and

Trivandrum, among others, have engaged SHGs and NGOs for (decentralized) management of waste.

2.2 Management of Multiple Solid Waste Streams

Municipal Solid Waste consists of Household Waste, Commercial Waste, Construction and Demolition Debris, Horticulture, and Waste from Streets. Municipal Solid Waste to be segregated into groups of bio-degradables, recyclables and hazardous waste. Bio-degradables like organic waste from kitchen, market and commercial places to be converted into rich organic manure or energy. Plastics, papers, glass; metals are to be recycled into new products. The construction & demolition waste to be used as landfill cover. "Segregation" shall remain to be a centric approach solution. This further creates an opportunity to order the sequence of collection and processing of waste – for instance – vegetable market waste which is high on organic content can be collected and processed on a daily basis and on a decentralized model with the facilities being set up at the markets itself or at a centralized processing unit. In case of recyclables or dry wastes, segregation by sorting them further into plastics, paper, metal, glass, and fuel (coco nut shells) and rubber. Bio-medical, hazardous and e-Waste to be managed by concerned authorities as per the existing legislations. The road sweepings, construction and demolition and the horticulture debris are to be collected separately and processed with. The non-recyclable waste components and inert would finally be disposed off into scientifically designed sanitary landfills.

2.3 Hierarchy of Waste Management- 5Rs (Reduce, Reuse, Recycle, Recover and Remove)

The framework proposes to have a multipronged approach that includes the 5Rs principle Reduce, Reuse, Recycle, Recover and Remove.

The first choice of measures in waste management, is avoidance and waste reduction. This step aims for goods to be designed in a manner that minimizes their waste components. Also, the reduction of the quantity and toxicity of waste generated during the production process is important.

Re-using an article removes it from the waste stream for use in a similar or different purpose without changing its form or properties. The recycling of waste, which involves separating articles from the waste stream and processing them as products or raw materials. This approach seeks to recycle a product when it reaches the end of its life span.

Recycling is a process of transforming materials into secondary resources for manufacturing new products. Promotion of waste recycling sector and providing that with an institutional support can and motivating all the stakeholders to segregate at source of generation.

3. Vision Goals and Principles of Policy

3.1 Vision:

Urban Cities of Assam become totally clean, sanitized, healthy, and liveable, ensuring and sustaining good public health and environmental outcomes for all citizens, in line with the Solid Waste Management Rules, 2016. To equip cities of Assam with efficient, environmentally friendly and sustainable waste management system with complete safe collection, transportation, treatment & disposal facilities and achieve the service Benchmarks.

3.2 Goal:

- 100% Door to Door collection and Source Segregation
- Efficient collection and safe transportation of wastes generated in the cities
- 100% treatment and scientific disposal facility and cost recovery
- Better awareness among the urban population and community mobilization participation
- Capacity Enhancement and Optimization of the human resources in SWM
- Strengthen the existing bye-laws for better regulation and user charges
- Encourage PPP in developing integrated treatment and treatment on Regional Approach.
- Finally achieve 'zero' waste cities in Assam.

3.3 Principles:

The policy will be based on the following principles:

- Sanitation will be treated as a basic service: The State Government shall create opportunities and provide necessary support through which, all citizens can have access to sanitation services as their basic entitlement.
- **Increased awareness of the collective goal of sanitized cities:** The causal linkages of sanitation with public and environmental health need to be made more explicit to citizens, communities and institutions. In addition to the provision of facilities, sustained improvements in the quality of life are possible when supplemented by hygiene and behavior change. The State will aim to generate demand for safe sanitation, especially among the un-served households. Citizens, communities, institutions, and cities as a whole will be encouraged to play an active role in both behavior change towards safe sanitation, and ensuring the adoption and use of safe technology to protect the environment.

- **Institutional roles, responsibilities and capacity development:** The policy will hinge on progressive articulation in policy and law followed-up by operations that are in line with the spirit of the 74th Constitutional Amendment Act, 1994. Devolution of functions, funds and functionaries will need to be progressively ensured to the ULB with adequate support for building planning, and management capacities. The quality of city sanitation planning will depend upon the vibrancy of sub-city representative institutions that draw on civil society to ensure active citizen engagement.
- Provision of enabling legislation for effective and efficient control and management of environmental sanitation of urban areas
- Minimizing multiple and manual handling of waste, and designing a system to ensure that solid waste does not touch the ground till treatment and final disposal;
- Promoting recovery of value from solid waste, developing treatment and final disposal facilities, which, while adhering to the statutory requirements, are sustainable, environmentally friendly and economical.
- ‘Polluter pays’ principle, which basically means that the producer of goods or items should be responsible for the cost of preventing or dealing with any pollution that the process cause, will be adopted and applied to the extent practicable.
- **Emphasis on operations and maintenance of sanitation infrastructure:** One of the key reasons for poor sanitation infrastructure as well as high capital expenditure on sanitation is the lack of operations and maintenance of existing sanitation infrastructure. ULBs will be responsible to ensure that existing sanitation infrastructure is maintained at adequate operational levels, either through official funds, or in partnership with the private sector.
- **Integrating broader environmental concerns in the provision of urban sanitation service delivery:** The environment (land, air, and water resources) must be considered in all development activities for sanitation provision and management. All planning and implementation will seek to ensure that adverse risks to public health and the environment are adequately minimized at all

stages in the sanitation chain –containment, collection, transportation or conveyance, treatment and re-use or disposal. Appropriate protection of the environment shall be applied, including prosecution under the law as required. The State Government will prioritize those cities that directly or indirectly affect rivers or river basins in the state due to discharge of untreated domestic wastewater for setting up pollution abatement systems.

- **Choosing technology and solutions appropriate to the context:** Under the policy, the choice of technology and solutions will be contingent upon the needs of that context.

4. Strategic Interventions:

The Proposed Strategy employs the six main elements:

- Door to Door Collection of Waste generated
- Waste minimization and promotion of recycling of waste
- Engaging stakeholders in implementation
- Processing, Treatment and Disposal of Waste
- Strengthening the capacities of the ULBs
- State Level Institutional arrangements & Program support

i. Door to door Collection of Waste Generated:

- Organizing door-to-door collection of waste to be the irreversible strategic approach to prevent residents from dumping their garbage out. The waste collected from door-to-door should be source segregated and collected separately in wet and dry waste from all sources. Appropriate bin system to be placed in the cities for segregated collection of waste.
- ULBs to encourage decentralized, community-managed primary collection system preferably managed by CBOs such as residents' associations, and welfare societies and Slum Level Federations that will be financially assisted and equipped for the purpose.
- Route mapping of door to door collection activities on City Wide Scale for improved coverage. Primary vehicles to be used to collect and transport waste from lanes and by- lanes to the main roads synchronizing with bulk transportation vehicles.
- The waste should be transported in a segregated form (wet and dry) by vehicles, at the primary collection and secondary/ bulk collection systems.
- Waste to be handled mechanically across the MSW value chain with minimum human contact with waste. Modernize fleet management services with covered transportation system to be adopted for transportation of the waste.
- Specific safety arrangements for people working in the area of collection and transportation of waste.

ii. Waste minimization and promotion of recycling of waste:

- Municipal Solid waste to be managed in accordance with the SWM Rules, 2016
- Promotion of biodegradable and recyclable substitutes for non-biodegradable materials like plastics and develop systems for their recycle, reuse, through promotion

of relevant technologies, and use of incentive based instrument, and developing and implementation of measures for reduce and remove of non-biodegradables through participatory approaches.

- Municipal Solid Waste to be segregated at source into groups of organic, inorganic, recyclables and hazardous waste. MSWM constituents like metal, plastics, glass and paper wastes are to be segregated and recycled. Each ULB to identify land to establish Dry Waste Sorting facilities (Material Recovery Facilities) wherever possible through social entrepreneurs, common interest groups of informal sector like rag pickers associations and cooperatives, CBOs like Women Self Help Groups(SHGs),Slum Level Federations(SLFs), Apartment Societies, Resident Welfare Associations (RWA) and NGOs to be involved.
- Encourage individual households/ apartment complexes for setting ‘source composting options’ like vermin composting/ composting at households level, portable new age small scale bio gas units for kitchen waste, and Small scale decentralized units for treating of organic waste fraction to the places like community level, large hotels, marriage halls, hostels, organized colonies
- ULBs to set up community-based composting yards on suitable road-side locations, institutional campuses and public parks for horticulture waste or leaf litter and encourage interested sweeper groups, apartment societies, resident welfare associations or CBOs to maintain them and use the proceeds from the sale of manure produced by them.
- Landfill sites to be used sparingly and only as a last resort in waste management hierarchy and shall not exceed 20% of the total municipal solid waste generated. Organic material and recyclables to be recovered fully prior to land filling of only inerts.

iii.Engaging Stakeholders in Implementation:

- Encourage sound contracting practice begins with setting operational goals, defining performance or service benchmark standards and specifications and producing a document that communicates these to private, semi-private, NGO, CBO or other economic actors who would like to participate as service providers.
- Awareness among stakeholders on SWM is important and continuous process. There need to intensify extension activities so as to continuously motivate and educate the stakeholders through effective IEC programs. ULBs to raise the awareness of city stakeholders through regular meetings with (households, establishments, industries, elected representatives municipal functionaries, media, etc) since improved sanitation

can ensure improved public health and environmental outcomes only if considerable changes in behavior and practice take place across the spectrum of the society.

- ULBs may formulate strategy to organize and strengthen CSOs (Civil Society Organizations-RWAs) in Non-Slum Areas for effective democratic and participatory functioning devising methodologies on the lines of CBOs like SHGs/SLF/TLF in the Slum Areas to ensure Community participation and ownership of Solid Waste Management on sustainable mode.
- ULBs to disseminate relevant information on waste quantities and characteristics; waste treatment, recovery and disposal; the costs of providing the waste management services; the sources of funding used to finance the services in public domain. Publication of reports on Annual report of the Service Levels.
- ULBs to constitute City Sanitation Task Force involving the stakeholders in Planning, Implementation and Monitoring of the City Sanitation Plans.

iv. Processing, Treatment and Disposal of Waste:

- ULBs to adopt a mix of multiple of options of centralized (city & regional level) and decentralized options for treatment and scientific disposal.
- Decentralized processing units at community level and city level in case of municipalities considering the quantities of waste generated, economics of clustering them into regional facilities.
- Development of State level MSWM project for operationalizing and scaling up the strategy covering either the PPP and Non PPP approaches or combination of both in all the ULBs in the state. The Collection, Transportation components to be implemented on Non PPP approach as ULBs have the required experience and expertise whereas PPP approach may be confined to for setting up of transfer stations, Processing and Landfill projects. In case of outgrowths, expanded areas, and agglomerations the Integrated SWM PPP based approach for the entire MSWM value chain operations may be adopted with highest level of transparency.
- Treatment of segregated waste to be done through appropriate technologies based on the feasibility, characteristics and quantities of waste. The technology options could be Composting, Biomethanation, Waste to Energy, RDF, Co-Processing of dry segregated rejects in cement/ power plants, which also includes utilization of construction and demolition debris and any other options as endorsed by the Central Pollution Control Board.
- Treatment and Scientific disposal is net cost based and recovery of O&M cost is technology dependent. Tipping / Processing Fee is the mechanism to compensate the in PPP projects developed for treatment and disposal.

v.Strengthening the Capacity of ULBs:

- State Government to guide ULBs to draft model byelaws and legislations to facilitate levying user charges, penalties for violators and explore revenue options like revenues from sale of waste and by products, CDMs, SWM Cess, Landfill tax or Processing fee etc., to achieve financial sustainability.
- Set out operational guidelines for the procurement of equipment and services based on the size of the town and population. Emphasis to mechanization for segregated collection, segregated transportation, processing, treatment and scientific disposal to reduce the manual and multiple handling of garbage.
- Provide incentives and market linkages for the byproducts like compost and other recyclables. Ex. Creation of market avenues through involvement of the Department of Agriculture, Horticulture, Forests and Fertilizer companies as well as other agencies in the farm sector to ensure effective marketing of the compost as well as its by-products.
- MSWM plan as part of the City Sanitation Plan and City Development Plan to cover the baseline data assessment, current practices, gaps in terms of manpower and infrastructure, existing facilities of treatment & disposal, current revenue and expenditure.
- Data on quantities of waste generated is inconsistent in the ULBs. All the Class- 1 cities in the state shall establish weigh bridge facilities for quantifying the solid waste generated in the city on daily basis prior to its treatment and disposal.
- Formulate and implement state and ULB level capacity building programs on SWM topics based on contract management & monitoring, environmental compliance and complaint redressal & monitoring systems including attitude and behavior change and creation of platforms for field based interactive learning and exposure visits.
- Formulate and implement state and ULB level for capacity building programs to the field staff, supervisory staff, contract employees, officers, civil society organizations, Community Based Organizations, on SWM topics based on the responsibilities including attitude and behavior change and creation of platforms for field based interactive learning and exposure visits.
- ULBs to provide adequate protection and health care facilities to its workers. The local body, as a policy, should provide adequate protective clothing and health check-up from time to time to the staff to ensure that their health is not adversely affected on account of their handling of solid waste. Free medical services and insurance to be made available to those whose health is affected on account of handling solid waste

- Strengthen the institutional capacities of the ULBs as per the size of the ULB. The ULBs to have dedicated technical staff within the SWM department (Environmental Engineer) who should be responsible for the SWM activities within the city.

vi.State Level Institutional Arrangements and Program Support:

- Setting up a Technical Cell with experts to extend support to the ULBs. The Technical cell would support in identifying sites for processing, treatment and landfill facilities (both individual and regional), PPP models, technologies, structuring and financing of projects including implementation and monitoring of the Mechanical Composting, Waste to Energy and Bio- Methanization, Co-Processing in cement/ power Projects.
- State Level Sanitation Committee set up to review the progress of MSW management in ULBs across the state on regular basis and provide necessary advice in up scaling.
- Encourage ULBs to perform better in all aspects of planning, coordination, and implementation, the state government to institute an annual awards scheme to the best performing towns to create a competitive spirit among cities/Towns in Assam.

Principal Secretary to the Govt. of Assam
Urban Development Department