

IMPHAL DREAMS



e-Newsletter

Published by Imphal Municipal Corporation
Imphal

MODEL ACTION PLAN OF MUNICIPAL SOLID WASTE MANAGEMENT FOR THE STATE OF MANIPUR

Background:

The increase in urbanization and spurt in consumerism has resulted in an increase in generation of municipal solid waste (MSW) which is a major environmental issue throughout the globe. Concerted efforts have been made by government bodies/ local bodies/ non- government organizations to address to this issue. The Municipal Councils/Urban Local Bodies are responsible for collection, transportation and disposal of MSW.

The rapid growth in production of MSW has not been matched by development of the organization capabilities of the ULBs leading to severe strain on them and deficiencies in the execution of this vital function. There is now a need to have an integrated approach involving all the stakeholders (government agencies, private parties, non-formal sector, waste producers, public, households, corporate and institutions etc) to tackle this huge piles of MSW before it suffocates our cities and towns.

The National Green Tribunal had given the direction in its order dated 3rd November, 2014 that the State should file the time bound action plan for the purpose of implementing the Municipal Solid Waste Management and Handling Rules, in Original Application No. 199 of 2014 (Almitra H. Patel & Anr. – Vs – Union of India & Ors.).

In pursuance of the direction of the National Green Tribunal and also in compliance of the statutory obligations under the Municipal Solid Waste Management and Handling Rules, 2000, it is required to have an Integrated Action Plan for Management of Municipal Solid Waste for the State of Manipur.

This Plan is expected to manage the MSW issue both for the short term and the long term. This will give a basic frame work upon which the entire MSW treatment efforts for the State in a comprehensive and integrated manner will be built upon, developed and evolved as per requirements. This plan will examine the present status, develop local strategies and evolve in a time bound manner to ensure that MSW issues are effectively managed in a scientific, cost effective and proactive manner in time. This plan will also formulate timetables along with targets so that the MSW growth projections are anticipated well in advance and proactively tackled.

Objectives, Challenges and Guiding Principles:

The objectives are:

1. 100% door to door collection of the MSW from households by 2015;
2. 100% scientific treatment and disposal of MSW, as per service level benchmarks by 2016;
3. Awareness and community participation in MSW management by 2015;
4. Involvement of private parties and informal sector in MSW management by 2017;

Challenges of Solid Waste Management:

1. ULBs lack resources, man power, machinery and expertise for proper MSW management;
2. Lack of awareness among the urban public for a need to handle MSW issues with objectivity and understanding;
3. Lack of policy framework at the State level for dealing with MSW;
4. Negligible participation of private sector in MSW management;
5. Need to motivate and synchronize the informal sector in the MSW management;

Guiding Principles of MSW Management:

To ensure proper municipal waste management by adhering to Municipal Solid Waste Management Rules and other relevant Legislations through the following steps:

1. Putting in place an operational framework with clearly defined roles of various stakeholders;
2. Strengthening institutional mechanism for planning, technical, financial and implementation support;
3. Encouragement of community participation in MSW management;
4. Promoting private sector and informal sector involvement in the effort;

Status:

Rapid Growth of Urban Population in the State:

As per Census 2011, the total population of Manipur is 2,570,390 .Of this, the rural population is 1,736,236 and the urban population is 834,154. In absolute numbers, out of the total increase of 403,602 added in the last decade, the contribution of rural is 145,416 and urban area is 258,186. The growth rate of population in Manipur in the last decade is 18.6 % (Rural 9.1 %; Urban 44.8%). The maximum decadal growth rate of rural population has been seen in Chandel District (23.2%) while the maximum urban growth rate is observed at Imphal East District (69.2%) during 2001 -2011.

The Population density is about 115 showing an increase of 18 points from 2001. Imphal West (998 per Sq. Km.) is the most densely inhabited district followed by Thoubal (821 per Sq. Km).

In percentage terms, the rural population constitutes 67.5 % and Urban population 32.5 % of the total population. However the growth rate of urban population in the state stands at 44.8% as against the rural growth rate of 9.1 %. The national urban growth rate figure stands at 31.16%.

As a result of the rapid growth of the urban population coupled with the changing lifestyles of the people, the Municipal Solid Waste generated daily has increased. If this Solid Waste issue is ignored for long, it will have serious ramifications on the health and hygiene of the public along with associated environmental risk. Therefore, there is an urgent requirement to have a systematic and scientific plan to tackle this issue.

There are 28 Urban Local Bodies (ULBs) in Manipur. Of these ULBs, Imphal Municipal Corporation with an urban population of 2.68 lakh as per 2011 census, is the largest ULB covering almost one third of the total urban population (6.3 lakh) of Manipur. Ten ULBs have population ranging from 10,000 to 46,000. The remaining 17 ULBs have population ranging from 600 to 10,000.

The Imphal Municipal area generates 130-150 MTD of MSW. Other ULBs generate below 5 MTD of MSW.

Management Strategy:

The State will focus on Integrated Solid Waste management system based on the waste management hierarchy. All ULBs will aim at the 3R approach (Reduce, Reuse and Recycle) which will ensure optimum management of Municipal Solid Waste from the households, commercial institutions, construction activities, medical facilities etc. and other waste generators. The prime focus of the ULBs will be for

minimization of waste production through active involvement of all the stakeholders in promoting use of reusable items in lieu of non-reusable items, recycling and composting at source where possible. This will reduce the cost involved in segregation and treatment, handling and disposal cost and also the environmental cost.

Once optimum minimization of waste generation is achieved ULBs will focus on segregation, collection and recycling of the waste wherever possible. The organic component of the waste will be processed to recover compost through suitable and feasible techniques like windrow composting, in-vessel composting, vermin-composting etc.

The non-composted and inert component of the waste remaining will be converted to energy through appropriate technologies of incineration, RDF etc. The final remaining inert residual waste will be safely disposed at sanitary landfills.

Cluster Approach:

There are severe constraints on the State and the ULBs to create and operate solid waste treatment plants and sanitary landfills for every ULB. Urban land is increasingly scarce. Also selection of a suitable site free from every encumbrance, without public objection and clear from every angle including environmental and airport authorities is very difficult in Manipur. The entire urban population of Manipur is compressed within a small valley of area 1000 sq. km. only. Further, there are financial constraints to operate solid waste plants for every ULB. The ULBs will also face severe shortage of manpower to operate these plants. Also the amount of solid waste generated is too small to merit establishment of solid waste treatment plant and sanitary landfills for every ULB.

In view of the above constraints, the Urban Development Department of Manipur has adopted the Cluster Approach to manage the solid waste. The entire 28 ULBs have been grouped into 4 Clusters and 2 stand-alone ULBs as per their proximity and population as indicated in the Table I:

No.	Name of ULBs	No. of Wards	No. of Households	Urban Population (2011 Census)
1	2	3	4	5
CLUSTER-A				
	Imphal MC	27	57764	268243
	Sekmai NP	9	1,111	5065
	Lamlai NP	9	924	4601
	Lilong (IW)	9	2,668	12427
	Lilong Thoubal NP	9	4430	24900
	Nambol MC	18	4678	22512
	Wangoi NP	9	1,836	9106
	Samurou NP	12	3,224	16582
	Thongkhong Laxmi NP	11	2,926	14878
	Mayang Imphal MC	13	4,501	24239
	Lamshang NP	9	1,783	8130
Total Population:			410683	
Stand alone -i	Jiribam MC	10	1,406	7343
Stand alone -ii	Moreh STC	9	3231	16847
CLUSTER-B				
	Thoubal MC	18	9454	45947
	Heirok NP	9	668	2974
	Yairipok NP	9	2027	9569
	Shikhong Sekmai NP	9	1578	7390
	Andro NP	12	1,669	8744
	Wangjing NP	9	1779	8055
Total Population:				82679
CLUSTER-C				
	Kakching MC	12	7144	32138
	Kakching Khunou NP	9	2278	11379
	Sugnu NP	9	1094	5132
Total Population:				48649
CLUSTER-D				
	Bishnupur MC	12	2501	12167

No.	Name of ULBs	No. of Wards	No. of Households	Urban Population (2011 Census)
1	2	3	4	5
	Ningthoukhong MC	14	2780	13078
	Oinam NP	9	1582	7161
	Moirang MC	12	3723	19893
	Kumbi NP	9	1,859	9546
	Kwakta NP	9	1430	8579
Total Population:				70424

Jiribam Municipal Council and Moreh Small Town Committee could not be considered under any Cluster as these two ULBs are located far away from other Urban areas.

The State will set up solid waste treatment plants along with sanitary landfills for Clusters having population more than 1 lakh. For other Clusters having population less than 1 lakh the State will prepare suitable landfill sites. At present Cluster – A having a combined population of 4.1 lakh is eligible for setting up of solid waste treatment plant along with sanitary landfills while other Clusters and Stand Alones are eligible for setting up of engineered landfill sites. It is the objective of the State to ensure time bound implementation of this Cluster Approach by 2015. The approved DPRs for the Projects along with their current status of implementation are enclosed at ANNEXURE.

Incentives:

The Government of Manipur will facilitate allotment of land at suitable site for setting up of Municipal Solid Waste Treatment Plants and sanitary land fields subject to availability, fulfillment of eligibility criteria as determined by the State Government from time to time.

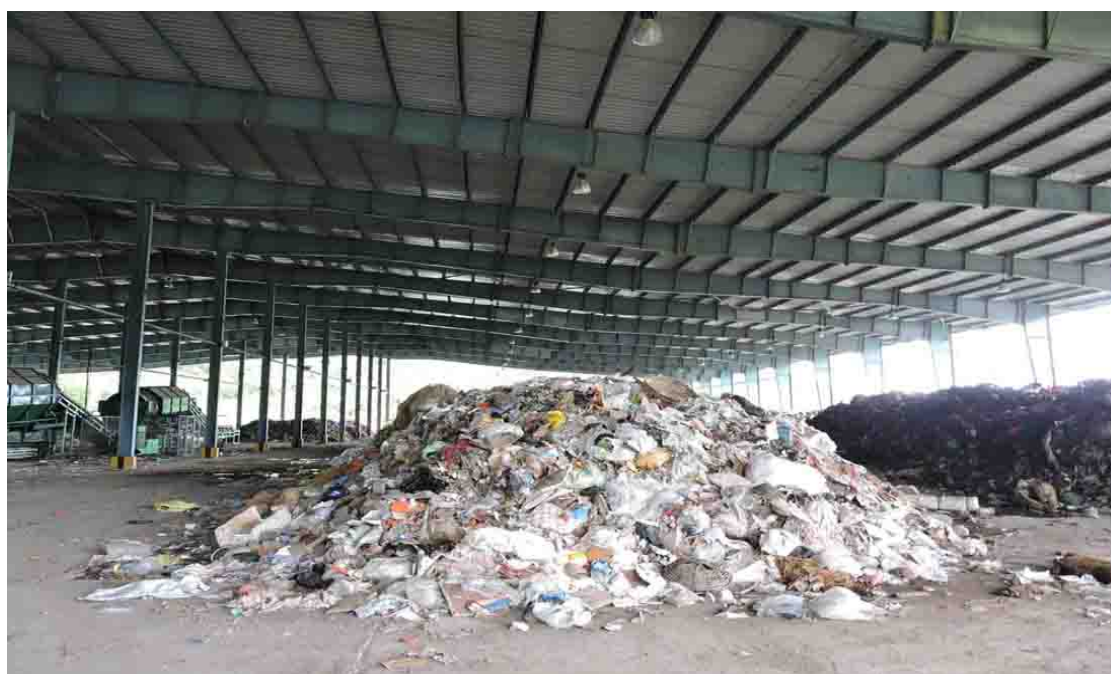
The State Government may consider performancebase subsidy to ULBs and participating private firms involved in management of Municipal Solid Waste. The State may also go for viability gap funding of those solid waste treatment plants which are economically not viable.

Capacity Development:

The State will undertake initiatives to ensure capacity development of the ULBs so that they are more capable of managing their vital function like management of

solid waste. These initiatives will be outcome oriented, role based and project based. These initiatives will range from

1. Community Capacity Development;
2. ULB specific capacity development like training of available manpower, requisition of extra manpower where required, setting up of a municipal cadre, provision of adequate tools and vehicles and machinery etc;
3. Fixation of goals and targets to be achieved by each ULBs alongwith suitable incentives and penalties in a time bound manner;
4. Setting up of a model Solid Waste Treatment Plant with energy generation in Manipur preferably through PPP Model;
5. Provision of adequate funds at the State level to ensure all the above initiatives are achieved in time;





Approach Steps for Management of Municipal Solid Waste in Manipur:

1. Waste Segregation, Collection and Transportation:

- i. Collection of wet and dry waste separately from door to door by adopting 2-bin system from residential, commercial and institutional area will be the prime priority for effective solid waste management. This will prevent public health hazards and also increase the aesthetic value of towns and cities.

- ii. The mode and frequency of collection will depend upon the size of the residential/ commercial/ institutional area. It will be fixed by the concerned ULBs taking into above consideration.
- iii. Waste so collected from the door step shall be transferred directly to small covered mechanized vehicles having separate compartments of wet and dry waste.
- iv. The waste so collected shall be transferred to final disposal site for processing and final disposal.
- v. A well synchronized plan of collection i.e. from door to door to mechanized vehicle to final processing plant will be managed by the ULBs and NGOs jointly through road mapping. This will avoid containers' overflow and waste littering of waste on the streets.
- vi. Community participation in the form of local NGOs, elected Ward Commissioners, local associations and other stakeholders shall be ensured through arrangement of events, competitions, rallies, discussions, meetings etc in the locality.
- vii. Informal sector participation will be encouraged in storage area/ disposal site for recovering recyclable material.
- viii. Waste management in the chain will be done mechanically thereby reducing manual labour as far as possible. Adequate safety precaution, periodic health checkup for workers involved in manual handling of MSW will be ensured through legislation and effective implementation and monitoring.
- ix. Private sector participation will be encouraged for service contract i.e. door to door collection and transportation of waste to the processing and disposal site. The private firm will be paid from the user charges collected from the individual household, commercial plots, institutional household. The user charges will be fixed by the ULBs on the principle of "Polluter pay", and as per the proportion of waste generated. Different charges may be levied by the ULBs for households, commercial/ institutional/ industrial waste generators, bulk waste generators such as hotels,

restaurants, industrial establishments etc. Subsidies in user charges may be given to the urban poor. The fees will be collected by the ULBs and paid to the private party on the basis of their performance and output.

- x. Monitoring on daily basis will be done by the ULB daily by collecting and analyzing data for any shortfall in the system so that timely correction may be done.

2. **Waste Minimization Strategy:**

Waste reduction at source, recycling and reuse is the most cost effective strategy. It results in reduction of the amount and/ or toxicity of the waste produced thereby reducing the cost associated with its handling and its environmental impact. This will be achieved through the following interventions:-

- i. Policy intervention at the State level to enforce Extended Producer Responsibility (EPR), wherein the producer is held responsible for the post-consumer stage of a product for its collection, reuse, recycling, storage and/ treatment. Promotion of eco-friendly products in packaging and product containers.
- ii. Encouragement of green procurement and take back programmes, buy back policy of reusable and recyclable packing material in an organized form against the existing traditional and unorganized form by introducing suitable deposit system in each Ward in consultation with ULB.
- iii. Promotion of concept of generating compost from household vegetable wastes at the household itself.
- iv. Source segregation of organic and inorganic waste and also domestic biomedical waste and other special waste at the point of generation to optimize waste processing and treatment methods.
- v. Exploration of Legislative and Executive means to ban/ regulate certain non-recyclable products like plastic carry bags.

- vi. State Government will authorize ULBs to frame rules and local bye-laws barring use or sale of certain types of products and packaging that cannot be reused, repaired, recycled or composted.
- vii. Promoting behavior change in the community through awareness campaigns involving all stakeholders and especially targeting school children, street vendors, NGOs, women groups and business communities to minimize waste generation.

3. Collection and Transportation

- i. ULBs will conduct house to house collection of MSW at pre-informed timings (preferably early morning) and use of ghanta garis/ special music/mike.
- ii. The biomedical waste, industrial waste, construction and demolition waste etc shall not be mixed with the municipal solid waste, and these special wastes will be separately collected and treated/ processed as per State/ Central norms.
- iii. Vehicles used for transportation of waste will be covered to prevent scattering waste and polluting the environment. Such vehicles shall be so designed that multiple handling of waste prior to final disposal is avoided.
- iv. ULBs will prepare a well synchronize primary and secondary transportation system along with primary and secondary collection centres where required with regular and well communicated operation timings to avoid overflow of waste containers, and littering of waste on the street.
- v. Waste collected from sweeping of the streets and drains shall be separated through all stages of collection, transport and treatment from other municipal solid waste. This waste will be disposed off directly in the identified landfills.
- vi. ULBs will plan for an effective waste collection route to ensure maximum utilization of available resource. In hilly areas, waste

collection should start at the highest point and proceed to lower levels.

- vii. The frequency of collection will be on a daily basis for at least wet waste collection. For dry waste an isolated shops and establishment, the frequency will be determined by the ULBs.
- viii. The timing of collection of domestic waste should be in the early morning. Waste for commercial areas may be collected between 10 AM and 2 PM. Vegetable and other market waste should be collected in non-peak hours i.e. either early morning and late in the afternoon or at night.
- ix. Municipal authority will make concerted efforts to integrate the informal sectors of rag pickers, Kabadi wallas etc into regular waste collection operation through private sector, NGOs, CDOs, SHGs and RWAs so that they are provided PPE (Personal Protected Equipment) during their work and also to ensure that they are not exploited and discriminated against. This will also ensure that they receive appropriate social benefit, medical healthcare and treatment.
- x. Adequate bins will be provided in places where secondary collection of waste is required as per assessment of the ULBs.
- xi. Use of Dumper Placers (Skip Trucks) will be promoted for transportation of large quantities of construction and demolition debris and inert waste.
- xii. Routing of secondary collection vehicles should be planned to ensure effective synchronization of primary collection, maximize operational efficiency and minimize environmental impacts of transportation. Transportation through environmentally sensitive areas should be avoided.
- xiii. ULBs will develop and use Management Information System (MIS) and Geographic Information System to have live information on waste generation and composition, staff position and

requirements, current utilization of vehicles, pay and recovery of user's fee, location and condition of waste storage depots etc.

- xiv. ULBs will design a well planned system for street sweeping with adequate staff and equipment (with proper protective equipments). The street sweeping in residential area may be carried out in two spells, 5 Hrs. in the morning and 3 to 4 Hrs. in the afternoon. The frequency of street cleaning will be designed by the ULB to suit the local conditions. The timing of cleaning of streets should not conflict with peak traffic conditions.
- xv. Necessary legal provisions will be introduced to provide for penal provision for littering of public places, streets, failure of service where contracts are awarded.

4. Processing, Treatment and Disposal of waste:

- i. Selection and adoption of MSW processing technologies requires due diligence study by the ULB. This will require even external expertise to find out the most valuable solution depending upon the prevailing condition of the respecting ULBs.
- ii. Waste treatment and disposal may be at central or specific location. Other like landfills and other waste management facilities may be located at different location depending upon the size of the waste and its products.
- iii. Processing units can also be decentralized at each municipal level considering the quantities of waste generated.
- iv. State level MSWM Committee may be framed to co-ordinate different projects and plants in the State.
- v. Treatment of segregated waste to be done by adopting appropriate technologies based on the feasibility, characteristics and quantities of waste. The technology options may be composting, Bio-methanation, waste to energy, RDF and any other option as endorsed by the Central Pollution Control Board (CPCB/ SPCB).

5. Institutional Mechanism to Implement MSWM:

- i. The ULBs/ Cluster of ULBs will have a separate SWM Department headed by an Environmental/ Civil/ Public Health Engineer. The exact size of this department will be proportionate to the requirement.
- ii. Training and updation of the capacities of the staff and personnel involved in solid waste management.
- iii. Provision of adequate and appropriate equipment to the agencies/ ULBs.
- iv. All ULBs/ Cluster of ULBs will be required to prepare comprehensive SWM Plan to tackle the issue both for the long term and short term.
- v. The State will endeavor to provide market linkage for the bi-products like compost and recyclables by creating Market Avenue through active involvement of allied departments like agriculture, horticulture, industries, private sector, informal sector etc to ensure the sustainability and profitability of the Solid Waste Management Project.
- vi. The State Government will issue model operational guidelines for procurement of equipments and services based on the size of town/ cluster of towns and their population.

6. State Level Committee

- i. There will be State level committee to monitor, supervise and develop the strategy for municipal solid waste management in the State.
- ii. The State will designate a "State MSW Management Agency" as the nodal agency for the purpose of identifying and enabling the development of regional MSW project. The agency will be headed by the Administrative Secretary/ Commissioner of Urban Development Department of the State.

- iii. The State will prepare service level benchmarks for solid waste management service providers.
- iv. For the purpose of identification of sites for setting up of processing and treatment facilities, sanitary landfills, preparation of PPP models for involving private parties, improvement of technologies and appropriate methods, examination of financing options, implementation and monitoring of the technical processes etc, there will be a State Technical Cell with experts drawn from the appropriate field.

(Courtesy: Directorate of MAHUD)