

**SIKKIM**



**GOVERNMENT**

**GAZETTE**

**EXTRAORDINARY  
PUBLISHED BY AUTHORITY**

**Gangtok**

**Monday 29<sup>th</sup> April, 2019**

**No. 184**

**GOVERNMENT OF SIKKIM  
URBAN DEVELOPMENT & HOUSING DEPARTMENT  
GANGTOK- 737101, SIKKIM**

**No: 4/UD&HD**

**Dated: 29.04.2019**

**NOTIFICATION**

**State Policy and Strategy on Solid Waste Management (Action Plan)**

This shall come in force w.e.f. the date of publication in the official Gazette, Government of Sikkim.

**Ganga D Pradhan  
Secretary  
Urban Development & Housing Department**

In pursuance of the provision of clause (a) of rule 15 of the Solid Waste Management rules, 2016, the Solid Waste Management Plan as per State Policy and Strategy on Solid Waste Management are hereby laid down as under, namely:-

**1. Objective:**

- (a) To ensure compliance with **Solid Waste Management Rules, 2016** notified in April 08, 2016
- (b) To bridge the gap that exists between the current solid wastes being generated, collected, transported, processed and scientifically disposed of by the year 2030.
- (c) To use a holistic integrated and cluster based approach to make the SWM sector self-sustainable and viable based on the **Principles of 5R's** i.e. Reduce, Recycle, Reprocess, Reuse and Recover.
- (d) To promote the principles of **Polluter to Pay** and enhance collection of userfee.
- (e) To address the current needs, constraints and capacity limitations so to achieve **Zero waste by the year 2030** goal.
- (f) To modernize and mechanize the operation and maintenance of Civic and Public Health Facilities in all the ULBs of the State to provide better and healthy living environment for the citizens of the State.
- (g) To develop the strategy that provides a 'road map' to completely transform State's SWM sector, transitioning it to an integrated, fully functioning and sustainable system which will serve the ULBs for coming decades.
- (h) To generate "**civic sense**" amongst the mass to uplift the city's sanitation and personal hygiene condition and raise the hopes for a sustainable common future through extensive IEC programs.
- (i) To preserve precious lands by creating regional scientific landfills.
- (j) To provide extensive job, research and development opportunities in MSWM sector.

**2. Background of Sikkim's topography and Geography: Profile**

Sikkim is a landlocked state in the north-eastern region of India and shares international borders with China, Nepal and Bhutan, and state boundary with West Bengal.

Owing to its location in the Himalayan Mountains region, the geography of Sikkim is diverse in the form of high mountain peaks and steep river valleys. Tucked between the Himalayan ranges, the state has mountainous terrain with elevation ranging from 280 meters to 8585 meters. The climate of Sikkim varies from subtropical in the south to tundra in the northern parts. The tundra region in northern Sikkim is covered by snow for four months consecutively every year. The temperature during these winter months drops down to below 0°C. The most of the populated lower regions of Sikkim experience a temperature climatic with temperatures ranging from 28 degree C in summer at times and dropping below 0°C in winters.

Sikkim has a very rugged topography due to which there are very less flat lands no flat area more than a few hundred square meters exists in continuity. This makes management of Municipal Solid Waste very challenging especially in terms of collection of waste from the households.

**3. Background of Existing Solid Waste Management and its Status**

Sikkim has seven Urban Local Bodies which has been constituted since 2010-11 under Sikkim Municipalities Act 2007. The management of municipal solid waste by the ULBs in their respective areas is in a nascent stage. Most of the ULBs till date do not have full-fledged capacity or infrastructure to manage the waste in their respective jurisdiction.

Presently Sikkim, due to rapid urbanization and changing lifestyle is generating about 31,000 tonnes of municipal solid waste every year.

Although the ULBs in Sikkim spend a sizeable portion of the municipal budget on cleanliness of towns, they are unable to provide effective services in the MSW management sector. The MSW generation estimates are normally based on the capacity of bins of the garbage collection utility vehicles.

The Urban Development & Housing Department (UD&HD) is the primary agency responsible for the town development and management matters, including the physical planning, growth management and the provision and management of core civic services. Growth trends are estimated to continue concentrating on the major towns, thus, leading to the aggravation of the imbalances in the already hard pressed civic facilities.

Unplanned urban expansion has strained the State resources. In State, as estimated 50 MT of solid waste is generated daily in the Gangtok Municipal Corporation itself. In certain areas the curb-side collection is prevalent. All ULBs are primarily responsible for collection, transportation and disposal of the solid waste, collection and transportation of the waste.

**(a) Numbers of Urban Bodies Constituted in the State of Sikkim**

A total of seven ULBs have been constituted in Sikkim in the towns of Gangtok, Rangpo, Singtam, Mangan, Gyalshing, Nayabazar-Jorethang and Namchi.

**(b) Current status of Municipal Solid Waste Management**

Currently, among the seven ULBs, 89 % source segregation of MSW have been achieved so far after rigorous training and IEC activities at cluster /ward wise in a phased manner. Separate bins are being provided to residents for source segregation by ULBs. The segregated wastes collected thereafter are being taken to the landfill where degradable discards are being composted while non-degradable items are being recycled through scrap dealers and remaining inert waste are disposed at landfill accordingly. Two ULBs i.e. Gangtok Municipal Corporation and Mangan Nagar Panchayat are composting their partial amount of bio-degradable waste within the ULBs itself. Also 100% door to door collection of waste has been achieved in all the seven ULBs.

In North District, under Mangan Nagar Panchayat, all the vegetable waste of the marketing center is being turned into compost through the Organic Waste Converter that has been installed by the ULB.

MSW from South and West Districts is being collected and sent to scientific landfill under construction at Sipchu, West Sikkim.

**(c) Quantity of Municipal Solid Waste generated daily from each town**

The quantification of waste generation for Gangtok city has been worked out as per the sampling methodology in accordance with the SWM, CPHEEO Manual (DPR on SWM for Gangtok under NERCCDIP, MoUD). Furthermore, the quantum of per capita waste generation for Class I, IV, V & VI towns as per Census 2011 has been taken as an average count of wastes generated from residential households, commercial establishments, markets, construction etc.

Estimation of per capita waste generation (household and other sources) of ULBs in Sikkim based on the 2011 Census data can be seen in the table below;

| Sl.No | Town         | Population | Average/capita generation (gms/day) | Total (Tonnes/day) |
|-------|--------------|------------|-------------------------------------|--------------------|
| 1     | Gangtok MC   | 100286     | 500                                 | 50                 |
| 2     | Namchi MC    | 12190      | 450                                 | 5.50               |
| 3     | Gyalshing MC | 4013       | 400                                 | 1.60               |
| 4     | Jorethang    | 9009       | 450                                 | 4                  |
| 5     | Nayabazar    | 1235       | 400                                 | 0.50               |
| 6     | Singtam NP   | 5868       | 450                                 | 2.64               |
| 7     | Rangpo NP    | 10450      | 450                                 | 4.70               |
| 8.    | Mangan       | 4644       | 443                                 | 4.2                |

#### 4. Cluster plan of MSWmanagement for urban centers

In every urban center, MSW will be managed by dividing wards into clusters. Each cluster will comprises of more than 50-60 households, the demarcation of clusters will be so made as to suit the landscape specifications that would facilitate collection & transportation of waste. Community Collection Centres (for segregated dry waste as well as compost at the household level) will be set up. Community composting/biogas units will also be taken up at these Collection Centres wherever deemed feasible. However, prior to introducing the hardware and infrastructure, the software must precede it in terms of rigorous IEC & Awareness Campaigns. This cluster approach will be adopted in all ULBs.

##### ***(a) Disposal of waste at cluster Level***

- (i) ULBs shall adopt suitable technology or combination of such technologies to make use of wastes so as to minimize the burden on landfills.
- (ii) The biodegradable wastes shall be processed by composting, vermin composting, anaerobic digestion or any other appropriate biological processing for stabilization of wastes, at source to the extent possible and thereafter all the community level.
- (iii) Landfilling shall be restricted to non-recyclable, residual and inert wastes that are unsuitable for either recycling or for biological processing.

Furthermore, the MSW, bio-degradable & non-degradable, emerging out of all marketing centres (primarily sabzimandis) will also get linked to these Community Collection Centres. Alternatively, Biogas units/community composting of varying capacities based on waste quantum will be installed at these marketing centres for managing vegetable waste as to treat it at source and avoid burdening the community centres. These units will be maintained and managed by the shopkeepers & immediate stakeholders.

##### ***(b) Initiatives in municipal SWM under Government of Sikkim***

The Government of Sikkim is amongst the first state if the country to successfully enforce the total ban of the use of polythene bags. The State has also

- (i) Passed the Non-biodegradable Garbage (Control) Rules in 1997 to minimize the generation of such waste as also its indiscrimination dumping on roads, streets and in jhoras.

- (ii) Installed a 50 TPD Capacity Compost plant at Martam to dispose the biodegradable waste which has been recently revived following a period of importation, thereby reducing the waste generation for disposal.
- (iii) Compost plant with the capacity of 1000kg per day has been installed at Lall Bazar Vegetable market premises subsequently Organic waste convertor at Mangan Nagar Panchayat has been installed.
- (iv) Distribution of composting bins at household level covering all the seven ULBs has already been started.
- (v) Distribution Colour coded bins for household level and religious institutions.
- (vi) Further, processes have been initiated to impose bans on use of disposable items like Styrofoam and plastic plates, cups; spoons etc. along with other non-recyclable waste such as flex banners/ hoarding/signposts in order to reduce waste at source. Burning of agricultural waste, leaves, litter, paper waste and garbage has been prohibited vide Notification No. 196/FEWMD, dated 5/1/15.

## **5. Management Principles**

### **(a) *Effective segregation, collection and transportation***

The important components of the management of MSW viz; segregation, collection, transportation and storage of waste, requires active involvement of the government bodies, private operators, community, NGOs, SHGs and local people. However, the key component would be awareness/sensitization and thereby bringing behavioral change of the people in their current attitude/perception of waste which is important for developing and creating a healthy environment. The mechanism to be adopted will be as per Zero waste concepts.

For effective segregation, collection and transportation, of the municipal waste management will be based on the following important principles:-

- (i) Sensitization and Mass Awareness
- (ii) Effective & Efficient source segregation, collection, transportation
- (iii) Maximum resource recovery
- (iv) Effective treatment
- (v) Safe disposal
- (vi) To avoid manual handling of waste and also minimize multiple handling by adopting state of the art modern SWM vehicles and equipment suitable to hilly terrain.
- (vii) Developing of skills and mechanism in waste collection of the 'waste collection crew' which are humane and dignified.

### **(b) Collection and segregation at each town**

- (i) ULBs provide daily waste collection service to all households, shops and establishment for the collection of segregated bio-degradable waste due to its putrescible nature. The practice of segregation of waste at source are being ensured through different category bins such

as degradable, non-degradable, hazardous so as to prevent the discards from reaching the waste stream and facilitate material recovery by means of composting and recycling. Sustaining door to door collection with community participation on cost recovery basis will be looked after by ULBs. Total composting of segregated kitchen waste using compost bins by covering all the household at source itself will be taken up, while dry waste can be stored category-wise and handed over to the Community Collection Centres on a periodic basis. ULB will however ensure thorough sensitization of the community and follow it up with constant monitoring.

- (ii) Recycled material can be collected at regular intervals as may be convenient to the waste producer and the waste collector, as this waste does not normally decay and hence need not be collected daily.
- (iii) Domestic hazardous waste is produced occasionally. Such waste can be collected periodically; however the waste producers need to be advised/directed to store them separately.

Collection of waste can be done by

- Municipal workers themselves
- Outsourcing the collection wastes to a competent organization
- Through ragpickers and scrap dealers or any suitable agencies

It is also important to keep all the roads, lanes and surrounding clean. In order to cater to the needs of tourist/floating population in and around major centers and market areas, taxi stands, bus stand, parking lots, shopping areas, adequate number of bins with leads (separate compartments for different waste type) will be made available by ULBs. These bins will be looked after by the concerned municipal workers of the respective areas and same will be linked to the community collection centers set up in respective wards.

Waste collectors will be sensitized by the resource persons with the assistance of NGOs for achieving segregation of waste. Kabadiwallas and recycling industries will be encouraged to maximize reuse & recycling of dry waste/non-biodegradable. For the same, thematic calendar will be published and distributed among all ULBs.

Mass awareness campaign for creating Community Awareness and Public Participation (CAPP) for segregation of waste will be carried out in each ULB periodically.

**(c) Procedure of Collection:**

- (i) All clusters will be manned with adequate trained number of sanitary workers with requisite facilities. Vehicles (larger and small) as per town size will be provided for collection bearing separate compartment/ bins to carry the segregated waste. Every collection time will be announced by an audible bell.
- (ii) Wherever the vehicle is not accessible, composting at the household level will be followed for degradable waste while the recyclables could be deposited periodically (since it does not necessitate daily collection) in Community Collection Centres provided by the ULBs. These community centres are also to be manned by trained sanitation workers. Since recyclable waste has a value, the proceeds from such

sales will be rolled back into the ULB revenue for further financial strengthening sustainability.

***(d) Other responsibilities and transportation***

- (i) The local bodies will identify the Resident Committees ward-wise, in each Ward and shell out the responsibility of managing the Collection Vehicle for Door to Door collection.
- (ii) GPS can be installed with waste collection vehicles for monitoring effectively transportation of waste.
- (iii) The Welfare Residential Committee will engage the Collection crew and the Driver for Door to Door collection of waste in their respective wards.
- (iv) The collection vehicle after it has reached its full capacity will transport the waste to the Community Collection Centres.
- (v) The local bodies will dispute trained Sanitation Supervisors at every cluster to supervise the collection efficiently. Also they will coordinate and communicate among each other and the drivers of the collection vehicle and the Community Collection Centres in charge to know the movement of these vehicles so as to effectively and economically lift and transport the garbage.
- (vi) Waste compactors will be installed district-wise in the main towns at the collection centres from where the waste can be recycled/disposal to landfill.
- (vii) Vehicles with hydraulic system will be introduced to achieve hygienic garbage handling in larger towns.

***(e) Regulatory measures***

Solid waste management practices can never reach the desired level of efficiency until the public participates and discharges its obligation. In order to improve solid waste management practices in urban areas, it is planned to incorporate suitable provision in the state bye-law to ensure public participation.

The following will be regulated by ULBs by stringent law and vigilance monitoring for all the waste generators including households, restaurant, hotels, shops, offices and institution:

- (i) To make source segregation compulsory to all Households, commercial space (hotels, shops, markets), institutional premises (school, colleges, offices)
- (ii) Residents will be asked to deposit segregated waste to Collection Vehicle on time. They shall not throw any solid waste in their neighborhood, on the street, jhoras, open spaces and into vacant plots or into drains. Punishment will be met out to those who litter and dispose waste on streets etc.
- (iii) They shall keep the kitchen discards (food waste) as and when generated, in any type of domestic waste container and (a) hand over to the waste collector daily or (b) compost it at the household itself using suitable technology provided by the ULBs. They shall keep Dry/recycled waste preferably in bags or sacks in a segregated manner to be transported to Community Collection Centres periodically.
- (iv) They shall not dispose of wet waste/bio-degradable in plastic or any other bags.

- (v) They will keep domestic hazardous waste separately, for disposal at designated place arranged by ULBs. Domestic hazardous/toxic waste material will be deposited in special bins (provided by the local body at specific designated places in the towns) at the Community Collection Centres. The hazardous waste will then be taken eventually to the landfill. This would facilitate maintaining hygienic condition and easy handling of the waste for further processing and proper disposal.
- (vi) Authorized bodies will be appointed by ULBs to provide uniforms, identity cards and protective equipment for trained sanitation workers and trained waste collectors.
- (vii) Societies /Association/Management of commercial complexes will be responsible for keeping their premises clean.

***(f) Maximum Resource Recovery***

The 'Hierarchy of Waste Management' gives a priority listing of the waste management options and indicates important general guidelines on the relative desirability of the different management options. The hierarchy will be adopted and will aim at:

- (i) Waste minimization/reduction at source
- (ii) Recycling
- (iii) Waste processing- with recovery of resources i.e. material (products) and energy

***6. The first step to waste management is waste reduction***

Reduction at source is the first in the hierarchy because it is the most effective way to reduce the quantity of waste, the cost associated with its handling, and its environmental impacts.

***7. Effective treatment and Safe Disposal***

Waste are either burnt or dumped in open spaces and these practices will be abolished as they are deleterious to health and the environment. Landfilling occupies the lowest rung in the integrated waste management, though it is a better option than dumping the waste in open spaces. It relies on containment rather than treatment (for control) of wastes. The purpose of landfilling is to bury or alter the chemical composition of the wastes so that they do not pose any threat to the environment or public health. Landfills are not homogenous and are usually made up of cells in which a discrete volume of waste is kept isolated from adjacent waste cells by a suitable barrier is a layer of natural soil (clay), which restricts downward or lateral escape of the waste constituents or leachate. Sanitary landfilling has a double liner to prevent leaching into the groundwater. Appropriate run-off control, leachate collection and treatment, liner for protection of the groundwater (from contaminated leachate), biogas recovery mechanism (landfill gas contains high percentage of methane due to anaerobic decomposition of organic wastes), monitoring wells, and appropriate final cover design constitute integral components of an environmentally sound sanitary landfill. Proper and regular monitoring will be done at landfill sites. All these steps will be ensured in the landfills. Landfills shall be constructed in accordance with the provision contained in the Municipal Solid Waste (Management & Handling) Rules, 2016.

In the context of Sikkim, where the ecosystem is fragile and the geographical terrain is highly challenging, the setting up of landfills will be in consonance with these hilly and mountainous terrain conditions as to avoid leaching into the river, streams and water bodies as to not contaminate them.

#### **8. Vegetable and Fruit Markets waste collection centres (Rural Marketing Centres)**

These markets produce large volumes of solid waste and local bodies will direct the association of the market to provide large size containers which match with the transportation system of the local body or depending on the size of the market, local body itself may provide large size containers with lids for storage of segregated market waste in separate bins at suitable locations within the marketing centres, floor-wise on full cost/partial cost recovery from the market association. This will also be applicable during Haat days when the production volume of waste would be much higher. The following alternatives will be adopted for managing such wastes in order to manage the waste at source:-

- (a) On-site bio-digester/composters for vegetable and fruit market waste will be encouraged.
- (b) The waste from fruit and vegetable processing industries can be used for production of biogas. Biogas is produced by anaerobic digestion of fruit and vegetable wastes. The conversion of fruit and Vegetable Wastes to biogas using anaerobic digestion process is a viable and commercial option.

#### **9. Marriage Halls/Community Halls**

- (1) A lot of waste is generated when marriage or social functions are performed at these places and unhygienic conditions are created. ULBs will be assigned the task of managing such waste to the committees/associations/societies that runs these halls. During every function the waste will be collected and segregated in various categorized bins that will contain waste of all categories separately. The waste bins thus collected will be transported to the Community Collection Centres set up by the ULBs.
- (2) Special arrangement will be made for collection of waste from marriage halls, community halls, puja halls etc. whenever these halls are used, on a full-cost recovery basis. The cost of such collection could be built into the charges for utilizing such halls. This service may be provided preferably through a contractor or departmentally as the local bodies deem fit. On-site, processing of food wastes by bio-methanation and composting may be encouraged.
- (3) Further, since many wedding reception are held in hotels and private homes, direct collection of waste from homes, hotels, restaurants, party halls etc., will be managed by the local bodies,. Separate vehicles (existing) with adequate crew will be provided for the purpose and the collection will be carried out on a fixed daily schedule; waste will be directly transported to disposal site. Existing waste transport vehicles available will be utilized to the maximum extent.

#### **10. Hotels and Restaurants**

- (1) The hotels and restaurants being one of the major waste generators /contributor in the state, hencethey shall ensure a proper segregation of waste at source itself.

- (2) The waste will be collected and segregated in various categorized bins that will contain waste of all categories separately. The waste bins thus collected will be transported to the Community Collection Centres set up by the ULBs. On-site, processing of food wastes by composting or bio-methanation may be encouraged.
- (3) The recyclable material obtained while segregating the waste shall be handed over to either the authorized waste pickers or the authorized recyclers.
- (4) ULBs will be assigned the task of timely monitoring of such segregated waste as generated by the hotel and restaurants.

#### **11. Gated Communities & Institutions**

- (1) All gated communities and institutions with more than 5,000 sq.mt area shall ensure 100 % source segregation of waste generated within their premises.
- (2) They shall facilitate the collection of segregated waste in separate streams and then handover recyclable material obtained to either the authorized waste pickers or the authorized recyclers. On-site, processing of food wastes by composting or bio-methanation may be encouraged.
- (3) The residual waste shall be given to the waste collectors or agency as directed by the local body.

#### **12. Hospitals/Pathological Labs/health Care Centers (PHCs, PHSCs)**

These establishments produce bio-medical as well as ordinary waste. They will be directed that:-

- (a) They shall refrain from throwing any bio-medical waste on the streets or open spaces, as well as into municipal dustbins or domestic waste collection sites.
- (b) They shall also refrain from throwing any ordinary solid waste on footpaths, streets or open spaces.
- (c) They are required to store waste in colour-coded bins or bags as per the directions of the Govt. of India, Ministry of Environment Bio-Medical Waste Management & Handling Rules, 1998 and follow the directions of CPCB and SPCB from time to time for handling, transportation, treatment and disposal of bio-medical waste.

#### **13. Construction and Demolition Waste (C&D Waste)**

Direction will be given that:-

- (a) No person shall dispose of construction and demolition waste on the streets, public spaces, footpaths or pavements.
- (b) Till finally removed construction and demolition waste shall be stored only within the premises of buildings, or in containers where such facility of renting out containers is available. In exceptional cases where storage of construction and demolition waste within the premises is not possible, such waste producers shall take prior permission of the local

authority or the state Government as may be applicable for temporary storage of such waste and having obtained and paid for such permission, may store such waste in a way that it does not hamper the mobility and also the waste does not get spread and also shall not block surface drains or storm water drains/jhoras.

- (c) To facilitate the collection of small quantities of construction and demolition waste generated in urban centres, suitable sites may be identified in various parts of the city and people notified to deposit small quantities of construction and demolition waste. Containers could be provided at such locations and small collection charges levied for receiving such waste at such sites and for its onwards transportation. Rates may be prescribed for such collection by local bodies. Contracts could also be given for managing such sites.
- (d) Local bodies will prescribe the rate per tonne for the collection, transportation and disposal of construction waste and debris and notify the name to the people.
- (e) Every person who is likely to produce construction waste may be required to deposit with the concerned local body an approximate amount in advance at the rates as may be prescribed by the local body from time to time, for the removal and disposal of construction waste from his premises by the local body. Such amount may be deposited at the time when the building permission is being sought in cases where such permission is not required, at any time before such waste is produced.
- (f) The charges for removal of construction waste to be doubled for those who fail to deposit the amount in advance.
- (g) Large local bodies may provide skips (large containers) to the waste producers on rent for the storage of construction waste so that the double handling of the waste can be avoided or use front end loader & trucks to pick up such waste. In small towns this may be, done manually using trucks, tractors and manpower.

#### **14. Garden waste**

- (1) Private gardens will as far as possible compost and re-use all plants wastes on-site. Where it is not possible to dispose of garden waste within the premises. It will be stored in large bags or bins on-site and transferred into a municipal system on a weekly basis. The generation of such waste will as far as practicable be regulated in such a way that it is generated only a day prior to the date of collection of such waste. It will be stored in the premises and kept ready for handing over to the municipal authorities or the agency that may be assigned the work of collection of such waste.
- (2) Garden waste and fallen leaves from avenue trees within large public parks and gardens will be composted to the extent possible. However, if such waste has to be disposed of, large skips may be kept, which match with the municipal transportation system for transportation of such waste. Such skips may be provided by local bodies or state Governments owing such parks and gardens. In case of private parks and gardens they will make their own storage arrangement which matches with the Municipal primary collection and transportation system.
- (3) The waste stored in public and private parks, gardens, lawn plots etc. will be collected on a weekly basis by arranging a rotation for collecting such waste from different areas, on

different days to be notified to the people to enable them to trim the trees and lawns accordingly and keep the waste ready. This waste may be got collected through a contractor or departmentally as deemed appropriate by the urban local authorities. Cost recovery may be insisted upon, based on the volume of Waste collected.

#### **15. Slaughter House Waste**

- (1) In slaughter house operations, the waste generated is of liquid and solid nature. The liquid waste will be washed away by safe potable and constant supply of fresh water at adequate pressure throughout the premises of slaughtering. The waste from the slaughter house is heavy in pollution and therefore, it will not be allowed to mix with the municipal drain system without pre- treatment meeting sewage standards as per the water (Prevention & control Pollution) Act, 1974.
- (2) At each slaughter house adequate tools will be provided for de-hiding of the animals, hides and skins will be immediately transported out of the slaughtering area in a closed wheelbarrow or similar other devices. In no case the hides and skins will be spread on the floor of the slaughtering area for inspection. Legs, bones, hooves etc. will also be removed immediately from the slaughtering area through a spring load floor chute or closed wheelbarrow.
- (3) At slaughter houses adequate compartments for immediate separation and disposal of condemned material must be provided.
- (4) Slaughtering of animals generates wastes consisting of non-edible offal (like lungs, large intestines, various glands, animal tissues, organs, various body parts etc.) Stomach/ intestinal contents, dung, sludge from waste treatment, bones, etc. all these types of wastes are required to be disposed by adopting methods like rendering/ controlled incineration/ burial/composting/anaerobic digestion like biogas etc.
- (5) The slaughter houses are normally controlled by local bodies, which will follow the standards prescribed, but due to non- existence of modernized slaughter houses, environmental pollution arising out of the slaughtering activities cannot be controlled. The local bodies must, therefore, take up modernization of slaughter houses and achieve the pollution control norms.

#### **16. Waste from Melas (Fairs)/ exhibitions/carnivals/religious festivals/tourist festivals**

- (1) The prevalent system of observing various kinds of festivals and Melas in Sikkim which generates huge volumes of waste that are currently not being managed properly also warrants attention. ULBs will manage the waste emerging out of these festivals by fixing the responsibility on committees/ association /societies and organizers of such events. Regulation will be passed for controlling the usage of disposable items such as Styrofoam/ plastic/paper/plates, cups, spoons which account for a large chunk of the waste. Eco-friendly alternatives like leaf and bamboo based products locally available and compostable will be encouraged. The cost of handling, storage, transportation & treatment of waste during such events will be borne by the organizers.
- (2) Furthermore, the current practice of making offerings at religious places of worship in the form food items packaged in multi-layered plastic & aluminium foil which neither has a

resale value nor can be recycled and accounts for a major chunk of INERT waste at the landfill will be discouraged. To control this, eco-friendly alternatives such as locally grown food items that can be offered package-free or at least in packaging that can be recycled.

### **17. Disposal of waste**

- (1) Suitable technology or combination of such technologies will be adopted to make use of wastes so as to minimize the burden on landfills.
- (2) The biodegradable wastes will be processed by composting, vermi-composting, aerobic/ anaerobic digestion or any other appropriate biological processing for stabilization of wastes. It must be ensured that compost or any other end product will comply with standards. Mixed waste containing recoverable resources will follow the route of recycling or other appropriate technologies.
- (3) Land filling will be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing. Land filling will also be carried out for residues of waste processing facilities as well as pre-processing rejects from waste processing facilities. Land filling of mixed waste will also be avoided unless the same is found unsuitable for waste processing.

### **18. Municipal Solid Waste process and treatment techniques**

Various treatment strategies can be adopted towards reducing the amount of MSW that needs to be land filled, as well as utilizing and recovering the material discard as resources to the largest possible extent. The following methods shall be adopted for managing waste:-

**(a) Composting of Biodegradable waste/ Waste to Energy through Bio-Methanation**

Upon source segregation, all biodegradable waste must be composted at the individual household level/ community level. The resource thus recovered shall be used in farming at either the individual or cluster level. Wherever suitable either at Household level or Community level, biogas plants must be installed for recovery of waste through productive usage of methane for cooking and heating purposes.

**(b) Material recovery of recyclable discards**

The recyclable segregated discards shall be recycled through scrap dealers, rag pickers and other unorganized sector. Collection points must be set up at the cluster level to further converge at the central level, ULB-wise. Thereon, the non-recyclables must be sent to state level landfills.

**(c) Management of electronic waste:**

All electronic waste collected from offices/homes/commercial spaces etc. must converge at a common collection point district- wise. This collection centre will be provided by the ULBs and the waste so collected will get recycled in collaboration with the e-waste Recycling initiative jointly set up by the State IT Department and GMC, which is already in operation.

**(d) Ultimate Disposal of MSW-Land Filling**

After making several attempts to identify landfill sites, UD&HD concluded that it is difficult to get the required landfill area in hilly terrain. However, steps will be taken in setting up appropriate land-fills, such as:-

- (i) Landfills comparatively nearer to the towns, which would significantly reduce transportation and O&M cost would be less.
- (ii) Ensure they are easy to manage the whole Treatment & Disposal facility in one complex. Single Leachate Treatment Plant may be utilized for both Landfill & Compost Plant.
- (iii) The specifications for sanitary landfill development are primarily guided by the characteristics of the proposed site and the guidelines framed by the Ministry of Environment and Forests, Government of India. Schedule I(A & B), Rule 15 (w), (zi), Rule 16 (1) (b) (e) and Rule 16 (4) under Solid Waste Management Rules, 2016.
- (iv) Waste will be covered immediately or at the end of each working day with minimum 10 cm of soil, inert debris or construction material till such time waste processing facilities for composting or recycling or energy recovery are set up.
- (v) Prior to the commencement of monsoon season, an intermediate cover of 40-65 cm thickness of soil will be placed on the landfill with proper compaction and grading to prevent infiltration during monsoon. Proper drainage will be ensured to divert run-offs away from the active cell of the landfill.

## **19. Closure of Landfill site and Post-Care**

The post-closure care of landfill site will be conducted after fifteen years and long term monitoring to assess:-

- (i) Maintaining integrity and effectiveness of final cover and repair required,
- (ii) Efficiency of leachate collection system,
- (iii) Ground water quality and action required to improve
- (iv) Maintenance and operation of gas collection system to meet the standards. The closed landfill may be used for human settlement after 15 years of post-closure care by ensuring gaseous emission and leachate compliance.

## **20. Financial requisites**

Solid Waste Management receives a comparatively inadequate share out of the total municipal budget as the municipal agencies assign a low priority to this work resulting in poor services. Today there is an urgent need to overhaul the system by making substantive changes in management & technology, which would inevitably require capital investment for beyond the current budgetary capital of the municipal agencies. Any Solid Waste Management system will require provision of financial resources for its smooth running. The present structure of revenue does not contain any instrument specifically dedicated to the needs of SWM. It is also obvious that in future the municipal agency will find it increasingly difficult to draw the required amounts from the existing revenue resource. As per the manual on Solid Waste Management by the Ministry of Urban Development, 2000, the annual requirement of funds for efficient SWM reveals that when the principal of Full Cost Pricing is applied the Total Annual requirements are often 2-3 times the amount being allocated at present. Thus, it is important that the beneficiaries also share the responsibility of waste management following the "Polluters pay principal". The concerned ULBs will work out the SWM Tax/Cess to be charged from the beneficiaries depending upon their economic status. A provision of cross-subsidy will be included in such exercise. It will be based on the frequency of service, volume/ weight of the waste or combination

of both or on family basis. It can be multiplied by a factor based on assessment of location, building value and income of occupant. Separate structure of tariff will have to be specified for community collection system and for house to house collection system. It will also lay down the method of charging and recovery of charges for transportation of acceptable industrial solid waste and demolition waste. There will be a provision for revision of the rates at specific intervals. For specific identified accusations, contracting out of work will be considered. However, such contracts will be performance based and appropriately framed with in-built monitoring and penalty mechanisms. A comprehensive DPR for all the 7 ULBs with financial requirement for Solid Waste Management has been prepared and are being followed up.

### ***21. Mobile Sanitation Courts***

It is the tendency of the public to take their civic responsibilities lightly. It is therefore necessary that while on one hand people are motivated to participate effectively in keeping the cities clean, there will be a fear of punishment if they fail Discharge their civic obligations. Provision of Mobile Sanitation Courts is therefore very useful to ensure littering of roads and disobedience of other legal provision or orders to improve the sanitary conditions. The mobile sanitation court would be able to recover its full cost from the fines that may be imposed by the court. There is, therefore, no likelihood of any financial burden on the local body.

### ***22. Grievance Redressal***

The local body will draw up a citizen's charter clearly stating what level of service it proposes to provide to the citizen as and how soon citizens can expect their grievance to be attended. Sanitation being very vital for health and environment, efficient machinery will be organized by the local body to receive public complaints and attend to them expeditiously. Formats may be prescribed for receiving such complaints, replying to the applicant as soon as the complaints have been redressed and for monitoring the pending complaints.

### ***23. Institutional Mechanism***

The fact of ownership has to be settled. With ownership must come the assumption of full responsibility for the long term sustainable performance of the Solid Waste Management System. The ULBs shall be mandated to replace inadequately qualified and inefficient staff with staff necessary to maintain the solid waste management system. For out sourcing the job, a stringent pre-qualification criterion shall be developed for the contractors which inter-alia shall include sufficient number of sufficiently qualified persons and the contract agreement shall be performance based for which necessary performance indicators shall be evolved.

#### ***(a) Management Plan for institutional strengthening***

Rules for operation and maintenance of the solid waste management system must be established to keep honest record of specified parameters that refer to the performance of the system including the quality of work performed by each individual. Apart from the enhancement of capacities of ULBs, there will also be additional checks by a local committee of qualified civil society representatives, health officer and officers from other departments who will be empowered to visit and issue a note of caution when any component of SWM system is not working or working inadequately.

**(b) Standardized Procedures**

- (i) A Manual of standardized procedures will be established for the activities of the entire MSWM system.
- (ii) These procedures will be mandatory and penalties established for each default. The same penalties will apply whether the system is operated directly by a ULB or by an external contractor.
- (iii) A surveillance mechanism will be created to **investigate every instance of non-compliance** reported to the ULBs using fast and modern communication means such as SMS by mobile to the authorities as well as CCTV installation in areas prone to littering.
- (iv) The staff responsible for solid waste management will be professionally qualified and trained.
- (v) The operation manual will be available to each staff.
- (vi) Each staff member will be given responsibility in terms of specific activity along with date and time in writing.
- (vii) The duty assignment records will be maintained in a Master File which will be checked by officers of Nodal office and State Pollution Control Board on regular basis.
- (viii) Training of the MSWM staff will be planned and implemented properly.
- (ix) Strict action is required to be taken against the staff in case of default.
- (x) Each staff member will submit a monthly report indicating duty performed by him and how it is matching with the assignment given to him.
- (xi) In case of deviation, sufficient reason will be recorded.
- (xii) Every ward will be monitored for its cleanliness and satisfaction of the citizen.
- (xiii) The monitoring results will be completed on monthly basis and submitted to the Nodal office in the form of a monthly report.
- (xiv) The report will be reviewed by the Nodal Officer. In case of any problem in SWM system, the Nodal Officer will discuss it with in-charge of the SWM system and suggest remedial measures.
- (xv) There will be a quarterly meeting of all the in-charge of the all wards of a town including lower staff to discuss the problems and remedial measures.
- (xvi) The outcome of the meeting will be recorded in the form of minutes and communicated to State Pollution Control Board within 7 days of the meeting.
- (xvii) There will be a separate cell in the State Pollution Control Board for monitoring management of MSWM System in the State.

- (xviii) This cell will constantly interact with the Nodal Officer on performances of MSWM System and other related issue.
- (xix) The cell will also conduct vigilance monitoring of the MSW System at least once in a month.
- (xx) The monitoring will include checking of ward wise records of the MSW System and their functioning to evaluate their performance and compliance of MSW Rules.
- (xxi) In case of unsatisfactory observations, the cell will issue notice to the Nodal Officer under EPA, 1986.
- (xxii) An annual report on the performance of town-wise MSW System record will be prepared and submitted to the State Boards highlighting all the important points including deficiencies and annual expenditure.
- (xxiii) It may be useful to involve local communities in monitoring the functioning of the entire MSWM System.
- (xxiv) It is necessary to have a cadre of professional staff in municipalities headed by technically qualified chief executives for planning and implementation of MSWM System.

#### **24. Duties of District Magistrate or District Collector or Deputy Commissioner**

As per Solid Waste Management Rules, 2016, under Clause(a) and (b) of Rule 12, the District Magistrate or District Collector or as the case may be, the Deputy Commissioner shall:-

- (a) In order to facilitate identification and allocation of suitable land as per clause (f) of rules 11 for setting up solid waste processing and disposal facilities to local authorities in his district in close coordination with the Secretary-in-charge of State Urban Development Department within one year from the date of notification of these rules.
- (b) To review the performance of local bodies, at least once in a quarter on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development.

#### **25. Information Education & Communication (IEC)**

The solid waste management involves several stages of activities where people's participation is required. It has been envisaged that people's participation is essential in the following issues and public awareness programme must include them with greater emphasis. Based on the initial assessment and workshop some of the targets could be:-

- (a) Coverage of household dry waste and wet waste collection (Alternatives days).Most ULBs should collect Dry and Wet Wastes separately on Alternate Days however it can be managed with little changes to the Alternative Days if required as per the need and Waste Generation Index of a ULB.

- (b) The importance of solid waste management and its related health hygiene shall be imparted to all the educational institutions. The sensitization at the school/colleges/university level will be the best way to inculcate Behavioral Change in the people/society towards waste management.
- (c) Monthly or in regular interval awareness through social media to be conducted for local citizens.
- (d) Several specific teams for different tasks may be set up for example a team for targeting schools, a team for working with self-help groups to recycle products from dry waste.

## **26. Specific Components for Public awareness in Urban Local Bodies**

- (1) Three basic modes for the programme
  - MODE – I-Information dissemination
  - MODE - II-Interaction, dissemination and input of information
  - MODE - III-Input of Information
- (2) In the first one the implementers will provide information and directives to the citizens and in Mode II, people will directly interact with the implementers at spot and in the third one people will convey their opinion and information to the implementers to have feedback and action.

For each mode of awareness, some tools and components are recommended for sustainable progress of the programme.

## **27. Tools and Components for Information Dissemination**

### ***(a) Use of Print media:***

Advertisements in local popular newspapers will be given in a planned manner to educate the masses. They will also be requested to start a regular suggestion box from where good ideas can be picked up. Newspapers may be especially motivated giving coverage to successful initiatives that have overcome SWM problems.

### ***(b) Use of TV/Cable TV/Radio***

This is the very powerful medium and will be used through local programs to inform the citizens of new waste collection arrangements and when they become operational and advise them to participate effectively in the prescribed manner. Contact numbers of the concerned officials for problem solving or reporting of SWM grievances may also be publicized. This media may be used to publicize successful efforts in some localities to motivate other citizens to perform likewise and get similar recognition of their effort.

### ***(c) Hoardings***

Hoardings may be put at strategic locations carrying messages seeking public participation; the hoarding should also carry the contact numbers.

## **28. Tools and Components for Interaction, dissemination and input of information**

### ***(a) Mass awareness camp:***

Mass awareness camps in each ward will have to be organized involving eminent personalities of the locality to generate more enthusiasms amongst the local residents. In this type of camps uniform attentions from all participants can never be expected so the messages has to be much focused and situation specific.

***(b) Involvement of School children:***

Children can play a key role as they are the powerful communicators. The regular meetings with Principals, teachers and students to explain the need for change and the usefulness to society of new ways to manage waste. The leading schools could be persuaded to work as a role model for other schools. It is necessary to educate young children when they are in primary school to form good habits for managing waste. It is noted that already school children in Sikkim are already effectively involved in SWM related campaign. It is needed to strengthen the same with more planned support.

***(c) Involvement of religious samities:***

The samities like SaiSamitiesetc play a significant role in bringing about a change in the mind- set of the people. The devotees can be involved during the awareness program. All religious institutions and committees in the ULB will be involved in waste management thereby constituting annual awards for them and for the encouragement to them to include cleanliness and sanitation as a pivotal part of spiritual teachings so that it compliment the mantra of total spiritual transformation.

***(d) Involvement of Medical Practitioners:***

Involvement of doctors to convey messages on good practices of SWM.

***(e) Involvement of Women Associations:***

The awareness amongst women is very crucial as they are generally found more concerned in maintenance of health and hygiene of the family and they are involved in domestic waste management on day to day basis.

***(f) Voluntary Organizations/NGO Involvements:***

The NGO's have good mass communication skills and education programs for the public, such NGO's will be persuaded to actively support the new strategies adopted by the local body and associate in public awareness campaigns. Those NGO's who wish to conduct programs for sections of the public on the new SWM strategies will be encouraged to do so and give necessary support.

**29. Tools &Components for Input of Information:**

Time to time questionnaire or opinion survey amongst the citizen should be carried out to understand direct reactions of the community regarding the operation of the system so that during the course modification and rectifications of the system operation could be made. This will also strengthen the confidence of the community.

***(a) Sign consent from the house hold for the source segregation:***

Consent can be received from each household for the source segregation (Format attached). This will remind each household that the source segregation is now compulsory and the call of the time.

***(b) Photographs for documentation:***

Photographs of pre and post collection of segregated waste should be clicked for the documentation purpose. The practice of photographs, video documentation of the events or exercise on each stage, pre and after will provide the ULBs with ready reference to plan, research, or rectify their future waste management systems keeping in view the strength and weaknesses in plan implementations. It will also enable the stakeholders to work on any data requirements for many purposes like planning, award documentations, IEC, Awareness and so on.

Therefore the success and failure of this strategy in ULB depends upon the level of the public participation in owning, adopting and operation of technologies and management practices being used to manage municipal solid waste. We need to upscale the efforts already imitated and fill all the gaps.

### 30. Time frame for implementation as per Rule 22

| Sl. No. | Activity                                                                                                                                                                                                                                                                                                                                               | Deliberation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Time Frame |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| (1)     | (2)                                                                                                                                                                                                                                                                                                                                                    | (3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | (4)        |
| 01.     | Identification of suitable sites for setting up solid waste processing facilities.                                                                                                                                                                                                                                                                     | <b>Completed</b><br>Note: owing to the hilly terrain and unavailability of suitable land and also due to less population, the waste produce is not on very large scale hence three regional landfills i.e. Martam (operational) for East district, Sipchu (under construction) for South and West and district Ringdang (under construction) for Northdistrict are being utilized by all the ULBs for purpose of Waste processing. However,for Rangpo and Singtam ULBs, new site for setting up their Waste Processing Facility has to be identified which can be done by 2020. | 2020       |
| 02.     | Identification of suitable sites for setting up common regional sanitary landfill facilities for suitable clusters of local authorities under 0.5 million population and for setting up common regional sanitary land fill facilities or stand-alone sanitary landfill facilities by all local authorities having a population of 0.5 million or more. | <b>Completed</b><br>Note: owing to the hilly terrain and unavailability of suitable land and also due to less population, the waste produce is not on very large scale hence three regional landfills i.e. Martam (operational) for East district, Sipchu (Under Construction) for South and West district and Ringdang (Under Construction) for North district are being utilized by all the ULBs.                                                                                                                                                                             | NA         |

|     |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                     |       |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 03  | Procurement of suitable sites for setting up solid waste processing facility and sanitary landfill facilities.                                                     | <b>Completed</b>                                                                                                                                                                                                                                                                    | NA    |
| 04. | Enforcing waste generators to practice segregation of bio degradable, recyclable, combustible, sanitary waste domestic hazardous and inert solid wastes at source. | These provisions have been covered under State byelaws for waste management for Urban Sectors of Sikkim has been prepared and notified by Govt of Sikkim.                                                                                                                           | 2020  |
| 05. | Ensure door to door collection of segregated waste and its transportation in covered vehicles to processing or disposal facilities.                                | <b>Completed</b><br>Note: 100% door to door collection of waste and its transportation has been achieved in all the ULBs.                                                                                                                                                           | ----- |
| 06. | Ensure separate storage, collection and transportation of construction and demolition wastes                                                                       | Action plans of various Work Departments are being prepared for the management of Construction and Demolition Waste.                                                                                                                                                                | 2020  |
| 07. | Setting up solid waste processing facilities by all local bodies having 100000 or more population                                                                  | <b>Completed</b><br>Note: Only Gangtok Municipal Corporation fulfills the criteria of having 1 Lakh or more population and the solid waste processing facilities of GMC have already been setup at Martam, East Sikkim.                                                             | ----- |
| 08. | Setting up solid waste processing facilities by local bodies and census towns below 100000 population.                                                             | The waste produced by the Census town with population below 1 Lakh does not meet up the criteria for setting up individual Solid Waste processing facility. Hence, the regional sanitary landfill facilities are catering the purpose of waste processing facility for these towns. | ----- |

|     |                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                  |       |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| 09. | Setting up common or standalone sanitary landfills by or for all local bodies having 0.5 million or more population for the disposal of only such residual wastes from the processing facilities as well as untreatable inert wastes as permitted under the rules. | NA                                                                                                                                                                                                                                               | _____ |
| 10. | Setting up common or regional sanitary landfills by all local bodies and census towns under 0.5 million population for the disposal of permitted waste under the rules.                                                                                            | <b>Completed</b><br>Note: Three regional landfills i.e. Martam (Operational) for East district, Sipchu (Under Construction) for South and West district and Ringdang (Under Construction) for North district are being utilized by all the ULBs. | _____ |
| 11. | bio-remediation or capping of old and abandoned dump sites                                                                                                                                                                                                         | NA                                                                                                                                                                                                                                               | _____ |

### 31. Action Taken Report on Solid Waste Management Rules, 2016

#### Rule 15. Duties and responsibilities of local authorities/village Panchayats of census towns and urban agglomeration

| Sl. No | Action to be taken                                                                                                                                                                                                                                                                                                                                              | Status                                                                | Budgetary Provision required for one time investment per annum (Rs. In Lakh)                                                                                                                                        | Budgetary Provision required for Recurring investment per annum (Rs. In Lakh) |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| 01.    | 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. | state policy on Solid Waste Management has been prepared and notified | An amount of Rs. 11,90,250/- have been approved for the preparation of State Waste Policy of which Rs. 7,14,150/- have already been paid from SBM-U fund. Final payment amounting Rs. 4,76,100/- is yet to be made. | -----                                                                         |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                 |       |       |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
| 02. | 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                                                                                          | 100% door to door collection achieved in all ULBs, however, the sustenance of the same is to be maintained                                                                      | ----- | 355   |
| 03. | Establish a system to recognize 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                                                                                                                                            | System already established in accordance to SWM Rules, 2016                                                                                                                     |       |       |
| 04. | Facilitate formation of Self Help Groups, provide identity cards and thereafter encourage integration in solid waste management including door to door collection of waste.                                                                                                                                                                                                                                                                             | Being Complied                                                                                                                                                                  | ----- | ----- |
| 05. | Frame bye-laws incorporating the provisions of these rules within one year from the date of notification of these rules and ensure timely implementation.                                                                                                                                                                                                                                                                                               | Bye-Laws of solid waste (management and handling) cleanliness and sanitation for urban sector prepared and notified.                                                            | ----- | ----- |
| 06. | 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.                                                                                                                                                                                                                                                                                                       | Being implemented in all ULBs.                                                                                                                                                  |       |       |
| 07. | Direct waste generators not to litter i.e. throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink canes, 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. | Mass awareness is being conducted throughout the state under IEC programs. This programme includes workshops, campaigns, street skits, distribution of colour coded beans, etc. | ----- | 300   |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                |      |       |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|
| 08. | 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 | Material recovery facilities have already been constructed and are functional in some ULBs. However, more numbers of MRF are to be constructed so that all the ULBs will atleast have one MRF 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. | 44.1 | ----- |
| 09. | Establish waste deposition centres for domestic hazardous waste and give direction for waste generators to deposit domestic hazardous wastes at this center for its safe disposal. Such facility shall be established in a city or town in a manner that one center is set up for the area of twenty square kilometers or part thereof and notify the timings of receiving domestic hazardous waste at such centers. 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                          | Hazardous wastes collected in ULBs are in very small scales hence no waste disposal facilities have been established so far in this state. However for a proper segregation of domestic hazardous waste the provision of providing separate colour coding bins is to be made and collections center for the same has to be provided which can be                                                               | 273  | ----- |

|     |                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |       |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|
|     |                                                                                                                                                                                                                                                                                | made available separately within the landfill itself.                                                                                                                                                                                                                                                                                                                                                                                                              |           |       |
| 10. | 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.                                                                                               | <b>Being complied.</b> It is covered under IEC programme. The budget provision for the same has been provided at point 7 i.e. an amount of Rs. 300 Lakh                                                                                                                                                                                                                                                                                                            | -----     | 300   |
| 11. | Provide training on solid waste management to waste- pickers and waste collectors.                                                                                                                                                                                             | As laid down in the state policy.                                                                                                                                                                                                                                                                                                                                                                                                                                  | -----     | ----- |
| 12. | 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. | Collections are being done. Bio-methanation plant for Gangtok Municipal Corporation is being installed at regional sanitary landfill Martam. However the waste collected are in very small scale hence, installation of bio-methanation plant/ de centralized compost plant in each ULBs is not feasible. Hence, the said plant can be installed in each regional landfill. Bio-methanation plant for GMC is being installed at regional sanitary landfill Martam. | 105*3=315 | ----- |

|     |                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                    |       |       |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
| 13. | 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.                                                                                                                          | Complied                                                                                                                                                                                                                                           | ----- | ----- |
| 14. | 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. | Due to the hilly terrains and unavailability of lands the covered secondary storage facility for temporary storage of waste cannot be setup. However, the waste in all the ULBs are collected door to door and are then transported by vehicles in | ----- | ----- |
| 15. | Collect horticulture, parks and garden waste separately and process in the parks and gardens, as far as possible.                                                                                                                                                                                                           | Covered under point 13.                                                                                                                                                                                                                            | ----- | ----- |
| 16. | Transport segregated bio-degradable waste to the processing facilities like compost plant, bio-methanation plant or any such facility. Preference shall be given for onsite processing of such waste.                                                                                                                       | As laid down in the state policy.                                                                                                                                                                                                                  | ----- | ----- |
| 17. | Transport non-bio-degradable waste to the respective processing facility or material recovery facilities or secondary storage facility.                                                                                                                                                                                     | As laid down in the state policy.                                                                                                                                                                                                                  | ----- | ----- |
| 18. | Transport construction and demolition waste as per the provisions of the Construction and Demolition Waste management Rules, 2016.                                                                                                                                                                                          | Action plans of various Work Departments are being prepared for the management of Construction and Demolition Waste.                                                                                                                               | ----- | ----- |
| 19. | Involve communities in waste management and promotion of home composting, bio-gas generation, decentralized processing of waste at                                                                                                                                                                                          | It is being covered under IEC programme. The budget                                                                                                                                                                                                |       |       |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                       |       |       |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
|     | community level subject to control of odor and maintenance of hygienic conditions around the facility. Scientific composting pits at sub division level to arrange refresher courses to villagers. Provision of machinery for processing of agri waste to enable farmers to convert their agri waste into processed waste.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | provision for the same is covered under point 7.                                                                                                                                                                                      | ----- | 300   |
| 20. | 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The state of Sikkim being organic state no chemical fertilizers is being utilized, and the same has been declared by Prime Minister Narendra Modi on 18 January 2016. [Source: Status of Environment & Related Issue(sikenvi.nic.in)] | NA    | ----- |
| 21. | 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 | PPP mode cannot be implemented due to very low scale generation of waste hence, the Urban local bodies itself are involved for the said provision.                                                                                    | NA    | ----- |

|     |                                                                                                                                                                                                                                                                                                                                                                                                   |                                                          |       |       |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------|-------|
|     | as feedstock to solid waste based power plants or cement kilns;                                                                                                                                                                                                                                                                                                                                   |                                                          |       |       |
| 22. | 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.                                                                                                                                                         | Being implemented                                        | ----- | ----- |
| 23. | 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. | Complied                                                 | ----- | ----- |
| 24. | 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 tonnes per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee, as the case may be                                                                               | Being implemented                                        | ----- | ----- |
| 25. | Submit application for renewal of authorization at least sixty days before the expiry of the validity of authorization                                                                                                                                                                                                                                                                            | Being implemented                                        | ----- | ----- |
| 26. | 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                                                                                                                                                                                                                    | Annual Reports are being submitted annually by all ULBs. | ----- | ----- |
| 27. | 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.                                                                                                                | Being Complied                                           | ----- | ----- |

|    |                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                |       |       |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
| 28 | 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.                            | Being implemented. It covers under IECs. The budget provision for the same has been provided at point 7 i.e. an amount of Rs. 300 Lakh                                                                                                                                                                                                                                         | ..... | 300   |
| 29 | 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. | Complied                                                                                                                                                                                                                                                                                                                                                                       | ..... | 500   |
| 30 | Ensure that provisions for setting up of centres 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.                  | Door to Door collections of segregated waste is given priority in state also due to the unavailability of the space and resistance of the people the setting up of centers for collection, segregation and storage of segregated wastes is not feasible. Also the collected wastes are transported directly to the regional sanitary landfills by the vehicles on daily basis. | NA    | ..... |
| 31 | 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.              | Bye Laws of Solid Waste (Management and Handling) Cleanliness and Sanitation for Urban Sector of Sikkim has been prepared and notified by Govt of Sikkim                                                                                                                                                                                                                       | ..... | ..... |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                               |       |       |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------|
| 32 | Create public awareness through information, education and communication campaign and educate the waste generators.                                                                                                                                                                                                                                                                                                                         | Being implemented. Comes under IEC. The budget provision for the same has been provided at point 7 i.e. an amount of Rs. 300 Lakh                                             | ..... | 300   |
| 33 | 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.                                                                                                                                                                                                                                                                             | NA                                                                                                                                                                            | ..... | ..... |
| 34 | 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. | Efforts are being made to bring about behavioral change in people through IEC. The budget provision for the same has been provided at point 7 i.e. an amount of Rs. 300 Lakh. | ..... | 300   |
| 35 | Investigate and analyses all old open dumpsites and existing operational dumpsites for their potential of bio mining and bio-remediation and whosoever's feasible, take necessary actions to bio-mine or bio-remediate the sites.                                                                                                                                                                                                           | NA                                                                                                                                                                            | ..... | ..... |
| 36 | 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.                                                                                                                                                                                                                                                   | NA                                                                                                                                                                            | ..... | ..... |

**32. Draft (Self Declaration Format)**

**NAME OF URBAN LOCAL BODY** \_\_\_\_\_

Segregation of Bio-degradable and Non-Biodegradable Wastes at Source.  
(As per the provision of SWM Rules 2016)

**Self-Declaration Format: RWA/Market Association/Gated Communities and Institution  
with an area > 5,000 sqm / Hotels/Restaurants/Establishment/ /Building/Place.**

I/We/M/s. \*\* \_\_\_\_\_ located at premises  
\_\_\_\_\_ (address) \_\_\_\_\_ (phone) \_\_\_\_\_ (mobile) \_\_\_\_\_  
\_\_\_\_\_ (e-mail) am/are a member of \_\_\_\_\_ RWA/Market  
Association/ Gated Communities and Institution with an area > 5,000 sqm/ Hotel / Restaurant /  
\_\_\_\_\_ (mention trade) and holder of \_\_\_\_\_ urban local body  
occupancy certificate Property Tax Assessment No. \_\_\_\_\_ or trade license  
no. \_\_\_\_\_.

The business activity at the premises is \_\_\_\_\_ or the premises is used for  
multipurpose activities / gatherings / domestic / commercial purposes.

I/We/M/s. \_\_\_\_\_ hereby self-declare that the total daily waste  
generated from our premises is 100 kg or less, hence not a bulk generator.

I/We/M/s. \_\_\_\_\_ hereby self-declare that, I/We shall segregate  
and store the waste in two separate streams namely bio-degradable and non-bio-degradable in  
suitable bins and handed over segregated waste to authorized rag-pickers or waste collectors.

I/We \_\_\_\_\_ hereby self-declare that, I/We shall not throw, burn  
or bury solid waste generated by me/us on streets, open public spaces outside my/us  
premises or in the drain or water bodies.

I/We \_\_\_\_\_ hereby self-declare that, I/We shall pay such user  
fee for solid waste management, as specified in the bye-laws of Urban Local Body.

(Authorized signatory)

For the Premises Occupier/ Owner,

To

The Commissioner/Municipal Executive Officer.

\*\* Strike out whatever not applicable.

**33. Draft (Self Declaration Format for Households)**

**NAME OF URBAN LOCAL BODY** \_\_\_\_\_

Segregation of Bio-degradable and Non-Biodegradable Waste at Source  
(As per the provision of SWM Rules 2016)

**Self-Declaration Format for Households**

I/We/M/s.\*\* \_\_\_\_\_ located at premises \_\_\_\_\_  
\_\_\_\_\_ (address) \_\_\_\_\_ (phone) \_\_\_\_\_ (mobile)  
\_\_\_\_\_ (e-mail) am/are holder of urban local body occupancy  
certificate/Property Tax Assessment No. \_\_\_\_\_. The premise is used  
for domestic purposes.

I/We \_\_\_\_\_ hereby self-declare that, I/We shall segregate and  
store the waste in two separate streams namely bio-degradable and non-bio-degradable in  
suitable bins and handed over segregated waste to authorized rag-pickers or waste collectors.

I/We \_\_\_\_\_ hereby self-declare that, I/We shall not throw, burn  
or burry solid waste generated by me/us on streets, open public spaces outside my/us  
premises or in the drain or water bodies.

I/We \_\_\_\_\_ hereby self-declare that, I/We shall pay such user  
fee for solid waste management, as specified in the bye-laws of Urban Local Body.

(Authorized signatory)

For the Premises Occupier/ Owner,

To

The Commissioner/Municipal Executive Officer.

\*\* Strike out whatever not applicable.

## Contents

|     |                                                                                       |    |
|-----|---------------------------------------------------------------------------------------|----|
| 1.  | Objective:                                                                            | 2  |
| 2.  | Background of Sikkim's topography and Geography: Profile                              | 2  |
| 3.  | Background of Existing Solid Waste Management and its Status                          | 3  |
|     | a. Numbers of Urban Bodies Constituted in the State of Sikkim                         | 3  |
|     | b. Current status of Municipal Solid Waste Management                                 | 3  |
|     | c. Quantity of Municipal Solid Waste generated daily from each town                   | 3  |
| 4.  | Cluster plan of MSW management for urban centers                                      | 4  |
|     | a. Disposal of waste at cluster Level                                                 | 4  |
|     | b. Initiatives in municipal SWM under Government of Sikkim                            | 4  |
| 5.  | Management Principles                                                                 | 5  |
|     | a. Effective segregation, collection and transportation                               | 5  |
|     | b. Collection and segregation at each town                                            | 5  |
|     | c. Procedure of Collection:                                                           | 6  |
|     | d. Other responsibilities and transportation                                          | 7  |
|     | e. Regulatory measures                                                                | 7  |
|     | f. Maximum Resource Recovery                                                          | 8  |
| 6.  | The first step to waste management is waste reduction                                 | 8  |
| 7.  | Effective treatment and Safe Disposal                                                 | 8  |
| 8.  | Vegetable and Fruit Markets waste collection centres (Rural Marketing Centres)        | 9  |
| 9.  | Marriage Halls/Community Halls                                                        | 9  |
| 10. | Hotels and Restaurants.....                                                           | 9  |
| 11. | Gated Communities & Institutions.....                                                 | 10 |
| 12. | Hospitals/Pathological Labs/health Care Centers (PHCs, PHSCs)                         | 10 |
| 13. | Construction and Demolition Waste (C&D Waste)                                         | 10 |
| 14. | Garden waste                                                                          | 11 |
| 15. | Slaughter House Waste                                                                 | 12 |
| 16. | Waste from Melas (Fairs)/ exhibitions/carnivals/religious festivals/tourist festivals | 12 |
| 17. | Disposal of waste                                                                     | 13 |
| 18. | Municipal Solid Waste process and treatment techniques                                | 13 |
|     | a. Composting of Biodegradable waste/ Waste to Energy through Bio-Methanation         | 13 |
|     | b. Material recovery of recyclable discards                                           | 13 |
|     | c. Management of electronic waste:                                                    | 13 |
|     | d. Ultimate Disposal of MSW-Land Filling                                              | 13 |

|     |                                                                                                                                                                    |    |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 19. | Closure of Landfill site and Post-Care                                                                                                                             | 14 |
| 20. | Financial requisites                                                                                                                                               | 14 |
| 21. | Mobile Sanitation Courts                                                                                                                                           | 15 |
| 22. | Grievance Redressal                                                                                                                                                | 15 |
| 23. | Institutional Mechanism                                                                                                                                            | 15 |
|     | a. Management Plan for institutional strengthening                                                                                                                 | 15 |
|     | b. Standardized Procedures                                                                                                                                         | 16 |
| 24. | Duties of District Magistrate or District Collector or Deputy Commissioner.....                                                                                    | 17 |
| 25. | Information Education & Communication (IEC)                                                                                                                        | 17 |
| 26. | Specific Components for Public awareness in Urban Local Bodies                                                                                                     | 18 |
| 27. | Tools and Components for Information Dissemination                                                                                                                 | 18 |
|     | a. Use of Print media:                                                                                                                                             | 18 |
|     | b. Use of TV/Cable TV/Radio                                                                                                                                        | 18 |
|     | c. Hoardings                                                                                                                                                       | 18 |
| 28. | Tools and Components for Interaction, dissemination and input of information                                                                                       | 18 |
|     | a. Mass awareness camp:                                                                                                                                            | 18 |
|     | b. Involvement of School children                                                                                                                                  | 19 |
|     | c. Involvement of religious samities                                                                                                                               | 19 |
|     | d. Involvement of Medical Practitioners:                                                                                                                           | 19 |
|     | e. Involvement of Women Associations:                                                                                                                              | 19 |
|     | f. Voluntary Organizations/NGO Involvements:                                                                                                                       | 19 |
| 29. | Tools & Components for Input of Information:                                                                                                                       | 19 |
|     | a. Sign consent from the house hold for the source segregation:                                                                                                    | 19 |
|     | b. Photographs for documentation:                                                                                                                                  | 19 |
| 30. | Time frame for implementation as per Rule 22                                                                                                                       | 20 |
| 31. | Action Taken Report on Solid Waste Management Rules, 2016.....                                                                                                     | 22 |
| 32. | Self-Declaration Format: RWA/Market Association/Gated Communities and Institution with an area > 5,000 sqm / Hotels/Restaurants/Establishment/ Building/Place..... | 31 |
| 33. | Self-Declaration Format for Households.....                                                                                                                        | 32 |

## **Abbreviation & Definition**

GMC- Gangtok Municipal Corporation

UD&HD – Urban Development & Housing Department

IEC- Information Education & Communication

CAPP- Community Awareness and Public's Participation

O&M Cost- Operation & Maintenance Cost

MSWM- Municipal Solid Waste Management

MT- Metric Tonne

MSWTF- Municipal Solid Waste Treatment Facility

ULB- Urban Local Body

SWM- Solid Waste Management

DPR- Detail Project Report

NGOs- Non Governmental Organizations

PHCs- Public Health Centres

SPCB- State Pollution Control Board

CPCB- Central Pollution Control Board

EPA- Environmental Protection Act

SHG- Self Help Group

CPHEEO- Central Public Health and Environmental Engineering Organization

NERCCDIP- North Eastern Region Capital Cities Development Investment Programmes

Haat- Open Air Market

Sabzimandis–Vegetables Markets