

GOVERNMENT OF HIMACHAL PRADESH DIRECTORATE OF URBAN DEVELOPMENT



HIMACHAL PRADESH MUNICIPAL SOLID WASTE MANAGEMENT (MSWM) STRATEGY-2015



**Himachal Pradesh
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HP MSWM STRATEGY -2015

1. INTRODUCTION

The municipal solid waste (MSW) management is a complex issue for Urban Local Bodies but essential and important with respect to public health, environment, and the quality of life of the citizens. The MSW (Management and Handling) Rules, 2000 warrant adoption of environment friendly and cost-effective MSW management. The issue of MSW management is becoming sensitive due to various factors such as increase in population, developmental activities, changes in socio-economic scenario and improved standard of living etc. The rate of MSW generation is an index of socio-economic development and economic prosperity of the region. Increasing industrialization and rising income levels lead to greater use of resources which further leads to the increased MSW generation and more complex composition of MSW than earlier. Thus, waste quantities as well as composition are inextricably linked to the vibrancy of economic activity and resource consumption pattern of the society which generates the waste. Further, the technologies to be adopted for MSW management and processing predominantly depend upon MSW quantity, quality and range of variations.

It is not the case that the field of solid waste management has no solution. In fact the entire developed world is managing the MSW successfully through the application of advanced and well developed technologies and management practices through purely private partnership. Rather the process of MSWM is standardised and we need to just understand the process, study the different



technological options and put them in place the appropriate technology, of course, with modifications suitable to our circumstances.

2. OBJECTIVE

The objective of the MSWM strategy is to create waste free cities/towns and provide clean and pollution free environment in the entire urban areas of Himachal Pradesh.

3. MSWM PRINCIPLES

- Highest Degree of Community Participation and community led management of MSW
- Segregation at source
- Waste to value through maximising recycling
- Endeavour to achieve zero land fill status
- Scientific land fill
- Polluters to pay

4. CURRENT PRACTICES

There are total 50 ULBs and 6 cantonment boards with total of 7 lakh population in the state of Himachal Pradesh. Though no serious effort has so far been made in the State to either know the quantity or quality of the waste being generated in the state. However some efforts on waste audit have been made by GIZ in Shimla & Manali. Quality and quantity of waste generated in the state does not remain the same through all seasons but it shows steep variation during different seasons due to massive floating population the State of Himachal Pradesh receives due to touristic activities.

4.1. COLLECTION:

There is no standard system of waste collection in our ULBs all over the state. Some ULBs, during the recent years have started household level collection of waste but it is in un-segregated form. Others are collecting the waste by placing big iron dust bins all over the towns. The ULBs have placed the big dustbins (Dumpers) at different locations without assessing the need, or doing any survey to identify the quantum of waste generation in different waste generating sources. Community has not been told as to how we want to collect or manage the waste generated in different parts of the town. As a result, some people use the dust bins to dispose of their waste but in other cases where waste bins/dumpers are away from their location, they dispose of the waste at un-notified location keeping in view their convenience. In fact the location of these dust bins have been found to be the dirtiest and stinking places in the town. Since the people have not been told about the use of these bins and there is no notice/sign board on or near the dust bins indicating the norms for the use of dust bins, they dispose of both bio-degradable as well as the non-biodegradable waste in the same bins.



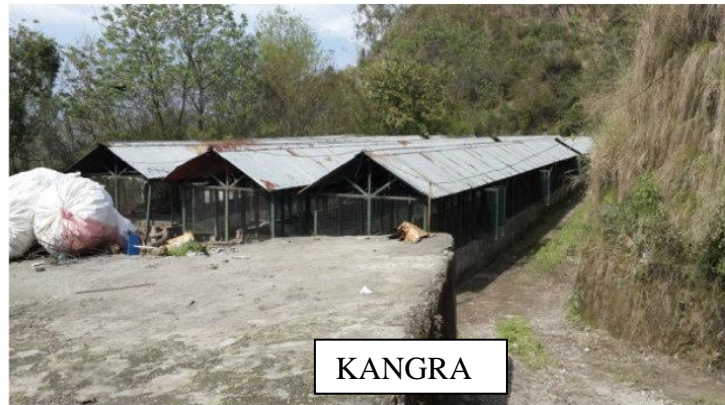
DUMPERS/BINS AND UNDECLARED SITES FOR WASTE DISPOSAL

4.1 SEGREGATION:

Whether we are collecting the waste through dumpers or we are collecting the waste from the source (door to door collection), it is in the un-segregated form. **This is where we are going wrong and this is the action/inaction that is failing our SWM efforts.** We presume that we will collect the waste from the entire town and dump the same at dumping site on the platform made at the site (in some places only) for the segregation without realising that it is an impossible task especially when the waste is in bulk.



DHARAMSALA



KANGRA



SUNDER NAGAR



THE PLATFORM IS AS CLEAN AS NEVER USED



SEGREGATION AT MANALI - AGAINST THE HUMAN RIGHTS

4.2 Recycling

4.3.1 RECYCLING OF BIODEGRADABLE WASTE:

We have spent several crores of rupees to construct composting pits all over the State and our municipalities are making unsuccessful efforts to make compost but there is not even a single unit where these pits are in use and any compost is being made. At some places, there is waste in 10-20% pits but that cannot be called composting. Un-segregated waste reaching the composting yard is the main reason for this failure.



UNUSED COMPOSTING PITS

4.3.2 RECYCLING OF NON-BIODEGRADABLE WASTE

This waste is collected by kabaris through the chain of rag pickers and waste useful to them goes to different places for recycling. Most of the non-biodegradable waste is collected by Kabaris from the source through rag pickers and some waste is collected by rag pickers from the dumpers/waste bins placed by the ULB at different locations in the town. This activity/management is independent of MSWM efforts of ULBs.



THIS IS THE **STARTING POINT FOR US AND WE NEED TO RECTIFY THE DRAWBACKS WE CURRENTLY HAVE IN OUR EXISTING MSWM SYSTEM.**

5.STRATEGY TO BE ADOPTED FOR MSWM IN HP

5.1 WASTE AUDIT TO ASCERTAIN THE QUALITY AND QUANTUM OF WASTE GENERATED IN THE STATE.

As of now, we are not clear as to what is the type, quantum and quality of the waste being generated by different sources i.e.; households, offices, institutions, commercial establishments, dhabas, restaurants etc. So this would be the first step in managing municipal solid waste in the state. Waste audit is a massive task and would be performed in a phased manner to get the fair idea about the quantity of waste being generated in different towns and in different seasons. However in order to begin scientific waste management process immediately national average data would be used to plan waste management.

5.2 TYPES OF THE WASTE

When we view the types of the waste, we would be viewing in terms of its **economic value and recyclability**. Actual information would emerge after the survey/waste audit but before we undertake the task in hand the entire planning would be based upon the assumption that we would be handling following types of waste:

- Bio degradable Waste
- Plastic Waste
- Non - Biodegradable waste (Including e-waste)
- Waste for landfill



5.3 STRATEGIES FOR HANDLING MUNICIPAL WASTE

5.3.1 BIODEGRADABLE WASTE

This waste has the potential of generating the income through the composting, biogas or any other product such as electricity through incineration. If this waste is collected in the segregated form, it is very easy to recycle it to generate the profit which would generate income to facilitate waste management further. Three processes with respect to management of bio-degradable solid waste need to be finalized during the survey period.

5.3.1.1 Waste Collection:

Currently, different methods are being employed to collect the municipal waste all over the state. The state of Himachal Pradesh would make an endeavour to put in place the state of the art technology. Door to door waste collection system that is being considered as highly advanced method and is adopted by different ULBs all across the country is an old and obsolete mode of waste collection. Moreover it is not sustainable keeping in view the paucity of massive manpower required.

The state of Himachal Pradesh therefore would adopt latest technology for waste collection and underground waste bins would be placed in such a fashion that no person in the town has to walk for more than 100 mtrs to find waste bin. It would be ensured through effective community mobilisation that people dispose of segregated biodegradable waste in waste bin meant for it. There would be separate waste bin for biodegradable & plastic waste with proper information displayed on the waste bins. Community would be consulted even for finalising the sites for waste bins and clearing of the waste bins. Special care would be taken to devise the mode of collection of bulk bio degradable waste being generated by commercial establishments such as restaurants, dhabas etc.

So the underground waste bin technology that is the latest state of the art technology all over the world would be adopted in the state of Himachal Pradesh. The provision of underground waste bins would make it convenient for the community to dispose off their waste as per their own convenience and it would save the waste from littering by stray cattle and dogs/monkeys. The location of waste bin would be decided in such a fashion that it is accessible by our waste collection vehicle and at the same time it is convenient for our community.

The community would be made fully aware of the process through extensive IEC, personal contacts, display boards and hand bills etc. Even print and electronic media will also be made use of.





5.3.1.2 Segregation at Source:

It is an accepted fact that our efforts of managing Solid waste all over the country is failing mainly for the want of segregation at the source and so is in the State of Himachal Pradesh. It is not a difficult task at all but it seems an impossible task. It is so because of the fact that community participation is absolutely lacking and currently community and municipality/government are like two opposite poles of the globe or two lines of the railway track that never meet. Municipality has become the sole agency to manage the waste and community has become the pressure group to just assume the role of criticising the Municipal Governance failure in the field of MSWM. *We generally presume that community is indifferent but in reality community is waiting for partnership and keen to support their own cause. We need to just approach the community in appropriate manner and provide space for community partnership and ownership.* So the community participation and community ownership would be at the heart of entire strategy for MSWM in the State of Himachal Pradesh.

5.3.1.3 TRANSPORTATION

The underground waste bins would be cleared through specially designed vehicle and biodegradable waste would be transported to the waste recycling unit and recycling would be done through the appropriate technology finalised through scientific feasibility study.





5.3.2 POLYTHENE AND PLASTIC WASTE:

Though Himachal Pradesh has banned polythene yet there is ample plastic waste that is generated due to sale of several items packed in the plastic. This waste when mixed with bio-degradable or non-bio-degradable waste, renders these waste non recyclable. So there is a need to collect this waste in segregated form. This plastic waste could be recycled or used in road construction or it can be destroyed in kiln of cement factories established in the state. For this purpose we need to train our municipalities as to how to use plastic waste in road construction and also coordinate with cement factories.

The contact has already been established with cement factories and ACC alone has the capacity to burn 90 tons of waste per month.

5.3.2.1 COLLECTION FROM THE SOURCE:

Separate waste bins to collect the polythene/plastic waste would be placed all over the town. These sites will be selected through the consultations with the community. The community will deposit all plastic waste in these plastic waste bins and depending upon the volume of waste generation the municipality would fix the frequency of clearance of this waste from waste bins. This plastic waste would be taken to waste yard (environment Depot) where it would be prepared to be sent to ACC cement factory.

5.3.2.2 PREPARATION OF WASTE FOR CEMENT PLANT:

Since the volume of this waste is more, we need to find out the strategy to compress it through appropriate technology; shredding or compressing, and this would be the part of scientific feasibility study. **Partnership** has already been established with ACC Barmana and ACC Barmana is ready to take the



polythene/plastic waste from our municipalities to burn it in the kiln as a CSR activity. The ACC Barmana has indicated that it has the capacity to accept and burn 3 Tons of the waste every day i.e. 90 tonnes of waste every month. This way the ULBs shall take following actions for management of plastic/polythene waste.

- ACC will be consulted as to what types of plastic waste will be accepted by it. It will certainly include all types of plastic/polythene packing materials, mineral water bottles, medicine strips, etc
- Such material shall be collected separately and taken to municipal waste yard at environment depot.
- It will be prepared in the manner acceptable to ACC/cement factories
- Since the quantity of polythene waste in the municipalities would be low, no municipality will send the waste to ACC in isolation. Clusters will be formed and all municipalities in the cluster will coordinate the transportation of the waste to ACC plant, in order to economise the transportation costs.
- In order to ensure smooth collection of waste at ACC plant, days and weeks shall be fixed for each cluster to despatch the waste to ACC plant.

5.3.3 NON-BIODEGRADABLE WASTE (OTHER THAN POLYTHENE):

This waste is already being managed by Kabaris through rag pickers but since there is no organised system to collect the waste from households, less than 50% waste goes to Kabaris. Rest of the non-biodegradable waste goes to un-notified dumping sites selected by the community on its own informally or our dust bins or mixed with other wastes sent to dumping sites. The rag pickers then collect the waste from above mentioned locations. **In case of non biodegradable waste, the following strategy shall be adopted:**



5.3.3.1 STRONG PARTNERSHIP WITH KABARIS.

Strong partnership shall be established with Kabaris and they will be facilitated to collect all types of non-biodegradable waste from the source in a planned strategic manner. This would be a win win situation for both; Kabaris & Municipality.

5.3.3.2 ENVIRONMENT DEPOT

A special yard/environment depot shall be established in all the municipalities and all kabaris shall be allotted adequate space in the yard to collect and store their waste. No kabari shall be allowed to litter the collected/stored waste at any location other than space provided to them in the environment depot.

- They will be provided a space in environment depot where they will handle all waste collected by them from the source
- Adequate space would be identified and Kabari yards would be designed as per the needs of the Kabaries to facilitate collection, segregation and transportation.
- The space would be rented out by the municipality
- The yards would be designed to collect, sort out and despatch all types of waste collected by them.
- Kabaries thereafter will not be allowed to collect or store their waste anywhere else in the town.

5.3.3.3 BULKY WASTE

In case of bulky waste appropriate mechanism would be set up to provide vehicle on demand wherein people having bulky waste to dispose of would be in position to demand the vehicle and hand over the waste to municipality/kabaris at the location near to them. This bulky waste would be then taken to environment depot for further transportation for recycling.



6. WASTE RECYCLING - WASTE TO VALUE

6.1 WASTE CHARACTERISATION

Decision of deploying appropriate MSW utilization/ processing/recycling technology depends on the physico-chemical characterization of the municipal solid waste. In view of this, Directorate of Urban Development, Government of Himachal Pradesh Shimla has initiated a project and approached National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur in Jan, 2015 to establish physico-chemical characterization data of the municipal solid waste samples in different seasons (Winter and Summer) at three dumpsites located at Shimla, Mandi/ Sundernagar and Dharamsala.

The study of physico-chemical characterization of the municipal solid waste samples further aims at using the data obtained for evolving at best suitable technological option for MSW utilization. The MSW may be used, depending upon the physico-chemical characteristics either for energy recovery using different technologies such as biogas generation (Biomethanation), refuse derived fuel project (RDF), or as a fertilizer/ soil conditioner by using mechanical composting/ vermin-composting etc.

7. SANITARY LANDFILL

The Sanitary Land-filling would be required as 100% waste recycling is not possible in Himachal Pradesh. The Landfill capping, landscaping is being explored through the Trisoplast® technology (a patented technology offered by Trisoplast Mineral Liners International BV of the Netherlands) through the innovative mineral barrier for environmental protection and waterproofing. The feasibility study is also exploring the thermophillic biogas technology (which produces more biogas than mesophillic and would reduce the problem HP may face in winters).



8. POLLUTERS TO PAY

Since the entire MSW management would be through community ownership, user charges shall be levied on each and every household/establishment generating waste. Past experiences in few towns of the state where door to door collection of waste is being done and commitments made by community during community mobilisation campaign in Sundernagar has established that people are enthusiastic to pay for waste disposal and are keen to see proper MSW management system functional in their towns. Municipal Corporation Shimla and Municipal Committee Mandi have already fixed the charges for different establishments and the ULBs would be free to adopt the same. However each ULB would be free to levy user charges in consultations with their communities.

9. CLUSTER APPROACH

Himachal Pradesh is a hilly state and towns are very small and scattered. The town wise SWM Plants may not be financially viable. Hence, cluster approach would be adopted which will be financially viable for the PPP Mode. Two pilot projects have already been identified and initiated in two clusters namely; Dharamsala cluster (comprising of Dharamsala, Kangra, Palampur, Nagrota Bagwan, Jawala ji and Dehra) and Sunder Nagar cluster (comprising of Sunder Nagar, Ner Chowk, Mandi and Riwalsar). Based upon the results of these two pilot projects, rest of the ULBs too would be organised into clusters to achieve economies of the scale and it would be done on the basis of scientific feasibility study.

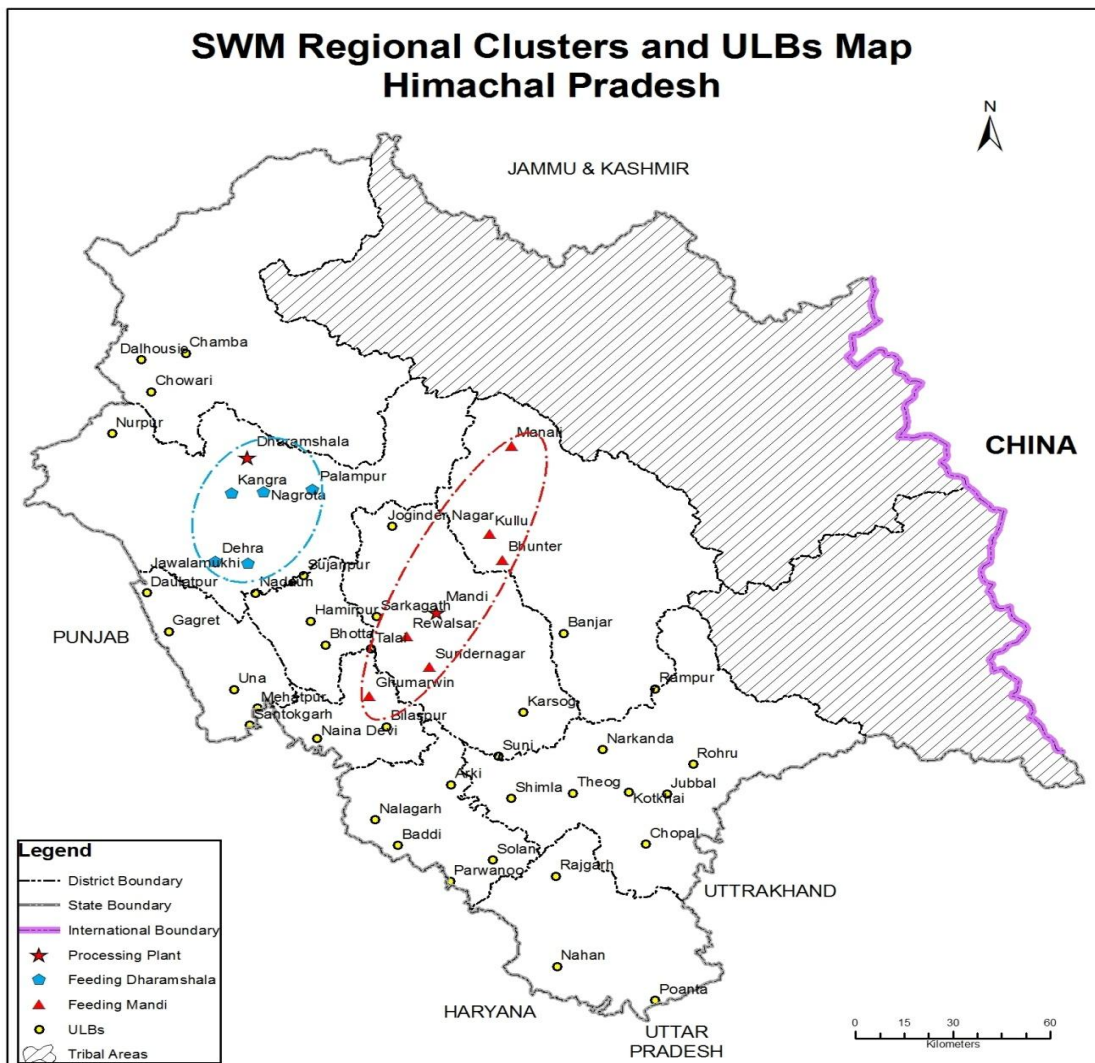


10. FEASIBILITY STUDY

Currently the MSWM is highly advanced and waste is being managed all over the world in PPP mode. The time has now come to put in place highly advanced technologies and management practices rather than muddling through or attempting hit and trial methods. Hence the state of Himachal Pradesh would follow well planned and scientific approach to adopt state of the art sustainable MSWM system. The process has already been initiated in collaborations with The Netherlands and the Embassy of Netherland is helping the state by conduction feasibility study and providing technical assistance to develop two pilot projects at Dharamsala and Sundernagar clusters.

11. PILOT PROJECTS

Since the state of Himachal Pradesh has decided to put in place the state of the art sustainable MSWM system in PPP mode through active community participation, the entire state shall be covered in a phased manner. In the first phase pilot project shall be undertaken in two clusters of Dharamsala (comprising of Dharamsala, Kangra, Palampur, Nagrota Bagwan, Jawalaji & Dehra ULBs) and Sundernagar. (comprising of Mandi, Nerchowk, Sundernagar, Rewalsar, Kullu, Bhunter and Manali ULBs) Once the proposed arrangement is pilot tested in these two clusters, it will be replicated in the entire state in one go.



12. FINANCIAL:

The Financing would be met out under the flagship programme of the Government of India, Swachh Bharat Mission (SBM-Urban), wherein the PPP project would be eligible to avail 20% Viability Gap Funding (VGF). State would adopt innovative approach to involve Gram Panchayats located in peri-urban areas too as these Panchayats already depend upon ULBs for their waste management. These Gram Panchayats would be allowed to participate/join in the cluster through contribution of their share available with them under (SBM-Rural). Besides this the efforts will also be made to arrange the gap funding from CSR (Corporate Social Responsibility) funding from the industry located in the cluster areas.



13. COMMUNITY PARTICIPATION:

Community organization/community mobilisation or the community participation, whatever term we may assign to this phenomenon but this means that community actually take decision in all aspects of the problem we are trying to solve. Here in our case, the problem is related to management of solid waste and our role is to facilitate the community to decide as to how it wants to manage its waste. Our role would be confined to facilitation, motivation and capacity building to enable the community takes appropriate decision to put in place a **sustainable MSWM system**. Once we succeed in this endeavour, all municipal solid waste throughout the State would be managed automatically.

Most important at this juncture is to understand; **what is community participation?** Most of the times we feel that mere disseminating the information by way of **posters, pamphlets and awareness camps** conducted in purely bureaucratic ways would ensure community participation. **NO**, it would just create confusion and alienation. In fact the community organization is a highly technical job and its practitioners need special training and special attitude. There is a set road map to approach and reach the community and here we would be meticulously following this road map as follows:

13.1 WORKSHOP OF TOWN LEADERS

At the outset, there would be an awareness workshop for all natural leaders and officials involved in the task to thoroughly discuss the concept of solid waste management and decide with consensus to put in place the sustainable municipal solid waste management system.

Here, in this workshop, the participants would be exposed to the present state of Solid Waste Management all over the state and what would be our concept, plan,



strategy and road map for putting in place the appropriate MSWM system. Based upon the discussions and suggestions received from the community leaders, final plan and strategy would be finalized for dissemination amongst the community. The major stakeholders who would be associated in the ice breaking workshop would be; Hon'ble MLA (local), SDM, MC President, MC Vice President, all elected members of the MC, EO, all officials of MC, all heads of the offices in the town, office bearers of the Beopar Mandal, office bearers of the hotel association, heads of the educational institutions, in charge of NSS in different educational institutions, NGOs, CBOs, office bearers of the MM/YM/SHGs, Kabaris, office bearers of the residents welfare associations (If any) etc.

There would be second workshop with the most important and real field functionaries such as all safai karamcharis, rag pickers, kabaris, SHGs etc. These two workshops would be to sensitise the community leaders and actual functionaries who would be actually handling the waste and the process on ground. This segment is generally ignored while planning such community led programme. So we need to take special care to intimately involve this segment of our team.

13.2 CONTACTING EVERY HOUSEHOLD THROUGH TOWN LEADERS AND SUPPORT ORGANIZATION

Once the plan and strategy is finalized in consultations with the community leaders and the field functionaries, the second step would be to reach each and every member of the community. This would be the most difficult but most important/indispensable step in the process. The target here would be to **make community completely well conversant with the plan and strategy**. This step has to be performed very precisely and meticulously. It needs a dedicated team of volunteers who will get in touch with each and every member of the community



and remain in their contact till the system starts functioning as per design and plan. The following manpower would be required to perform this task to achieve desired results:

- One trained personal in each ward. This trained person could be provided by some voluntary organization/NGO. This person would be the paid field functionary who would be paid monthly honorarium and he/she will work on whole time basis for at least three months.
- This trained field functionary would be supported by one volunteer in each ward. This volunteer could be paid an incentive worth Rs 1000/-.
- Ward member to provide the required leadership in the ward
- President, Vice President and EO MC to oversee the progress in each ward and provide required leadership.

13.3 ATMOSPHERE BUILDING/IEC

It would be important for such community based project to be successful that there is proper environment building to ensure that every resident of the town is fully charged to willingly own the mission of "Zero waste and zero Landfill". This task would be accomplished through mass scale awareness and IEC through the following modes:

- Rallies by school and college children
- Slogan writing and painting competitions in schools and colleges
- Partnership by the media
- Nukkad nataks
- Posters and banners
- Any activity that MC feels necessary for the project. MC would be provided with untied funds for the purpose



13.4 TASKS TO BE PERFORMED BY THE VOLUNTEERS DEPLOYED BY THE SUPPORT ORGANISATION

The volunteers will collect the primary data through a proper format developed by the social development and capacity building experts.

- Preparing the list of households
- Making each and every household well conversant with the concept and processes of MSWM that we want to put in place
- Taking feedback and suggestions from the community
- Conduct of household survey to assess the various types of waste being generated and quantum of each type of waste.
- Identification of suitable collection points/Waste in locations
- Current practices of disposal of solid waste by household and commercial establishments.
- Reaction of community to the proposed MSWM
- To organize the ward level hearings and awareness camps
- Once the actual collection of MSW is started, these field functionaries would be expected to monitor the waste segregation and collection as per norms set.
- **Most importantly, these field functionaries will make efforts to motivate local residents to join them in their field work and make it a movement.**

13.5 TRAINING OF SUPPORT ORGANIZATION and its VOLUNTEERS;

The role of support organization is very **crucial and success and failure depends** upon its competence, dedication, sincerity and optimism. All field functionaries of the support organization are required to be well conversant with the process of SWM chain, our planning and strategy and role of each stakeholder. Hence they would be required to be oriented towards the goals and community mobilisation



processes. They are to act as the "**Change agents**", hence their quality has to be of very high standards. In order to achieve this, a 3-days orientation cum capacity building workshop would be organized for these field functionaries. Once they are trained and sent to the field their activities and progress would be monitored by the President, VP, all ward members and EO of MC. In official capacity they will report to the EO MC. These field functionaries would be the whole time volunteers and are expected to take the task as a mission with missionary zeal.

13.6 FUNDING OF COMMUNITY MOBILISATION CAMPAIGN

The community mobilisation campaign shall be funded through comprehensive capacity building project sanctioned by Government of India for the purpose.
