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Solid Waste Management



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Solid waste Management

Success story of Pammal Municipality

Introduction

Waste generation is strongly linked to per capita income and consumption. As income increases, consumption increases as more income is spent on goods and services. This is, especially, more when there is a transition from low income level to middle income level. This could be attributed to changing lifestyles, food habits and living standards. Since urban consumers consume more than rural consumers, generation of waste in urban areas is higher.

According to UN estimates, India will have more than 40 percent, i.e. over 400 million people, clustered in cities over the next thirty years. Owing to this rapid urbanization there has been an increase in the solid waste generated in the last few decades. Hence, there has been a growing concern in provision of sanitation facilities and environmental issues in urban areas as these are the major determinants towards public health conditions.

Managing solid waste is, thus, an important environmental concern but unfortunately, it has a lower priority than provision of water supply and sanitation facilities. Solid waste management is perceived as a linear activity of collecting waste and disposing them.

The problem statement

In India managing solid waste is a function of the local government namely the Municipalities which are the Urban Local Bodies. About half of the municipality's expenditure is allocated for this activity. However the activity is plagued by the following issues.

Financial issues: Limited revenues earmarked for municipality to carry out effective Solid Waste Management

Institutional issues: Lack of suitable and adequate staff, and fragile links with other suitable agencies.

Operational issues: Non-availability of land for disposal of collected waste. Accumulation of solid waste in heaps resulting in breeding of disease vectors such as flies, mosquitoes, cockroaches, rats etc., Indiscriminate dumping of waste at disposal site leading to contaminated water leading to deterioration of water quality in surrounding areas, bad odor emanation of land fill gas containing methane which is explosive and also results in global warming

Social issues: The activity is labour intensive with a variety of people involved namely the rag pickers, scavengers and municipal workers who are the informal waste collectors. Lack of public awareness on SWM issues on effective disposal compounds the problem.





Policy response to the problem

All the above issues were highlighted by several civic and environmental activists, which resulted in direction by the Supreme Court to Ministry of Environment and Forests to draft rules on MSW. Realizing the need for proper and scientific management of solid waste, the MSW (Management and Handling) Rules 2000 were notified by the Ministry of Environment and Forests, Government of India, in exercise of Powers conferred by section 3,6 and 25 of the Environment (Protection) Act, 1986 with the objective of regulating the management and handling of the Municipal Solid Wastes. The objective of these rules was to make every municipal authority responsible for the implementation of the various provisions of the Rules within its territorial area and also to develop an effective infrastructure for collection, storage, segregation, transportation, processing and disposal of Municipal Solid Wastes.

The progress in implementation of the activities by the municipalities in adherence to the MSWM Rules 2000 has been slow. There are some examples where the interventions have been successfully implemented. Pammal Municipality is one such example. The above rules become important in the context that the Pammal Municipality is a Award winning Municipality and has gained recognition as a model unit because of its adherence to the MSWM Rules 2000.

Establishment of Model Solid Waste Management Unit at Pammal

Pammal is a third grade municipality with 21 wards and a population of approximately 100,000, located 17 km from Chennai. In 1994, Ms. Mangalam Balasubramanian and a group of women formed a Mahalir Mandram (women's association) to address the challenge of waste management in Pammal. This waste was deposited in the neighborhood bins. Awareness – raising street plays were held to educate residents about pollution and the benefits of waste management. At that point, the Mandram began segregating the waste and making vermicompost from the biodegradable material. The successful production of compost inspired the Sankara Eye Hospital to allocate space on a portion of their land in Sankara Dhyana Mandapam for the Mandram's vermi compost production. In 1995, the Mandram registered itself as a self help group and obtained a loan, which was used to construct a vermi composting shed. The impact of their work attracted the attention of many officials and impressed Pammal municipality's executive officer.

In 2004, representatives of PepsiCo visited the project and subsequently suggested that the activities be expanded to cover a larger area. In 2005, using PepsiCo's support, a larger shed with 108, one –two tone capacity vermi compost tanks was constructed on 1.1 acres provided by the

municipality. The Municipality then invited Ms. Balasubramanian to expand the service to cover all 21 wards in Pammal. The Mandram registered itself as an NGO named Exnora Green Pammal and signed a contract with Pammal municipality.

Performance of activities at Pammal model SWM

The key objective of the project is to evolve a garbage free Pammal with extensive green cover. The strategy used in the implementation has been— Recycle, Reuse, and Reduce garbage going to landfill.

The activities included.

- Door to door collection of garbage from households by Green Ambassadors (Pasumai Thuduvargal name in Tamil illustrating the dignity of Labour) segregated at source as organic and inorganic.



- Conversion of organic waste into vermin compost with a brand name “Excellent organic compost” (Exorco)



- The inorganic waste is separated into different categories such as pet bottles, HDF, LDP, Laminates, Cardboard, Pet bottles are crushed into pellets. Thin carry bags are crushed and sent to CIPET (Central Institute of Plastic Engineering Technology) Students for their project work. Some of the water pouches and thin carry bags are recycled in a weaving centre established by the NGO near Thirukazhukundram.



- Conversion of dry leaves into briquettes. Dry leaves such as coconut leaves, garden dry leaves are converted into briquette.



- Conversion of food waste, canteen waste and meat waste into Energy. At present a demonstration unit of waste to Energy is set up producing bio gas and producing 5 KW of electricity lighting street lights.



In all such above activities the total waste materials are converted into usable materials and provide employment opportunities to many women from down-trodden families.

Table showing the particulars of the SWM activities in Pammal.

Population Covered	100,000
Average total Waste (Kg/per day)	25,110
Bio degradable (Kg/ per day)	12,500
Average Recyclables (Kg/per day)	3,500
Average Compost Produced (Kg/per day)	1,200
Average Dry leaves converted into Briquettes (Kg/per day)	1,000
Average Food waste used for producing Bio gas (Kg/per day)	250
Average waste dumped (Kg/per day)	6660
Average waste diverted (Kg/per day)	18450
% of total waste not land filled	70%
Per capita waste (Kg/per day)	0.25
Total carbon emission reduced	
Bio gas :	96 tons
Other Recyclable :	5182 tons

Lessons Learned

The success of solid waste management depends upon people's participation. The rate of recovery of recyclables is not as high as it could be, largely because some residents do not segregate their waste. When residents don't segregate their waste, the workload of green ambassadors is increased because they have to segregate the residents' waste, the value of recyclable material is reduced because the recyclables become dirty, the quality of

biodegradable material is reduced, and the amount of landfill material increases. If more residents segregate their waste properly, the recovery rate of recyclable materials will increase, and the amount of landfill waste will be lower. Raising awareness to achieve widespread public cooperation in terms of segregation of waste requires continuous effort and is likely to take several years. Changing people's habits is a gradual process. Solid waste management requires money for startup and for operation. Services cannot be sustained from one-time grants. The revenue earned by the sale of compost and recyclable materials and the collection of a user fee covers less than 10% of the operating costs. The Municipalities /local bodies by imposing a Green Tax on all residents could assist in getting segregated materials. Collecting a user fee is not an ideal way to generate revenue for solid waste management because payment is irregular, and collecting the fee is a considerable burden for the service provider. Although collection of a user fee strengthens rapport between the service provider and residents, such collection becomes a very costly task because collecting the fee consumes an enormous amount of the service provider's time.

Conclusion

The Pammal SWM experience demonstrates that successful implementation of the Government's rules depend upon determined local leadership, public awareness, involvement and cooperation of residents, qualified staff, attentive human resource management, proper and on going financial support and physical facilities. Together such elements can achieve major improvements in the cleanliness of neighborhoods as well as a significant reduction of waste.

This article was written by

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EVENTS

National Green Corps Training Programme in Hosur District, Tamil Nadu.

A One day Training Programme for the NGC Teacher Co-ordinators of Hosur District was conducted at "Vijay Vidhyalaya Matriculation School, Hosur" on 10th August 2011. Around 100 teacher coordinators participated in the training programme. The training programme was sponsored by the Titan group of companies. The Chief Educational Officer and Assistant Educational Officer, Hosur participated in the training programme. Thiru. A. B. Thiruvengadam, NGC State coordinator gave a brief lecture about the environmental friendly practices to be followed in the schools and to involve the students in various environmental activities such as celebration of green days, conservation of wild life, vermicomposting, planting and protecting trees etc., Thriu. J.D. Marcus Knight, S.P.O, ENVIS Centre gave a lecture on Solid Waste Management with tips on energy conservation and simple ways to reduce, recycle and reuse.



THE INTERNATIONAL DAY FOR THE PRESERVATION OF THE OZONE LAYER

16th September 2011

“HCFC phase-out: a unique opportunity”

The United Nations’ (UN) International Day for the Preservation of the Ozone Layer is celebrated on September 16th every year. This event commemorates the date of the signing of the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987.

The international community adopted the Montreal Protocol on Substances that Deplete the Ozone Layer to protect the earth from harmful ultraviolet radiation. In more than 24 years of successful implementation, the Protocol has been gradually strengthened to cover the phase-out of nearly 100 ozone-depleting substances. The latest adjustments were adopted in 2007 to accelerate the phase-out of hydrochlorofluorocarbons, or HCFCs.

The International Day for the Preservation of the Ozone Layer (16th September) also offers an opportunity to celebrate the significant benefits brought about by the Montreal Protocol. Specifically, by reducing the production and import of ozone-depleting substances by over 98 per cent, the parties have put the ozone layer firmly on the path to recovery and helped to ensure that present and future generations will reap the benefits of the parties’ forward-looking and bold actions. On this day primary and secondary school educators throughout the world organize activities that focus on topics related to the ozone layer, climate change and ozone depletion.

In Chennai, the International Day for the Preservation of the Ozone Layer was celebrated by the Tamil Nadu Pollution Control Board and the Department of Environment with the help of school students from various city schools. Awareness programmes such as street plays and human chains were conducted by the school students and the TNPCB staff. A rally with banners and placards was also conducted. The Honorable Minister for Environment and Pollution Control Thiru T.K.M. Chinnaiah, the Principal Secretary to Government, Environment and Forest, Thiru C.V. Sankar, I.A.S., and the Director of Environment, Thiru T. S. Srinivasamurthy, I.F.S., participated in this programme.



Did you know?

RECYCLING SAVES ENERGY

EVERY TIME A NEW PRODUCT IS MADE FROM RAW MATERIALS, LARGE AMOUNTS OF ENERGY ARE CONSUMED. RECYCLING PRODUCTS DECREASES THE AMOUNT OF ENERGY IT TAKES TO PRODUCE THESE ITEMS.

WHY SHOULD WE CARE?



Recycling uses LESS energy



so FEWER fossil fuels are burned



which REDUCES carbon dioxide in the atmosphere



and DECREASES greenhouse gases



which DECREASES global warming.



Using recycled scraps to make aluminum cans uses 95 percent less energy than making cans from raw materials.



It takes 75 percent less energy to make recycled steel than steel produced from raw materials.

ENERGY IS USED IN THE

4

STAGES OF PRODUCT DEVELOPMENT:
EXTRACTION OF RAW MATERIALS
MANUFACTURE OF RAW MATERIALS INTO PRODUCTS
PRODUCT USE BY CONSUMERS
PRODUCT DISPOSAL

Energy plays a role in all 4 stages! Knock out one of these steps by recycling and you've saved energy.



For more recycling and energy-saving information, visit www.recyclemore.org.

HOW DOES COMPOSTING HELP THE ENVIRONMENT?



GREENHOUSE GASES TRAP HEAT IN THE ATMOSPHERE.

Too much greenhouse gases can contribute to the depletion of the protective ozone layer and climate change.

HUMAN ACTIVITY HAS INCREASED GREENHOUSE GAS EMISSIONS OF:

- carbon dioxide (CO₂)
- methane (CH₄)
- nitrous oxide (N₂O)
- fluorinated gases

The best way we can help decrease methane emissions is to compost!

COMPOSTING DECREASES THE GREENHOUSE GAS, METHANE.



composting produces nutrient-rich fertilizer

Composting = recycling organic, decomposable, biodegradable waste into nutrient-rich fertilizer for our crops.

- aerobic nature of composting produces very little methane
- composting will decrease the amount of trash that goes into landfills
- composting decreases methane emissions

What are some everyday items that can be composted?

- Bread, grains, pasta
- Coffee grounds, filters
- Eggshells
- Tea bags
- Vegetable, fruit scraps
- Shredded paper
- Paper towels
- Leaves

Methane is a greenhouse gas that is, over the course of 20 years, **72 times more potent than CO₂**.

LANDFILLS ARE THE LARGEST HUMAN-MADE CONTRIBUTOR OF METHANE INTO THE ATMOSPHERE.



When organic waste is disposed of in the trash, instead of composted, it ends up in a landfill. As the landfill is filled and covered, no air can pass through, causing anaerobic conditions. In these conditions, the decomposition of organic waste produces methane within the landfill that needs to be released.

aerobic = air
anaerobic = no air



For more composting and environmental information, visit www.recyclemore.org.

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