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INTEGRATED APPROACH FOR MUNICIPAL SOLID WASTE MANAGEMENT

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ABSTRACT

Urban India is now the world's third-largest garbage generator. However, it's not the amount of waste generated that's as much of an issue as the fact that more than 45 million tonnes, or 3 million trucks worth, of garbage is untreated and disposed of by municipal authorities everyday in an unhygienic manner. One of the major problems being faced by cities and towns relate to management of municipal solid waste (MSW). Waste quantities are increasing and municipal authorities are not able to upgrade or scale up the facilities required for proper management of such wastes. In many cities and towns, garbage is littered on roads and foot-paths. Due to lack of serious efforts by town/city authorities, garbage and its management has become a tenacious problem and this notwithstanding the fact that the largest part of municipal expenditure is allotted to it. Citizens are also not accustomed to use the available storage facilities (dust bins) set up by the authorities. It is not uncommon to find 30-50% of staff and resources being utilized by Urban Local Bodies for these operations. Despite this, there has been a progressive decline in the standard of services with respect to collection and disposal of municipal solid waste including hospital and industrial wastes, as well as measures for ensuring adequacy of environmental sanitation and public hygiene. So there must be a integrated approach with sincere participation of all stake-holders to handle this issue.

Keywords—Integrated approach, stake holders, littering, garbage, tenacious problem.

I. INTRODUCTION

Integrated solid waste management refers to the strategic approach to sustainable management of solid wastes covering all sources and all aspects, covering generation, segregation, transfer, sorting, treatment, recovery and disposal in an integrated manner, with an emphasis on maximizing resource use efficiency. The primary purposes of solid waste management (SWM) strategies are to address the health, environmental, aesthetic, land-use, resource, and economic concerns associated with the improper disposal of waste. These issues are an ongoing concern for nations, municipalities, corporations, and individuals around the world.

II. NEED FOR ISWM

1. Cities are facing an increasing growth in population, and shares in GDP growth, resulting in – among other things – increasing quantities of waste being generated
2. Due to changing lifestyles and consumption patterns, the quantity of waste generated has increased with quality and composition of waste becoming more varied and changing.
3. Industrialization and economic growth has produced more amounts of waste, including hazardous and toxic wastes.
4. Complexity, costs and coordination of waste management has necessitated multi-stakeholder involvement in every stage of the waste stream. This calls for an integrated approach to waste management.
5. Local Governments are now looking at waste as a business opportunity,
(a) to extract valuable resources contained within it that can still be used and (b) to safely process and dispose wastes with a minimum impact on the environment

III. STATUS OF MUNICIPAL WASTE IN INDIA

- i) As per report (May 2000) of Ministry of Urban Development (MoUD), Government of India that 1,00,000 MT of Municipal Solid Waste was generated daily in the country.
- ii) During the year 2004-05, Central Pollution Control Board (CPCB) through National Environmental Engineering Research Institute (NEERI), Nagpur conducted survey in 59 cities (35 Metro cities and 24 State Capitals) and estimated 39,031 Tons per day MSW generation in these 59 cities/towns.

- iii) The survey conducted by the central institute of Plastics Engineering and technology (CIPET) at the instance of CPCB has reported generation of 50,592 tonnes of MSW per day in the year 2010-11 in same 59 cities.
- iv) As per information received from State Pollution Control Boards/ Pollution Control Committees (in between the year 2009-12), 1,27,486 TPD (Tons per day) municipal solid waste is generated in the Country during 2011-12. Out of which, 89,334 TPD (70%) of MSW is collected and 15,881 TPD (12.45%) is processed or treated.

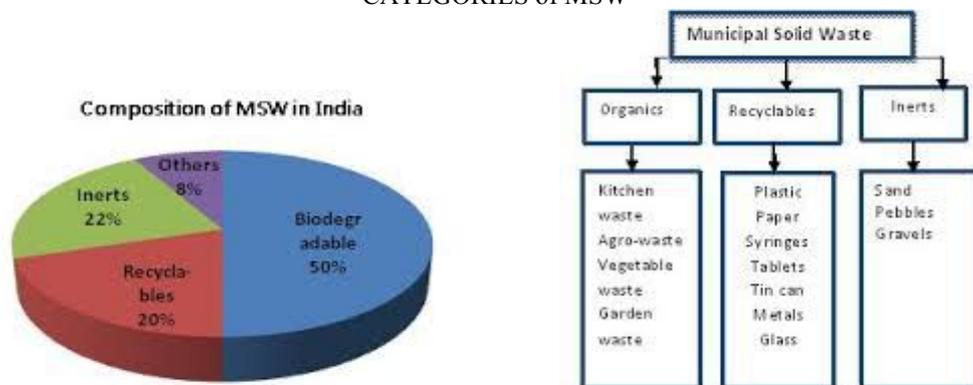
An Integrated Solid Waste Management System covers all aspects of waste management; from waste generation through collection, transfer, transportation, sorting, treatment and disposal. Data and information on waste characterization and quantification (including future trends), and assessment of current solid waste management system for operational stages provide the basis for developing a concrete and locality-specific management system.

Prior to design any Integrated Solid Waste Management Scheme there is utmost need for the following correct information:

- 1 Waste charectrisation & Quantification future trends
- 2 Prevailing Solid Waste Management System & Gap therein
- 3 Target for ISWM
- 4 Constraints & Stakeholder Concern

After quantifying the waste it should be characterized in different categories prior to implement the steps of integrate approach

CATEGORIES of MSW

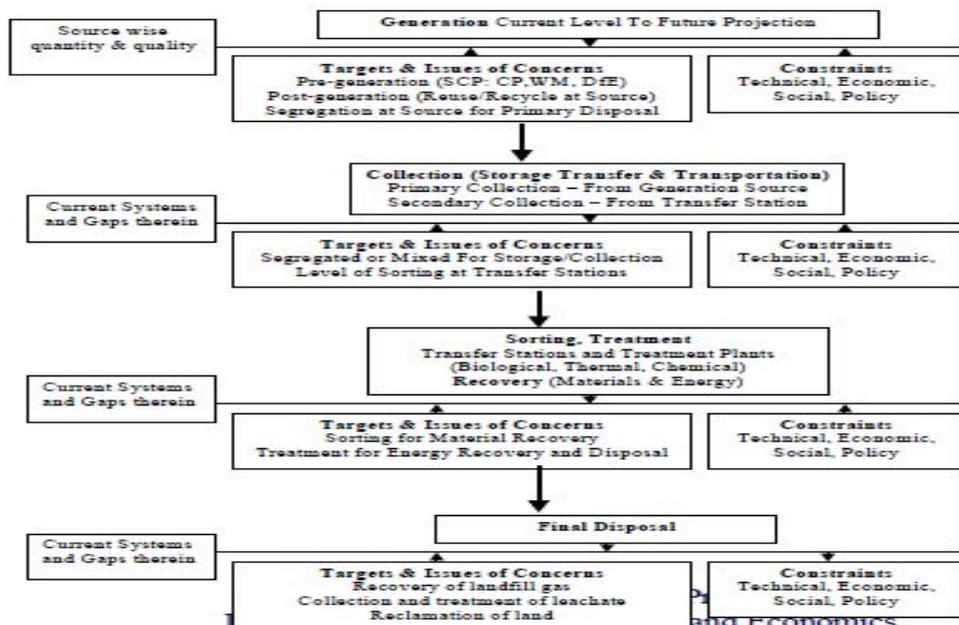


Plans for Integrated approach: At Each level of the following steps there should be implementable planning

1. Generation Level for Categorization
2. Collection & Transportation
3. Sorting, Treatment and Recovery
4. Final Disposal

Efforts should made by local bodies for creating mass awareness among the citizens for ensuring proper management of MSW including collection, segregation, storage and transportation. Source segregation of waste can be insisted and pressurized with residents where there is house-to-house collection system is introduced. Also, it may be achieved by placing separate bins for each category of wastes. However, the objective of segregation could be achieved when facilities are provided for treatment/ processing of the segregated wastes. Municipalities must have well equipped waste transporting vehicles, following the waste transportation norms like –transporting waste under covered conditions so that littering does not occur on the way and it should not be exposed to the public, arrange alternative vehicle while breakdown on the way. The final disposal includes the different techniques & methods for treatment of the wastes depending upon the categories. At every stage the

monitoring is essential regarding the projected target& the achieved target. If there is any gap, the reason behind the deficiency of the goal should be investigated and remedial measure must be taken. This can be performed by following manner :



Steps for Developing ISWM Plan

| Steps | Status of Matala ISWM Plan | Identification of issues of concerns of the stakeholders – financial, social, technical and environmental – which they consider as very important to be addressed while designing the ISWM System; | Target: |
|---|----------------------------|--|---------|
| Collection of baseline data on waste characterization and quantification and to analyze future trends; | Target: | | |
| Collection of baseline data on prevailing management systems and to identify gaps there in; | Target: | | |
| Setting up the targets to be achieved through the ISWM System – targets are set for each operational level (generation, collection and transportation, sorting and material recovery, treatment and resource generation, and final disposal) and for coverage and efficiency of services, as well as for efficiency of efforts and management system; | Target: | Designing the elements of the ISWM System - policies (regulatory, fiscal, etc.), technologies (basic equipment and operational strategies) and voluntary measures (awareness raising, self regulation, etc.) – and their technical feasibility, economic viability and implementability; | Target: |
| Identification of the constraints – technical, socioeconomic and policy constraints – which should be kept in mind when designing the elements of an ISWM System; | Target: | Developing an implementation strategy including financing strategy, human resources, institutional aspects, and timeline (schedule of implementation); | Target: |
| | | Developing a monitoring and feedback system for periodic feedback to improve the ISWM system and its implementation or to modify the targets | Target: |
| | | Developing detailed schemes based on strategic action plan (measures) | Target: |

IV. CONCLUSION

ISWM is the application of suitable techniques, technologies and management programs covering all types of solid wastes from all sources to achieve the twin objectives of (a) waste reduction and (b) effective management of waste still produced after waste reduction. Effective solid management systems are needed to ensure better human health and safety. They must be safe for workers and safeguard public health by preventing the spread of disease. In addition to these prerequisites, an effective system of solid waste management must be both environmentally and economically sustainable. Environmentally sustainable: It must reduce, as much as possible, the environmental impacts of waste management. Economically sustainable: It must operate at a cost acceptable to community.

It is necessary for the success of these technologies in India to evolve an Integrated Waste Management system, coupled with necessary legislative and control measures. A detailed feasibility study needs to be conducted in each case, duly taking into account the available waste quantities and characteristics and the local conditions as well as relative assessment of the different waste disposal options. Suitable safeguards and pollution control measures further need to be incorporated in the design of each facility to fully comply with the environmental regulations and safeguard public health. The success of any system mostly depends upon the knowledge, sincerity of the implementing personals. The knowledge of eliminating the faults to management personals.

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