

Solid Waste Management in Bangalore City

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Abstract - The important source of waste are food wastes, plastics, paper, glass, leather, cardboard, metals, yard wastes, ashes and special wastes like bulky household items like electronics, tires, batteries, old mattresses and used oil so on priority wise this has to be put in order. Recycling of inorganic solid waste such as plastic, metal, paper and cardboard was made through the prototype development based on mechanical treatments. The solid Waste minimization measures which include waste prevention by giving education, internal recycling of production waste by segregating, and source-oriented improvement of waste quality and reuse of products for the same purpose.

Index Terms - Solid waste management, plastics, Bangalore, Environment.

INTRODUCTION

Solid waste is commonly known as trash or garbage and rubbish. It is a waste type consisting of everyday items that are discarded by the public. Solid Waste Management (SWM) is a term that is used to refer to the process of collecting Sources generated solid waste and it is treated as solid wastes. It also offers solutions for recycling of different usable goods and manure for agricultural purpose. It also items that do not belong to garbage or trash. As long as people have been living in settlements and residential areas, garbage or solid waste has been an issue but to solve this issue we need to plan in advance. Green environment strategies must include sustainable consumption and production, including waste management, with a demonstrated history of advancing strategic research on reduce, reuse, and recycle (3R) policies and strategies in the particularly in the plastic segment. To establish A harmonious and balanced relationship between human and nature on the earth is very important for the survival of life and sustainable growth in the near future there it is need of the hour to understand the changes taking place. Over the period of time, human directly or indirectly interfered with the natural environment for its comfort and other developmental

activities. One of the causes for pollution of air, water and soil is the way municipal solid waste is being managed so this is the sources are happening at the source level itself this problem has encounter. This solid waste problem cross is global and is a serious issue in developing countries such as India. Bangalore Metropolitan Region Development Authority (BMRDA) is an autonomous body created by the Government of Karnataka under the BMRDA Act 1985 for the purpose of planning, co-ordinating and supervising the proper and orderly development of the areas within the Bangalore Metropolitan Region (BMR) which comprises Bangalore Urban district, Bangalore Rural district and Ramanaaram District. Since 2007, BMRDA covers an area of 8,005 km (4,974 mi), the second largest metropolitan area in India. Bruhath Bangalore Mahanagara palike Bruhath Bengaluru Mahanagara Palike is spread in 713 Sq. Km Area with total population of 1.3Cr. The demographic of the city is holding more than 29 Lakh households divided into 8 zones, 27 divisions and 198 wards. (BBMP)has 17000 and above Pourakarmikas,4500 auto trips,550 secondary transport vehicles,7 processing plants, 18 bio plants,25 large vehicles under the direct payment of ULB who are carrying out cleaning of public places (Streets, Roads, etc..) and collects street sweeping waste which will be sent for further processing and disposal. The waste generation rates are increasing that to particularly with the advent of industrialisation and the characteristics are changing with increase in population explosion, Industrial development, electronic industries and living standards, particularly in growing cities such as Bengaluru but this was not planned in advance the development. Due to financial constraints a proper municipal solid waste collection and disposal mechanism is not in place because plastic was not in much use. For long, urban solid waste management has not been recognized as a major attribute for the pollution of air, water and soil pollution. It is now abundantly clear that improper disposal of solid waste

can affect all the spheres of the nature and can affect every form of life and caused different types deceases. It is need of the hour for an evolution of proper management of solid waste monitoring body is very important as at the local level.it is necessary to review the status of the current scenario of its collection and disposal methods. Bengaluru, which represent a typical fast-growing city is taken up for detailed review as a case study by understanding other developed cities.

OBJECTIVES OF THE STUDY

The present study is focused on the following objectives

1. Highlight the impact of solid waste on environment issues and reducing measures
2. Enlist solid waste trends and issues Challenge's for city development.

METHODOLOGY

Interpretative phenomenological analysis (IPA) of qualitative research methodology has been used in this research. The study was conducted among the different wards people in Bangalore city in state of Karnataka, India. wards are selected, Semi-structured in-depth interviews were conducted among with general public to collect data regarding solid waste management.

OVERVIEW OF SOLID WASTE MANAGEMENT

India is the highest populated, country in Asia next to China, recorded a population of 121 crore as of 2011 census data and in total 17% population of the world. Of this total, 37% is comprised by urban populations; the other 63% is made up of India's rural population, most of whom are largely dependent on subsistence farming with small and marginal farmers. The city of Bengaluru, located in the southeast of India Karnataka state. It is situated at 12.97N 77.56E and covers an area of 2,190 square kilometres at an average elevation of 920 meters. Bengaluru city experiences a moderate weather throughout the year. In summers from March to May the maximum temperature rise up to 38°C. In winter months the temperature varies between 28°C and 32°C. The annual rainfall is about 900 mm. this attracted different people migrate because of good

weather and employment opportunities. policy reforms promoting economic liberalisation have opened the country to foreign direct investment which in turn has contributed to India's rapid industrialisation and urbanisation. This economic growth, together with gradual shifts in consumption and production patterns have led to escalating waste generation as well as the proliferation of emerging waste streams such an important cause plastic which is ultimately became challenge to human development The Solid Waste management (SWM) consists of organic and inorganic waste materials generated by various household and industrial activities. The improper disposal of SWM pollutes all the Important components of the living environment, i.e., air, land, and water then it is ultimately caused different problems.

REVIEW OF GAPS AND CHALLENGES SOLID WASTE

The survey of the quick study and discussions with key respondents stakeholders, households and industries during workshops and researcher identified that India's urban area is facing significant waste management challenges at the national semi urban and metropolitan city levels resulting from a range of technical, social, economic and institutional constraints, even at the govt level which together are contributing to soil and water contamination, air pollution, climate change and impacts on biodiversity and ecological health. These all will lead to ecological imbalance as well as pollution in the country and may be caused to different deceases In Bangalore city. Approximately 58.5% of the city's waste generation is from households, 49.7% from commercial establishments and 6.8% from street sweeping. The Per Capita waste generation from regular households in the city is 309g and that from slums is 300g. Currently, Bengaluru city generates around 5000 MT/day of MSW at an average of 0.5 kg/day/per capita with a population of about 10.18 million. Bengaluru city is facing serious problems due to existing disposal practices of generated waste incurring high cost due to lack of proper infrastructural facilities, also the open dumping in the expanding zone of the city poses serious problems to the structures constructed on these old dumps in addition to the groundwater quality due to improper leachate

management. This is again caused to the water contamination. However, with an increasing population and the growing necessities of the Information Technology (IT) sector, Apartment culture is also one of the serious issues the local authorities are struggling to provide the proper solid waste management system to a satisfactory level. The final disposition of this waste is an important issue, because local people oppose the matter not to land fill the nearby villages. It is the key element to control the environmental contamination of soil and pollution of local water sources. Urban management model municipal solid waste for city sustainability at all level. Recently, the authorities have taken initiatives and measures to organize municipal solid waste management (MSWM) sector but still it is not realised. Bengaluru city being a historical city has several narrow streets and galleys, high population density itself a challenge to waste management and has pockets of rural area which have been amalgamated with developed areas, posing serious problems for collection and transport of Municipal waste due strike of people who have employed. The phenomenal growth of vehicles on roads makes the task even more difficult. The solid Waste minimization measures which include waste prevention by giving education, internal recycling of production waste by segregating, and source-oriented improvement of waste quality and reuse of products for the same purpose. By minimizing the use of disposable items and promoting the use of recycled articles at lesser price. Separating biodegradable and non-biodegradable waste before dumping them. Recycling the non-biodegradable waste material. Also, external recycling, sorting of waste, reuse for another purpose, and energy recovery are included as waste management measures. The important source of waste are food wastes, plastics, paper, glass, leather, cardboard, metals, yard wastes, ashes and special wastes like bulky household items like electronics, tires, batteries, old mattresses and used oil so on priority wise this has to be put in order. The recycling of inorganic solid waste such as plastic, metal, paper and cardboard was made through the prototype development based on mechanical treatments. The recycling of electronic waste was carried out as a program to collect electronic equipment called "Recyclatron" in order to promote a culture towards sustainability in the management of electronic waste and to be a reference model for social

and environmental responsibility within the community, households and industries.

FINDINGS AND MEASURES

The Bangalore Urban solid waste Management Model needs to be developed. It is for the Urban solid waste management for city sustainability. It establishes the indispensable elements to solve the problem of environmental issues and high production in urban areas. With a multidisciplinary approach, different disciplines to be incorporated from medical, engineering, social, marketing, local economic development, sustainability, and management of organizations and to retain culture. The various innovative methods on the basis of experience to be placed, Zero land filling, awareness among the civilians about segregation of waste, inclusion of waste management at school and college level curriculum, biotechnology, appointment of sufficient manpower, the technological development, marketing of materials for recycling, plastic usage strict guidelines, space studies for final disposal sites, segregation of waste (dry, and wet) and organizational studies in recycling companies incorporating the vision of environmental issues management systems. When it has been segregated properly an environment friendly method Composting is simple solution for organic waste that is often successful at the household level. And also, bio gas biogas production, which can be used to produce electricity or as fuel for vehicles. Waste disposal can be improved by constructing different types of sanitary landfills. The supply water needs to be centralised, unnecessary digging of borewell leads to water contamination even at the industry level so this matter has to be careful watching is needed because water contamination has highest degree in creating problems. Based on location factors local govt has to decide waste management handling issues and challenges. On basis of result model wards to be identify as a lesson to the other wards, before monsoon all drainage to be cleaned in advance. When we wanted to manage all those measures it is necessary to have proper trained man power with strategic deployments needed and urban development planning authority has plan locational patterns.

CONCLUSIONS

Solid Waste is a material which has negligible value to the producer and there is no direct consumption of the generated waste. This study identified that waste management is at a very early stage of its development and remains one of the major concerns both at the urban area's levels in India. The country's existing waste management system is impeded by a number of challenges, including: (i) increase in the volume and quantity of waste generation because of increased population;(ii) Farmers agitation (iii) growth and emergence of new types of waste e- waste and plastic; (iv) barriers to integrating informal urban waste workers into existing waste management systems; (v) low waste collection coverage; (vi) lack of suitable areas for landfilling; (vii) Non cooperative of the some stake holders; (viii) strike by pourakarmikas these all issues can be solved only when an integrated approach is been developed, sufficient solid waste infrastructure, awareness programme colour adding to the different waste, to avoid multiple handling of waste, 14 hours two shift are needed. The process of transformation of the materials obtained from the Municipal solid Waste was carried out in a first stage based on a mechanical treatment that is the grinding so therefore there is need of at source level basic knowledge needed. In order to reduce volumes of compaction and market the products as raw materials particularly plastic waste. The recycling of organic solid waste was carried out through the study and quantification of food material to produce quality compost to the nearby village which is more cost effective when compared to chemical fertilizers.

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