



GROWTH, NATURE AND COMPOSITION OF SOLID WASTE GENERATION IN SMKMC

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ABSTRACT

The solid waste is one of the matters of great concern to the urban policy makers in India. The size of solid waste has been increasing continuously and rapidly with rising level of urbanization. The health hazards and unhygienic living environment has resulted in the reduction in health quality of the urban mass. The Government of India and state governments are taking keen efforts for the cost effective solid waste management. Municipal solid waste management rule 1998, provided detail guidelines regarding sorting, collection, transportation and disposal of solid waste to the municipal corporations in India. The SMKMC was established on 19th Feb 1998. The total residential area of SMKMC is 5458.15 hectare. The very first aim of the present research article is to analyze the growth, nature and composition of generated solid waste in Sangli- Miraj Kupwad Municipal Corporation. The study has covered the period from 1971 to 2014. The whole article is based on secondary data and it has processed by using statistical techniques such as percentile, CGR and simple graphical techniques.

Key words: Solid waste, Solid Waste Management, Disposal, Health Hazards.

INTRODUCTION:

With the increasing population, the volume and sources of solid waste generation are also increasing in urban area. The effective management of generated solid waste is one of the major emerging challenges in front of the local governments and to reduce health hazards by proper disposal methods. The SMKMC is one of the recent municipal corporations and taking many efforts for scientific solid waste management. However, the means of SMKMC are seen inadequate and ineffective, because, on an average 142 metric tonne solid waste is being generated per day in SMKMC, out of which around 102 metric tonne is being collected and disposed properly. The remaining 40 metric tonne solid waste is uncollected or untreated which creates health hazards at large extent.

Under this overall backdrop, the researcher is intended to know about the growth of the solid waste in SMKMC and its nature and sectoral composition. The data is collected from the integrated solid waste management project and analyzed by using appropriate statistical tools.

II. OBJECTIVES

The major objectives of the present study are as below.

1. To study the growth of solid waste in SMKMC
2. To study the composition of generated solid waste in SMKMC
3. To analysis the nature of generated solid waste

III. Data Analysis

The table no.1 shows the growth of population in SMKMC, no. of households, persons in households, waste generation per head/ per day in gram, and solid waste generated per day in MT as well as per year.

1. Growth of Solid Waste in SMKMC

Table 1 shows the growth of the solid waste in SMKMC during the period 1970 to 2014.

It is seen from the table 1 that the population of SMKMC has increased from 202461 to 516415, since 1971 to 2014. It has grown by 2.25 percent per annum. It means that population of SMKMC has increased by 155.07 percent in 2014 over the year 1971. Likewise, the number of households is increased from 37379 in 1971 to 125343 in 2014. It has recorded 2.92 percent compound annual growth which is more than that of population growth per annum. The number of households is increased by 235.33 percent in 2014 over the 1971. However, the family size is seen reduced due to small family preferences of the urban localities.

Table 1 Growth of Solid Waste, Population, Households and Family Size in SMKMC

Year	Population	No. of Household	Persons in Households	Waste Generation per head/ /per day/G	MT/ per day	MT/ Per Year
1971	202461	37379	5.42	135	27.33	9976
1981	271096	50885	5.33	166	45.00	16426
1991	351917	69911	5.03	189	66.51	24277
2001	431014	89795	4.80	239	103.01	37600
2011	502793	110062	4.57	289	145.31	53037
2012	502908	114819	4.38	373	187.58	68468
2013	510146	117006	4.36	380	193.86	70757
2014	516415	125343	4.12	392	220.43	73889
CGR	2.25%	2.92%	-0.65%	2.57%	4.88%	4.88%
SGR in 2014 over 1971	155.07	235.33	-23.99	190.37	640.69	640.67

Source: Integrated solid waste management 2014

It is interesting to note that the solid waste generated per day per head was just 135 gram in 1971 in SMKMC which goes up to 392 gram per day per head in 2014. It has grown by 2.57 percent per annum during the reported period. In other words, per day per head solid waste has increased by 190.37 percent in 2014 over 1971. The generated solid waste per day was just 27.33 metric tonne in 1971 which increased to 202.43 metric tonne in 2014. It has also grown by 4.88 percent per annum during the reported period. In other words, per day generated solid waste has grown by 640.69 percent in 2014 over 1971. It indicates the gravity of the municipal solid waste problem in SMKMC.

In short it can be stated that the solid waste has increased more rapidly and continuously in SMKMC due to enlargement in economic activities and urbanization during the period 1971 to 2014.

2. Sectoral Composition of Solid Waste in SMKMC

Table 2 Sectoral Composition of Solid Waste in SMKMC in 2014

Sector wise Sources of Solid Waste	Metric Tone	Percentage
Commercial Market Yard	23.5	10.68
Vegetable Market	32.5	14.77
Kattalkhana	2.5	1.14
Hotels and Restaurants	15.5	7.05
Industrial Waste	10	4.55
Residential Area	90.6	41.18
Agriculture Waste	10.4	4.73
Hospitals	15.6	7.09
Parks	4.4	2
Street Sweeping and Others	15	6.82
Total	220	100

Source: Integrated solid waste management 2014

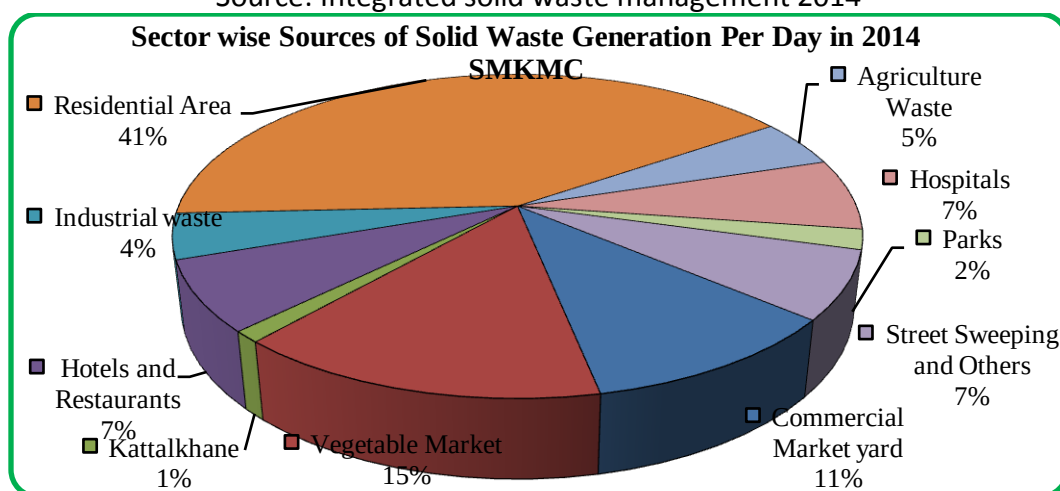


fig. 1

Table 2 and figure 1 indicate sector wise average per day solid waste generated in SMKMC in the years 2014. It is clear from the data that the residential area or household sector was the major sector contributing in total solid waste generated in SMKMC i.e 41.18 percent or 90.6 metric tonne out of 220 metric tonne. Similarly, around 10.68 percent or 23.5 metric tonne out of 220 metric tonne solid waste was generated by the commercial market yards. The 14.77 percent or 32.5 metric tonne out of total 220 metric tonne solid waste was generated by the vegetable market in SMKMC. The 2.5 metric tonne or 1.14 percent of the total solid waste was generated by the Kattalkhana. Likewise, the 7.05 percent of the total solid waste was generated by the hotels and restaurants in SMKMC. The contribution of industrial waste in total solid waste was 4.55 percent and it was 4.73 percent in case of agriculture sector. The proportion of hospital waste in total solid waste was 7.09 percent and the proportion of Parks in total solid waste generation was 2 percent. The proportion of street sweeping and others in total solid waste generation was 6.82 percent.

In brief, it can be stated that the household sector is the major sector contributing in total solid waste generated by SMKMC per day.

3. Nature of Solid Waste Generated in SMKMC

It is clear from the table 3 that on an average 417.67 gram is per day per head biotic waste was generated in 2014 and 384.20 gram is the per day per head non biotic waste generated in SMKMC.

Table 3 Nature of Solid Waste in SMKMC in 2014

Ward	Per day per head /Gram	SWG/MT/ Per Year
Biotic Waste	417.67	26280
Non Biotic Waste	384.20	18250
Total SMKMC	392.85	80300

Source: Integrated Solid Waste Management 2014

The 26280 MT per year biotic waste was generated in SMKMC and 18250 MT per year non biotic waste was generated in SMKMC in 2014.

III. CONCLUDING REMARK

The solid waste generated per day per head was just 135 gram in 1971 in SMKMC which increased to 392 gram per day per head in 2014. It has grown by 2.57 percent per annum during the reported period. In other words, per day per head solid waste has increased by 190.37 percent in 2014 over 1971. The generated solid waste per day was just 27.33 metric tonne in 1971 which reached to 202.43 metric tonne in 2014. It has also grown by 4.88 percent per annum during the reported period. In brief, it can be concluded that the solid waste is generating more rapidly in SMKMC.

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