Transformation of Waste to Cash with by SWM in Western Region of Maharashtra

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Abstract:
Now a days in the urban and semi urban areas the typical solid waste disposal and dumping the same is difficult due to skyscraping prices of the land. Therefore the there is need to curtail the land requirement for dumping the solid waste. The curtailment in land is possible if we reduce the volume of solid waste before its final disposal. The segregation of solid waste allows us to categories the waste into two broad categories i.e. degradable and non-degradable waste. But, if during segregation we identify and separate out the value added products from the available solid waste which allows the further reduction in the waste volume. The Indian solid waste mostly has a blend of dry plastic, paper, aluminum, empty beverage containers, glass and other metals along with wet waste like vegetables, meals, fruits etc. The separation of the dry material in proper class of classification will facilitate the income source to the persons involved in collection of solid waste within a town.

This research study will involve to identify the current waste management practicesDaund City to understand the collection and disposal system in the town to recover the cash and value added products. The study also involves the environmental impacts of current practices. This article aims to reduce the volume of waste generated before final disposal of available solid waste and economic up gradation of the bottom line personnel involved in it.

Keywords:Solid waste, Value added products, Income source, Daund City.

I. INTRODUCTION

According to planning commission report for the year 2014release that 377 million people residing in urban area generate 62 million tons of municipal solid waste per year.And it is projected that by the year 2031 these urban areas will generate 165 million tons of waste annually and by year 2050 it could reach 436 million tons per year. To accommodate this amount of waste generated by the year 2031 it required about 23.5×107 cubic meter of space for landfill which means area required would be 1175 hectare of land per year. From the year 2031 to the year 2050 it would be 43000 hectares space required for dumping at a 20 meter height if the generation is considered as 450 gm/capita/day waste generation. In the Indian continental the lack of availability of primary data on per capita waste generation insufficient data on waste characteristics and influence of informal sectors different reports provide different values and projections.

1.1 The Study Area

The Daund is located at coordinates of 18.47°N 74.6°E about 514 meters above mean sea level on the western margin of the Deccan plateau. It is situated about 80 kilometers East of the Sahyadri mountain range which forms a barrier from the Arabian sea. The town is mostly flat terrain with hills rising 600 m to the South of the Kurkumbh town. It is located at the southern bank of river Bhima. As per the census of the year 2011 for Daund had a population of 49450 of which 25117 were males and 24333 were females. There were 5721 children of age below 6 years with literacy rate of 77.34% which is higher than the national average of 74.04%, male literacy was 80.44% whereas female literacy was 74.13%.
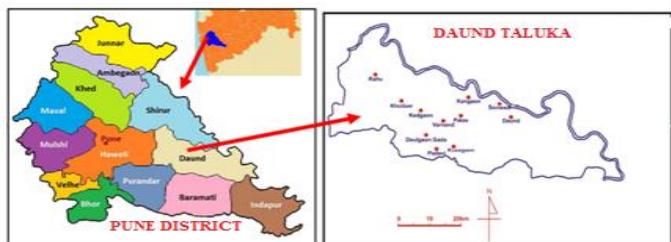
Fig.1- Showing the study area in Pune district

1.2 Population and Waste Generation

As per the information of Central Pollution Control Board (CPCB- July 2017) Pune city generates 0.46 kg/capita/day of the waste. If we consider the same waste generation rate for the Daund city and projected population by Arithmetical Increase Method for the year 2031 as 79273. The Maximum total waste generation in Daund City will be 79273X0.46 = 36466 kg/capita/day which is 36.46 tonnes per day and minimum at the rate of waste generation of 0.19 gm is 15 tonnes per day. The quantity of waste generated need of the systematic waste (Trash) collection system, segregation of collected solid waste which will helpful in identification of value added materials from the collected trash will generate the parallel income source for rag pickers and labors involved in trash collectors and governing authority.

Table 1- Population and waste generation in major cities of India (CPCB)

Name of City	Population as per census of year 2011	Total waste generated in tonnes per day as per CPCB	waste generation (kg per capita per day)
Ahmedabad	3520085	1302	0.37
Hyderabad	3843585	2187	0.57
Bangalore	4301326	1669	0.39
Chennai	4343645	3036	0.62
Kolkata	4572876	2653	0.58
Delhi	10306452	5922	0.57
Mumbai	11978450	5320	0.45
Pune	2538473	1175	0.46
Nashik	1077236	200	0.19
Daund	**56313**	**NA**	**NA**

2. Methodology

The detail survey of the Daund city will be executed to collected the base line data to classify the class of waste generator viz Domestic, commercial, industrial and institutional ect. The data available with the governing authorities will also take into account to countercheck and validation purpose. The existing dumping locations ward wise, section wise and zone wise will mapped down. The theoretical and actual rate of waste generation with its composition will analyze and the higher rate will consider and taken for the design purpose.

Table 2-The income wise composition the their weights [8]

Composition of waste (% by weight)	Countries with low income (1)	Countries with middle income (2)	Countries with high income(3)
Metals	0.2 to 2.5	1 to5	3 to13
Glass and Ceramics	0.5 to3.5	1 to10	4 to10
Foods and garbage	40 to65	20 to60	20 to50
Paper and paper products	1 to10	15 to40	15 to40
Textile waste	1 to5	2 to6	2 to10
Plastic and Rubber	1 to5	2 to6	2 to10
Miscellaneous Combustible	1 to8	-	-
Miscellaneous Non- combustible	-	-	-
Inert materials	20 to50	1 to30	1 to20
Density of waste in kg/m^3	250 to500	170 to330	100 to170
Moisture content in percentage by weight	40 to80	40 to60	20 to30
Quantity of waste generation in Kg/cap/day	0.4 to0.6	0.5 to0.9	0.7 to1.8

3. Conclusion

The identification and overcoming on the deficiencies in the existing municipal solid waste management systems in Daund City, an indicative action plan incorporating strategies and guidelines will be delineated. Based on preliminary and primary plan of execution, which includes collection of base data, collection of samples, analysis and inter relation with the experimental results, the recovery percentage of cash product and value added products will be addressed in results.

This research study will looks about the current waste generation and management practices in Daund City. To understand the existing collection and transportation system so that effective disposal with efficient management can be design to recover the cash as well as value added products. This investigation will not only focus the environmental impacts due to improper disposal but also attempting the sustainable solution.

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