

# QUANTIFICATION STUDY OF MUNICIPAL SOLID WASTE: A CASE STUDY OF SHIRUR ANANTPAL TOWN

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## **Abstract**

*The urban development directly and indirectly responsible for the increasing the quantity of solid waste in the urban area. Municipal solid waste was generated from different sources viz. residential areas, commercial complexes, restaurants, educational institutions. In order to design a plan for effective solid waste management the reliable data on waste generation quantity, play a key role in the waste management process.*

*The present paper is an attempt to study the quantity of municipal solid waste generated from Shirur Anantpal. The baseline data regarding the monthly waste generation of two-year period collected from Shirur Anantpal Nagarpanchayat by using the questionnaire method. The per days solid waste collection rate was calculated by considering the waste carrying capacity of the vehicles (WCCV) used for the transport of the waste from town to dumping ground and their total number of trips per day, the total amount of waste generated per day was calculated, on the basis of which the monthly waste generation quantity in tons were calculated.*

*The study was carried out from January 2021 to December 2022. The results reveals that, the total maximum and minimum values of municipal solid waste collected by Nagarpanchayat of Shirur Anantpal were 126.4 and 89.8 tons respectively during January 2021 to December 2021. The maximum and minimum quantity of municipal solid waste collected during January 2021 to December 2022 was 123.1 and 90.8 tons respectively from Shirur Anantpal.*

*Key words:*

*Municipal solid waste, quantification, Shirur Anantpal, disposal.*

The rapidly expanding urbanization has a direct relation with the waste generation rate. The problem of management of municipal solid waste generated in urban centers are a concern for the Urban Local Bodies (ULB) and the city dwellers. Though only 31% of Indian population resides in urban areas, this population of 377 million (Census of India, 2011) generates a gigantic 1,43,449 metric tons per day of municipal solid waste, as per the Central Pollution Control Board (CPCB), 2014-15 and these figures increase every day with an increase in population (CPHEEO, 2016).

In India, the per capita waste generation in urban areas ranges from 0.2 to 0.6 kg, leading to a generation of 38 million ton of municipal solid waste (MSW) per year The Ministry of Urban Development (MoUD) in India estimates that, the rate of collection is about 75 % (ton of MSW collected by municipal corporation/ton of MSW generated by city) for urban areas. While, The Energy and Research Institute (TERI) estimates the rate of collection is about 72.5% (CPCB, 2000).

Population and human activities directly relate to the generation rate and composition of solid waste. The lack of waste services in both urban and rural areas will cause environmental and public health problems (Syafudin et al., 2023). The rapid industrial development may play an important role in the process of urban development. The urban development directly and indirectly responsible for the increasing the quantity of solid waste in the city area. The proper management of the solid waste may reduce the environmental problems, generally

## **Introduction**



the total amount of waste generated per day was calculated, on the basis of which the monthly waste generation quantity in tons were calculated (CPHERI,1974).

$$MSW\ Collection / Day = WCCV \times No.\ of\ Trips / Day$$

From the total number of trips made by the transport vehicle per day, the total amount of waste collected (approximate quantity) per day was calculated. In addition, on the basis of daily calculation the average monthly waste collected quantity was calculated in tons.

### Results & Discussion

The study was carried out from January 2021 to December 2022 and the results were summarized in Table No.1 and presented in **Fig. 1**. The total maximum and minimum values of municipal solid waste collected by Nagarpanchayat of Shirur Anantpal were 126.4 and 89.8 tons respectively during January 2021 to December 2021. The maximum and minimum value of average per day waste collection during January 2021 to December 2022 was 4.15 and 2.90 tons respectively.

The maximum and minimum quantity of municipal solid waste collected during January 2021 to December 2022 was 123.1 and 90.8 tons respectively from Shirur Anantpal. The maximum and minimum value of average per day waste collection during January 2021 to

December 2021 was 4.1 and 2.93 tons respectively.

The quantity of MSW generated depends on a number of factors such as food habits, standard of living, degree of commercial activities and seasons. Data on quantity variation and generation are useful in planning for collection and disposal systems (Pappu et al., 2007; Shekdar, 1999). In the preset seasonal study of solid waste collection, it was found that the higher quantity of waste generated in the month of August, September, October and November and that may be due to festivals.

The municipal authorities in most of the Indian towns do not weigh the refuse vehicles regularly, but estimates the quantities on the basis of number of trips made by the collection vehicle and waste carrying capacity of the vehicle.

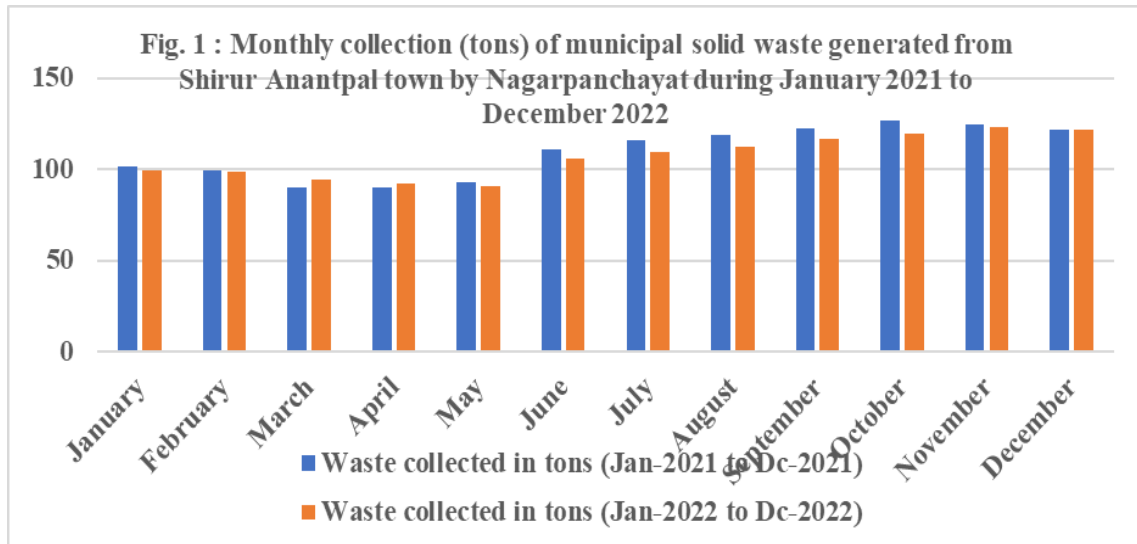
### Conclusions

The study reveals that, the baseline data regarding the quantification of waste is mainly based on the number of trips of vehicle in a day and its carrying capacity. The generation varies from season to season. It may be due to the season wise festivals and various season-based activities. In order to design and plan an effective waste disposal for the town the Urban Local Bodies needs the reliable data on the waste quantification.

**Table No. 1: Monthly collection of municipal solid waste generated from Shirur Anantpal town by Nagarpanchayat during January 2021 to December 2022**

Sr. No.	Months	During Jan.-2021 to Dec.- 2021		During Jan. 2022 to Dec.-2022	
		Waste collected in tons	Average/ day waste collection in tons	Waste collected in tons	Average/day waste collection in tons
1	January	101.2	3.26	99.6	3.21
2	February	99.5	3.55	98.7	3.53
3	March	89.8	2.90	94.7	3.05
4	April	90.1	3.00	92.5	3.08
5	May	92.6	2.99	90.8	2.93
6	June	110.6	3.69	105.6	3.52
7	July	115.6	3.73	109.7	3.54
8	August	118.9	3.96	112.5	3.75
9	September	122.5	4.08	116.3	3.88

10	October	126.4	4.08	119.5	3.85
11	November	124.4	4.15	123.1	4.10
12	December	121.8	3.93	121.8	3.93
<b>Average</b>		<b>109.45</b>	<b>3.61</b>	<b>107.06</b>	<b>3.53</b>
<b>Maximum</b>		<b>126.4</b>	<b>4.15</b>	<b>123.1</b>	<b>4.1</b>
<b>Minimum</b>		<b>89.8</b>	<b>2.90</b>	<b>90.8</b>	<b>2.93</b>



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