

Chapter-II
Planning for Solid Waste
Management

Chapter - II: Planning for Solid Waste Management

2.1 Solid Waste Management Planning

Sound planning is a prerequisite for Solid Waste Management. Para 15 (a) of Solid Waste Management Rules, 2016 and section 1.4.6 of MSWM Manual, 2016 emphasised the need for ULBs to prepare a detailed Solid Waste Management plan with short term (five years) and long-term (20-25 years) actions. The five-year short-term plan may be broken up into specific action plans covering various aspects such as waste minimisation initiatives, waste collection and transportation, treatment and disposal, and other policy changes as may be deemed necessary.

Audit observations related to planning such as preparation of Detailed Project Reports (DPRs), method used for estimation of municipal solid waste generation are discussed in the succeeding paragraphs.

2.1.1 Preparation of DPRs

Urban Local Bodies prepared plans for Management of Solid Waste in the form of Detailed Project Report (DPR) under Integrated Solid Waste Management (ISWM)/Swachh Bharat Mission (SBM) 1.0 and SBM 2.0. In urban area, SBM 1.0 was started with effect from 2 October 2014 for five years and SBM 2.0 was started with effect from 1 October 2021 for five years. The position of preparation of DPRs under ISWM/SBM 1.0 and SBM 2.0 and their approval by State Level Technical Committee (DPR approved in June 2016 and in August 2023 under SBM 1.0 and 2.0 respectively) is given in **Table 2.1** below:

Table 2.1: Details of DPR prepared under SBM 1.0 and SBM 2.0

Number of ULBs	ISWM/SBM 1.0		SBM 2.0	
	State	Selected ULBs	State	Selected ULBs
Total ULBs	177	18	213	18
Work order issued for DPR	117	09	209	11
DPR prepared	66	06	194	11
DPR approved	62	04	194	11

(Source- Information provided by the DLB and selected ULBs)

It is evident from the above table that position of preparation of DPRs and their approval have improved under SBM 2.0 as coverage against existing ULBs has increased from 35 per cent to 91 per cent at State level and from 22 per cent to 61 per cent in selected ULBs.

However, all existing ULBs have not prepared DPRs as of July 2023.

State Government stated (March 2025) that till date DPRs of 214 ULBs have been prepared and approved in various meetings of State Level Technical Committee.

DPRs of few ULBs have not been prepared due to the following facts : (i) these are newly constituted and hence assessment of requirement and provision of required infrastructure like land for processing units are being made and DPRs will be prepared for left out ULBs as and when land is made available, (ii) in some ULBs processing facilities are already available and gaps in processing are not anticipated, and thus DPRs are not being prepared, (iii) in smaller ULBs planning is being made without preparing DPRs.

2.1.2 Estimation of Waste Generation in DPR

The MSWM Manual 2016 prescribes detailed methodology for estimation of municipal solid waste¹. The plan was to be based on assessment of existing quantum of waste generated, levels of collection and processing, available resources, and a gap analysis *vis a vis* future scenario.

Various issues related to method of planning noticed in test checked ULBs where DPRs were prepared under ISWM/SBM 1.0 are discussed below:

(a) The assessment method prescribed by the MSWM Manual requires collecting data on waste generation for seven continuous days, from multiple locations over three main seasons. However, deviations from the prescribed methodology were noticed in two test checked ULBs (Bhiwadi and Dungarpur), where the consultant collected data for only three days and extrapolated it over the entire year. In other four ULBs either seven days were considered, or number of days were not mentioned in the DPRs.

(b) In Balotra, the per capita waste generated in 2014 was calculated by dividing waste disposed in the landfill during 2014 by the population of 2011 census. This method was incorrect because the waste generated is not equal to the waste disposed at landfills. The per capita waste thus calculated was then extrapolated for the year 2024 and then for the year 2044, without explaining the basis of this population projection. Estimation for the years falling from 2024 to 2044 was not done.

State Government stated (March 2025) that the work of preparation of DPRs were outsourced by the State Government and the consultants were directed to prepare DPRs in accordance with the provisions as laid down in MSWM Manuals 2016. There may be some deviations, and these deficiencies have been removed in DPRs prepared under SBM 2.0.

The fact remains that department/concerned ULBs were required to ensure compliance of provisions of the MSWM Manual while approving the DPR.

¹ **For Long term-** Waste quantities should be aggregated over the 7-day period, weighed, and averaged. These quantities can then be extrapolated to the entire urban local body (ULB) and per capita generation. **For Short term-** At least 100 representative sampling locations per one lakh population including household, commercial establishments, hospitals etc. Waste collected from these categories for 7 days period, weighed and averaged represent the waste quantity and quality extrapolated to the entire ULB.

2.2 Inconsistency in data of waste generated

Inconsistency in data of assessment of waste at State level and ULB level

Section 1.4.3.3 of Municipal Solid Waste Management Manual 2016 prescribed estimation² of per capita per day waste generation and State/ULBs were required to use these norms for assessment of waste.

Audit compared the data of assessment of waste prepared by the State Government for all ULBs for the year 2021-22 with the assessment mentioned in Annual report of respective ULBs in case of selected ULBs and found inconsistency in data as shown in Table 2.2 below.

Table 2.2: Estimation of per capita per day (PCPD) generation of waste in test checked ULBs during 2021-22

(Weight in PCPD per gram)

S. No.	Name of the ULB	Norms of waste generation as per SWM Manual	Assessment of waste by the State Government		Assessment of waste as per annual report of the ULB		Percentage of variance (+) Excess/ (-) Short*
			Population considered (as per census 2011) (in lakh)	Estimation of per capita per day waste generation	Population considered (as per census 2011) (In lakh)	Estimation of per capita per day waste generation	
1.	Jaipur	400-600	30.46	550	30.41	497	(-) 9.63
2.	Balotara	200-300	0.74	300	0.88	400	33.33
3.	Baran	200-300	1.18	450	1.43	343	(-) 23.77
4.	Udaipur	350-450	4.51	450	5.24	344	(-) 23.55
5.	Bikaner	350-450	6.44	450	7.80	450	-
6.	Bhawani Mandi	200-300	0.42	300	0.42	213	(-) 29
7.	Deoli	200-300	0.22	300	0.22	453	51
8.	Jodhpur	350-450	10.34	450	13	369	(-) 18
9.	Pokran	200-300	0.24	300	0.29	206	(-) 31.33
10.	Hindaun City	200-300	1.05	450	1.05	398	(-) 11.55
11.	Choti Sadri	200-300	0.18	300	0.18	381	27
12.	Rajgarh	200-300	0.59	300	0.80	400	33.33
13.	Sujangarh	200-300	1.02	450	1.01	450	-
14.	Kishangarh	200-300	1.55	450	1.55	464	3.11
15.	Sambhar Lake	200-300	0.22	300	0.22	358	19.33
16.	Bari	200-300	0.63	300	0.74	377	25.66
17.	Bhiwadi	200-300	1.05	450	1.05	572	27.11
18.	Dungarpur	200-300	0.48	300	0.52	314	4.66

(Source: Information provided by DLB and Form-IV of concerned ULBs)

* Excess means assessment of waste done by ULBs is more than the assessment of waste done by the State Government.

² As per MSWM Manual 2016, per capita per day 200–300 gram waste generation was estimated for ULBs having population below 2 lakh, 300–350 gram per capita per day waste for ULBs having population 2 lakh to 5 lakh, 350–400 gram per capita per day waste for ULBs having population 5 lakh to 10 lakh and 400–600 gram per capita per day waste generation was estimated for ULBs having population more than 10 lakh.

Audit observed that in 16 out of 18 ULBs, there were variations in assessment of waste generation between State Government and the annual reports of concerned ULBs. State Government and concerned ULBs adopted different methods for calculation of waste generation. The State Government calculated estimation of waste at a uniform rate³ whereas source of norms adopted by test checked ULBs were not mentioned in their annual reports. It was also noticed that the State Government and the concerned selected ULBs considered different population of the ULB for same year.

In one ULB (Deoli), variation in assessment was 51 *per cent* while in seven ULBs (Bari, Balotra, Bhawani Mandi, Bhiwadi, Choti Sadri, Pokaran and Rajgarh) variation was about 25 to 33 *per cent*. In eight ULBs, variation in assessment ranged from three *per cent* to 24 *per cent*.

State Government stated (March 2025) that it estimated waste generation on the basis of norms prescribed in the current effective SBM 2.0 guidelines.

This indicates towards the unreliability of the data on estimated waste generated in the State, which has further impact on the effectiveness of planning and monitoring of waste management in the State.

2.3 Conclusion

DPRs of all existing ULBs were not prepared. Inconsistency in estimated waste generation data between State and concerned ULB indicates unreliability of data and lack of monitoring and coordination among ULB and State Government.

Recommendations:

1. *The State Government may ensure compliance of procedures laid down for estimation of waste generation and preparation of DPR as per MSWM Manual by all ULBs for effective planning of Solid Waste Management.*

³ 350 gram per capita per day generation of waste for ULBs having population up to one lakh, 450 gram per capita per day generation of waste for population between one lakh to 10 lakh and 550 gram per capita per day for ULBs having population more than 10 lakh.