सत्यमेव जयते

Report of the Comptroller and Auditor General of India on Solid Waste Management in Urban Local Bodies in Jharkhand

SUPREME AUDIT INSTITUTION OF INDIA

लोकहितार्थ सत्यनिष्ठा

Dedicated to Truth in Public Interest

Government of Jharkhand

Report No. 3 of the year 2024

(Performance Audit)

Report of the
Comptroller and Auditor General of India
on
Solid Waste Management in Urban Local Bodies
in Jharkhand
For the year ended 31 March 2022

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Preface

Preface

1. This Report of the Comptroller and Auditor General (CAG) of India has been prepared for submission to the Governor of Jharkhand under Article 151 of the Constitution of India.

2. The Report covering the period 2017-22, contains the results of the Performance Audit on **"Solid Waste Management in Urban Local Bodies in Jharkhand"**.

3. The audit has been conducted in conformity with the Auditing Standards issued by the CAG of India.

Executive Summary

Executive Summary

The Swachh Bharat Mission (SBM) - Urban aims to ensure modern and scientific Municipal Solid Waste Management (MSWM) in urban areas. Under the Mission, the Urban Development and Housing Department (the Department), Government of Jharkhand (GoJ), was required to streamline and formalise Solid Waste Management (SWM) systems, through a systematic process, comprising of (i) waste segregation and storage at source (ii) primary collection (iii) secondary storage (iv) transportation (v) secondary segregation (vi) resource recovery (vii) processing and (viii) treatment and final disposal of the solid waste. Urban Local Bodies (ULBs), are responsible for implementation of Rules made by the Central Government.

Previously, two Performance Audits (PAs) had been conducted on the (a) "Implementation of SWM project by Ranchi Municipal Corporation *via* PPP mode" and (b) "Management of Water Supply, Sanitation and SWM Services" in ULBs and the findings of these PAs had been included in the Annual Technical Inspection Reports (ATIRs) on Local Bodies (LBs) for the year ended 31 March 2013 and 31 March 2016, respectively. These ATIRs had been tabled in the State Legislature in March 2015 and August 2017, respectively. However, these Reports had not been referred to the Public Accounts Committee or any other Legislative Committee, for discussion (as of January 2023). The Major findings included in these ATIRs, have been summarised in **Appendix 1**.

This PA, on "**Solid Waste Management in ULBs in Jharkhand**", covering the Financial Years (FYs) 2017-18 to 2021-22, was conducted between July 2022 and January 2023, with the objective of assessing the quality of SWM facilities, being provided by the ULBs in the State. The PA involved test-check of 14 sampled ULBs.

Major Audit Conclusions

Chapter-III: Planning and Institutional Mechanism

The State Government notified the Jharkhand State Urban Sanitation Policy, 2018. Audit, however, noticed that the Solid Waste Management Plan (short and long term) were not being prepared, by any of the 14 test-checked ULBs. Further, Detailed Project Reports (DPRs) of 30 SWM projects, of 36 ULBs had been sanctioned by the Department under SBM. Consultants for the preparation of DPRs, of four ULBs, were yet to be appointed. The DPRs of SWM project of two ULBs (Chhatarpur and Medininagar), out of the 14 test-checked ULBs, had not been finalised as of July 2022. It was also noticed that waste minimization strategies in line with the 5R's *viz.* Refuse, Reduce, Reuse, Refurbish and Recycle, were far behind its achievement as a huge quantity of 8.71 lakh Metric Ton (62 *per cent*) waste had reached the landfill sites of ULBs.

Nine out of the 14 test-checked ULBs had failed to recognize organisations of informal waste picker/collectors and integrate them into SWM planning and activities.

There was an overall vacancy of 61 (28 *per cent*) Sanitary Supervisors and 17 (89 *per cent*) in Public Health Officer cadre, in the test-checked ULBs, whereas in Deoghar and Ranchi, 69 (138 *per cent*) Sanitary Supervisors were in excess of the sanctioned strength. The shortage of staff affected the effective implementation and monitoring of SWM activities. Lack of training to the SWM staff was also seen in 12 out of the 14 test-checked ULBs.

Recommendations

State Government may ensure early preparation of DPRs of all ULBs, for better implementation of SWM activities. State Government/ULBs may encourage involvement of informal waste pickers/collectors in SWM planning and integrate them into SWM activities. State Government may endeavor to fill the vacant staff posts, for effective implementation of SWM and also ensure that requisite training is provided to all personnel engaged in SWM activities, within a specified period. State Government may draw up a time-bound plan for ULBs to achieve the highest/preferred level of Service Level Benchmarks.

Chapter-IV: Financial Management

Five ULBs (Chakradharpur, Chhatarpur, Deoghar, Garhwa and Koderma) out of the 14 test-checked ULBs, had not prepared their budgets during FYs 2017-18 to 2021-22. Further, GoI had released Central share of ₹ 93.48 crore for implementation of 25 SWM projects of 30 ULBs of the State, including the 10 test-checked ULBs. The State had incurred expenditure of ₹ 111.06 crore (56 *per cent*), against the SBM funds of ₹ 199.81 crore during 2016-22. The Mission Directorate (State Urban Development Agency) and Ranchi Municipal Corporation (RMC) earned interest of ₹ 23.25 crore (as of March 2022) on deposits of SWM funds in bank, and was lying idle. Regarding utilization of SWM funds it was noticed that, the Department released ₹ 7.50 crore for SWM projects, in two test-checked ULBs (Chakradharpur and Pakur). However, only ₹ 35 lakh had been utilized by Chakradharpur MC and the balance amount of ₹ 7.15 crore was lying in the Treasury, as of March 2022. Against the total expenditure, in the test-checked ULBs, expenditure on SWM had ranged between two and 11 *per cent*, during 2017-22. No SWM expenditure had been incurred, in 13 and six out of the 14 test-checked ULBs from the 14th and 15th FC grants, respectively. Audit also noticed that 10 test-checked ULBs had realized less amount of minimum user charge amounting to ₹ 36.84 crore against D2D collection of waste. Further, three ULBs (Dumka, Garhwa and Jamtara) had not levied user charge ₹ 2.62 crore.

Recommendations

ULBs may prepare Budget Estimates every year, for better financial planning of SWM projects. ULBs may conduct a realistic assessment of the Operation & Maintenance costs involved in SWM and may levy and collect SWM user charges from all premises.

Chapter-V: Information, Education & Communication Activities

The test-checked ULBs (except Jugsalai), had not notified and published the list of domestic hazardous waste. They had also not emphasized the aspects of 'not to burn' and 'not to bury' solid waste and had not propagated waste minimisation through the 5R's. Further, none of the test-checked ULBs had encouraged community participation (except for the Giridih Municipal Corporation and Jugsalai MC). Six test-checked ULBs did not hold any meeting with the representative of Resident Welfare Associations to ensure community participation in waste segregation. Three test-checked ULBs did not levy penalty for irregular dumping/littering of waste.

Recommendations

Information, Education & communication activities may be carried out regularly, for creating public awareness and also for educating waste generators, so that they are better placed to achieve the overall objectives of SWM. ULBs may ensure greater emphasis on segregation of waste at source, with the involvement of community-based organisations, Resident Welfare Associations and non-government organisations. State Government may ensure imposition of penalty to be levied by the ULBs against irregular dumping/ littering of waste.

Chapter-VI: Segregation, Collection, Storage and Transportation of Solid Waste

Audit of 13 out of 14 test-checked ULBs (Chhatarpur NP did not segregate solid waste at all during this period) revealed that the percentage of source segregation of solid waste ranged between one and 98 *per cent* during 2017-22 (except in Jamtara, where segregation was absent during 2017-18 and in Deoghar Municipal Corporation, where *cent per cent* source segregation was done during 2021-22). The test-checked ULBs had not taken initiatives for using shredded plastic waste in road making, although this was stipulated under the MSWM Manual. None of the test-checked ULBs provided any tax incentives, to waste generators, to promote segregation of waste at source. Further, seven to 18 *per cent* of the waste generated in the State and 11 to 16 *per cent* of the waste generated in the test-checked ULBs had not been collected. The coverage of D2D collection of MSW from Residential Premises (RPs), ranged between 82 and 93 *per cent,* whereas, in Non-Residential Premises (NRPs), it ranged between 72 and 95 *per cent,* (excepting 100 *per cent* coverage during FY 2019-20) during 2017-22. Thus, five to 28 *per cent* of RPs/

NRPs had been disposing of MSW, on the streets, public places *etc.* Five ULBs out of the 13 test-checked (except Chhatarpur NP) ULBs had not provided personal protective equipment to the work force engaged in handling of solid waste. Clearance of storage facilities, on a daily basis, was not seen in 13 test-checked ULBs. Audit also observed that seven test-checked ULBs had the requirement of 28 Transfer Stations (TSs). However, only three ULBs had 12 TSs. Of which, two were running in the premises of government offices. Regarding transportation of MSW, it was noticed that out of the 14 test-checked ULBs, 13 ULBs (except Chhatarpur NP) could transport only 12.28 lakh MT of MSW to dumpsites, against the total 13.98 lakh MT, collected during 2017-22. Auto Tippers (76 *per cent)*, used for transportation of MSW, had been transporting waste in uncovered vehicles in five test checked ULBs. In 11 test-checked ULBs, 529 vehicles used for transportation of MSW did not have the required registrations. The test-checked ULBs had not ensured GPS-based monitoring of their vehicles, engaged in SWM activities.

Recommendations

State Government may encourage segregation of waste at source through distribution of domestic bins, by giving incentives to waste generators and collectors for segregation of waste, and ensure that ULBs take measures to prevent mixing of segregated waste, during various stages of SWM. State Government may ensure the usage of shredded plastic waste in the construction of bituminous road by the ULBs, while segregating and shredding the plastic waste. ULBs may ensure 100 per cent collection of MSW generated from all sources and also ensure that the workers, involved in handling of waste, follow occupational health and safety protocols by wearing safety gear and other protective equipment. Coverage of D2D collections of MSW, in all RPs/ NRPs, may be ensured by the ULBs. Since ULBs are responsible for complete establishment and maintenance of storage facilities such as their clearance, ensuring attendance on a daily basis, to avoid littering and prevent unhygienic conditions, State Government may ensure that ULBs are not just engaging in peripheral activities, but are also fulfilling their entire set of responsibilities in regard to creating clean and hygienic living spaces in their areas.

ULBs may also construct Transfer Stations, as provisioned in DPRs, and ensure operationalization of the TSs already constructed, for safe storage and segregation of waste to minimize the harmful impact on the environment. ULBs may ensure that the vehicles procured by them, for SWM activities, comply with the statutory requirements of registration, obtaining of authorisations, being in possession of fitness certificates etc. It may be ensured that the vehicles procured are covered, for the purpose of collecting and transporting segregated waste, in an efficient manner. GPS based tracking technology may be utilised for effective monitoring of the daily activities of the vehicles and workforce.

Chapter-VII: Implementation of SWM Projects

No DPR, for SWM projects, had been prepared for the Chhatarpur NP. No Concessionaire had been selected for the Jugsalai MC. Release of central assistance was pending for two ULBs (Dumka & Medininagar). Concessionaire was also to be selected for the Ranchi Municipal Corporation, after termination of the existing concession agreements. No expenditure had been incurred on construction works, by three (Chatra, Garhwa and Jamtara) of the test-checked ULBs, while the projects in five (Deoghar, Giridih, Jhumritelaiya & Koderma and Pakur) of the test-checked ULBs were ongoing, with expenditure ranging from 19 and 85 *per cent*. Five ULBs (Chatra, Garhwa, Jhumritelaiya & Koderma and Ranchi) had started construction work on landfills or dumping sites without obtaining the required Environmental Clearances. Tipping fee of the Concessionaires, worth ₹ 3.94 crore, was outstanding, as of March 2022, had not been paid till December 2022, due to paucity of funds. Audit scrutiny also revealed that four (Chakradharpur, Chatra, Garhwa and Deoghar) of the test-checked ULBs had paid Tipping fee, without required verification having being carried out by the Project Management Consultant.

Recommendations

State Government may ensure early completion of the SWM projects of ULBs. State Government may ensure that all landfill sites operate with valid authorisations and environmental clearances.

State Government/ULBs may ensure timely payment of Tipping fees to the Concessionaires, for smooth functioning of SWM activities in municipal areas. State Government may also ensure appointment of Project Management Consultants for all projects, to monitor the operation & maintenance of SWM activities, and authentication of the Tipping fee bills, of the Concessionaires.

Chapter-VIII: Processing, Treatment and Disposal of Waste

During audit it was noticed that 31 to 42 *per cent* of solid waste could be processed during FYs 2017-18 to 2021-22. Low processing of waste was mainly due to incomplete infrastructure being available with the test-checked ULBs. In the 13 test-checked ULBs, in-house composting had not been promoted. As such, the minimum amounts of solid waste, which was required to reach the landfills sites, could not be ensured. Regarding disposal of waste, though land for landfill sites was available in 12 out of the 14 test-checked ULBs, construction work could be started only in eight of the test-checked ULBs and completed only in the Deoghar Municipal Corporation. Moreover, the Department had released ₹ 1.31 crore, to the Chakradharpur MC, for acquisition of land. Of this, ₹ 84.28 lakh was transferred to the District Land Acquisition Officer, West Singhbhum. However, the land could not be acquired, as such, the Concessionaire could not start construction activities. Buffer zones of no development, in the adjoining areas of sanitary landfills/dumpsites, were not

declared by the 12 test-checked ULBs. DPRs for disposal of 8.38 lakh MT legacy waste, in six of the test-checked ULBs, had not been prepared.

Recommendations

State Government may ensure that ULBs maximise processing of waste and its scientific disposal at landfills through early completion of SWM projects. State Government may take early initiatives for bio-remediation of the legacy waste in the ULBs.

Chapter-IX: Unfruitful/Wasteful Expenditure

Audit noticed that 66 Community Bins purchased (February 2022) at a cost of ₹ 11.75 lakh were lying idle at Pakur MC. Twelve Refuse Bins purchased at a cost of ₹ 6.24 lakh (August 2018) were lying unutilised for more than four years at Pakur MC. Four of the test-checked ULBs had purchased 1.74 lakh domestic bins but only 0.55 lakh bins had been distributed to households, while the remaining 1.19 lakh were lying idle in stock. Two Transfer Stations constructed (June 2019) in Ranchi at a cost of ₹ 41.73 lakh had remained non-functional. Vehicles costing ₹ 1.15 crore, purchased by the two of the test-checked ULBs, for the purpose of SWM activities were lying idle, as of November 2022. Further, it was seen that a bio-methanation plant, established (November 2019) at a cost of ₹ 2.21 crore, at Deoghar Municipal Corporation, was non-functional and four Aerobic Bio-Composters, for conversion of wet waste to rich compost, installed in Medininagar Municipal Corporation, were either being used by the public as community bins or were lying idle. The service provider had supplied and installed 122 Smart Semi Underground bins (Smart bins) at a cost of ₹ 3.12 crore in Ranchi Municipal Corporation. Again 100 smart bins had been purchased (February 2022) by the provider. However, the required Bin Level Sensors (BLS) for tracking the fill level of waste inside these smart bins, had not been installed, which resulted in wasteful expenditure of ₹ 8.96 crore on purchase and installation of smart bins.

Recommendations

State Government may fix responsibility on concerned officials of the ULBs responsible for domestic bins lying idle in the stores, partial installation of community bins, uninstalled Refuse bins, idle transportation vehicles, SWM machines lying idle since purchase and non-functional RFID Tags and transfer stations. ULBs may ensure creation of awareness amongst the local public about the Vermi/ Aerobic Bio Composting for effective utilization of Composters. State Government may ensure that responsibility is fixed by RMC on concerned officials of the ULB who are responsible for payments being made to the suppliers for supply and installation of smart bins without bin level sensors. The recovery of such amounts paid may be monitored. It may be ensured that RMC is not just engaging in peripheral activities, such as

purchasing of bins in large numbers. RMC may also ensure timely installation of BLSs in the smart bins, for their efficient functioning.

Chapter-X: Construction and Demolition Waste

None of the 14 test-checked ULBs, had submitted annual reports/data of Construction and Demolition (C&D) waste, to the Jharkhand State Pollution Control Board (JSPCB). Further, only one (Koderma), out of 14 test-checked ULBs, had published the name and location of a site, for C&D waste.

Recommendations

State Government may ensure identification and publication of sites by ULBs, for disposal of construction and demolition (C&D) waste. State Government/JSPCB and ULBs, may also ensure maintenance of a database of C&D waste.

Chapter-XI: Monitoring

Audit scrutiny revealed that the consolidated annual reports of only 42 ULBs (out of 50 ULBs) were submitted by the JSPCB, to the CPCB, on a regular basis, from FY 2018-19 onwards. The remaining eight ULBs did not submit their annual reports to the JSPCB. The District Level Review and Monitoring Committee and District level SWM Committee, required for monitoring of SWM activities had not been constituted in any of the districts of the test-checked ULBs. Further, none of the test-checked ULBs had conducted social audit of SWM and no third-party evaluation of SWM activities had been undertaken by the State Government.

Recommendations

State Government may ensure submission of annual reports of Solid Waste, by all 50 ULBs of the State. State Government may also ensure that District/ULB level Committees are constituted, as an effective institutional mechanism for monitoring the implementation of SWM plans.

Chapter I
Introduction

Chapter I

Introduction

1.1 Classification of Solid Waste

As per the Solid Waste Management (SWM) Rules, 2016, of the Government of India (GoI), solid waste includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste, other non-residential waste, street sweeping, silt of drains, horticultural/agricultural and dairy waste and treated bio-medical waste, but does not include industrial waste, untreated bio-medical waste, e-waste, battery waste and radio-active waste. Solid waste poses a threat to the environment and human life, if not dealt with and disposed of safely. As such, Solid Waste Management (SWM) is an integral part of public health and sanitation.

Municipal Solid Waste Management (MSWM) refers to a systematic process that comprises of: (i) waste segregation and storage at source (ii) primary collection (iii) secondary storage (iv) transportation (v) secondary segregation (vi) resource recovery (vii) processing and (viii) treatment and final disposal of the solid waste.

Section 251 of the Jharkhand Municipal Act (JMA), 2011, enumerates the responsibilities of the municipalities, in regard to solid waste management. Urban Local Bodies (ULBs), within their respective municipal areas, are responsible for implementation of the Rules made by the Central Government, as specified under the Environment (Protection) Act, 1986. They have the responsibility for regulating the management and handling of municipal solid waste, as also for development of infrastructure, for collection, storage, transportation, processing and proper disposal of solid waste.

1.2 Process of Solid Waste Management

The process of solid waste management is depicted in ***Chart 1.1***:

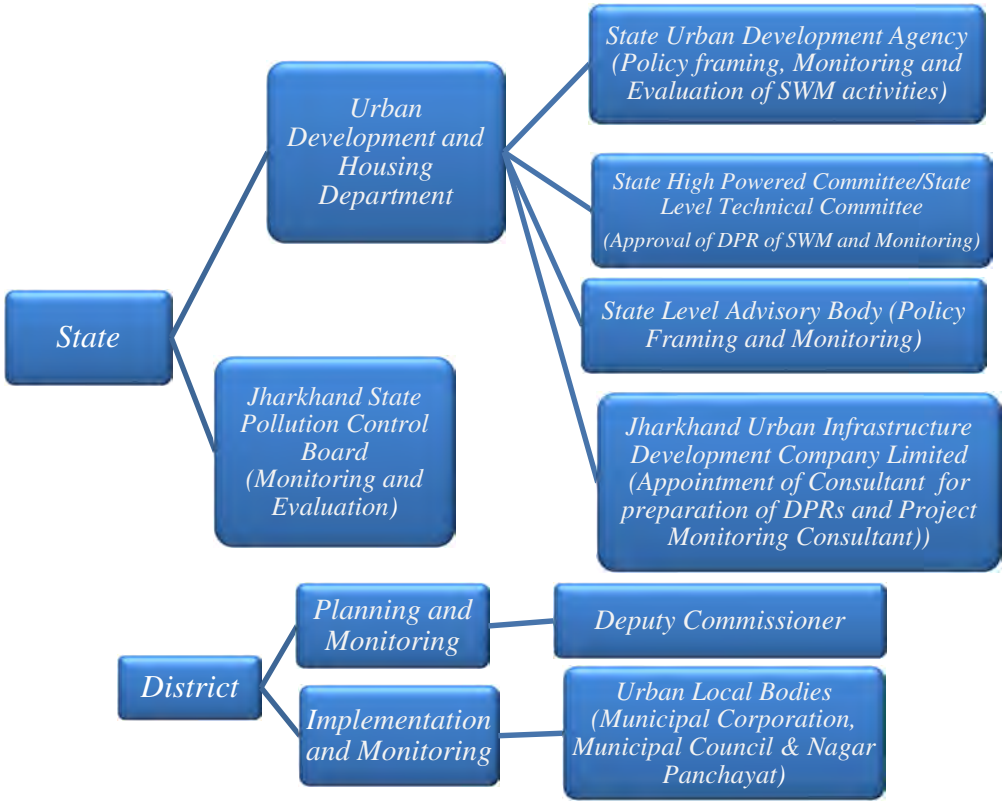
Chart 1.1: Process of Solid Waste Management

(***Source: SWM Rules and Manuals***)

1.3 Regulatory framework governing the management of solid waste

Subject to the provisions of the Environment (Protection) Act, 1986, the Central Government holds the power to take necessary measures for protecting and improving the quality of the environment. The Ministry of Environment, Forests and Climate Change (MoEF&CC) amended (April 2016) the erstwhile Municipal Solid Waste (Management and Handling) Rules, 2000, and redefined these through (April 2016) a new set of Rules for management of various kinds of waste, *viz.* solid waste, construction and demolition waste and other special waste[1]. The regulatory framework, governing the management of different types of waste, is indicated in **Appendix 1.1.** The role of authorities at all levels, in the planning, execution and monitoring of Municipal Solid Waste (MSW) management, is shown in ***Chart 1.2***.

Chart 1.2: Role of various authorities in MSW



(Source: SWM Rules and SBM Guidelines)

1.4 Sustainable SWM

There are three internationally accepted principles of sustainable SWM**,** as under:

i. **Affordability,** or the ability of households to pay for waste management services. It is universally accepted that 1-1.5 *per cent* of the average household spendable income, is the limit for payment for complete waste management services.

[1] *'Special waste' includes e-waste, bio-medical waste, slaughterhouse waste, plastic waste etc.*

ii. **Polluter pays principle,** whereby waste generators should bear the cost of waste management.

iii. **Sustainability,** in terms of countering negative environmental and economic effects of waste generation and management, by financially costing these effects and ensuring full cost recovery, by imposing charges on the agents and users concerned.

1.5 Waste management hierarchy

The essence of sustainable SWM is encapsulated in the 3R's, *viz*. Reduce, Reuse, and Recycle, of using natural resources and thereby minimising waste. These 3R's are also referred to as the "hierarchy of waste management", implying a preferred ordering of waste management practices to be adopted, rather than the largely prevalent disposal of all solid waste in landfills. The waste management hierarchy is shown in ***Chart 1.3***.

Chart 1.3: Waste Management Hierarchy

'Waste reduction' is placed at the top of the hierarchy, to show that the best way to deal with waste is to prevent its production and, where this is not possible, to reduce its production. Waste reduction decreases efforts in the collection and treatment of waste.

'Reuse' implies using the useful material from the discards, in its original state in the same or different manner, but without any physical or chemical modifications. This can reduce the demand for raw material and, consequently, waste material for final disposal.

'Recycling' entails recovering useful material from the discards, in the form of new products by physical and/ or chemical processes.

1.6 Organisational structure of Urban Governance

The Urban Development and Housing Department (the Department), Government of Jharkhand (GoJ), headed by the Secretary to the Government, is the Nodal Department for the overall enforcement of the provisions of Solid Waste Management (SWM) Rules, 2016, in the urban areas of the State.

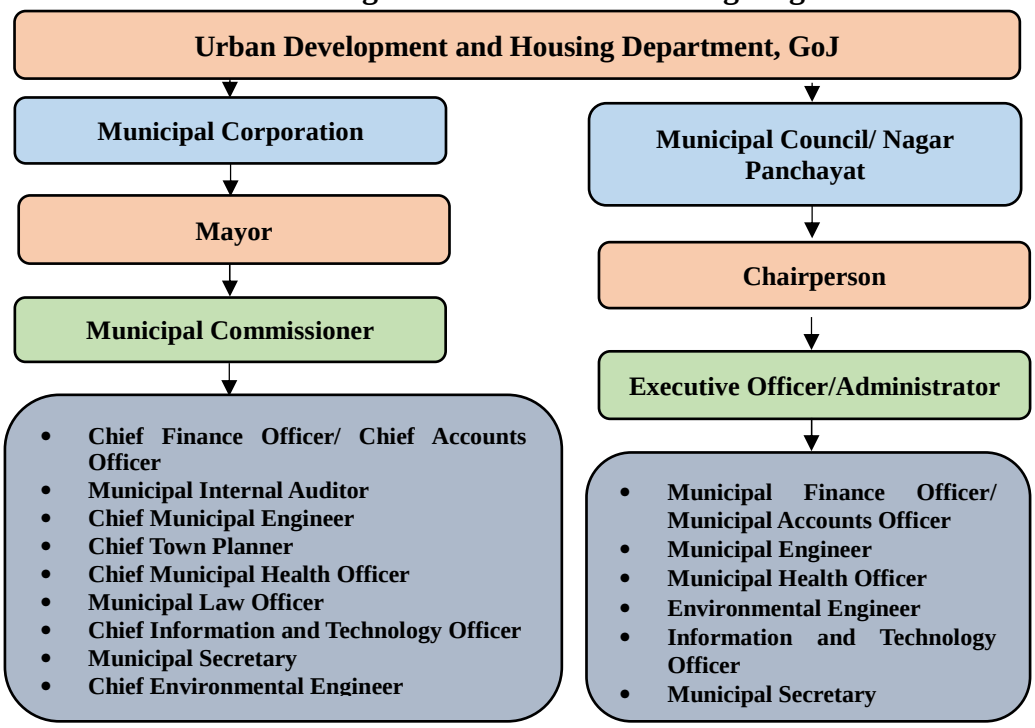
The Secretary is assisted by the State Urban Development Agency (SUDA), which had been designated (May 2015) as the State Mission Directorate, under the Swachh Bharat Mission - Urban (SBM-U), for implementation of the mission at ULBs' level. SUDA has a Project Management Unit (PMU).

The Jharkhand Urban Infrastructure Development Company Limited (JUIDCO), was established (July 2013) under the Companies Act, 1956, for formulation, implementation and maintenance of schemes for development of urban infrastructure. In this capacity, JUIDCO appoints consultants for preparation of Detailed Project Reports (DPRs) of SWM projects and provides Project Management Consultancy (PMC) services for creating infrastructure such as processing plants, Landfill sites *etc*. in ULBs.

The Jharkhand State Pollution Control Board (JSPCB), under the Forest, Environment and Climate Change Department, GOJ, is responsible for monitoring compliance with the MSWM plan and SWM Rules.

The Municipal Commissioners of the Municipal Corporations and the Executive Officers / Administrators of the Municipal Councils and Nagar Panchayats, are responsible for implementation of SWM Rules, at the ULBs' level. The organisational structure, in regard to the functioning of the ULBs in the State, is depicted in ***Chart 1.4***.

Chart 1.4: Organisational Structure/ Organogram



(***Source: JMA, 2011***)

1.7 Trend of urbanisation in Jharkhand

As per Census 2011, there was a population of 79.33 lakh people (24 *per cent* of the total population of 3.29 crore in the State), in the urban areas. However, as per the population projections of the Census of India, the projected urban population of the State was 101.33 lakh, as on March 2022, with the growth rate of 27.70 *per cent*, during the years 2011-22.

1.8 Profile of ULBs

There were 50 ULBs in the state of Jharkhand, as on 31 March 2022. The ULBs, as categorised on the basis of their population, are shown in **Table 1.1**.

Table 1.1: Categorisation of ULBs in Jharkhand

Category	Nomenclature		Population	Number of ULBs
Larger Urban Area	Municipal Corporation		1.5 lakh and above	09
Smaller Urban Area	Municipal Council (MC)	Class 'A'	One lakh and above and less than 1.5 lakh	01
		Class 'B'	0.40 lakh and above and less than one lakh	19
Transitional Area	Nagar Panchayat (NP)		0.12 lakh and above and less than 0.40 lakh	20
	Notified Area Committee		----	01
Total				**50**

(Source: JMA, 2011 and Annual Report 2020-21 of Department)

The ULBs in the state are governed by the Jharkhand Municipal Act (JMA), 2011. Each ULB has been divided into Wards, represented by an elected Ward Councillor. All ULBs, except for the Notified Area Committee (NAC), Jamshedpur, have a Council, consisting of Councillors and other members, for carrying out the duties of ULBs. The daily functions and responsibilities of NAC, Jamshedpur, are carried out by a Special Officer, appointed by the Department.

1.9 Status of devolution of functions in Urban governance

The 74th Constitutional Amendment Act, 1992, sought to empower the ULBs, to perform functions and implement schemes, in relation to the 18 subjects specified in the 12th Schedule of Article 243W of the Constitution of India, including SWM. Accordingly, the GoJ amended (2012) the JMA, 2011, and inserted all the 18 functions in Section 70 of the Act, in order to give effect to the above Amendment.

Details of the functions being performed by the ULBs are shown in **Table 1.2**.

Table 1.2: Functions being performed by ULBs

Sl. No.	Function	Status of implementation	Number of functions performed
1.	(i) Burials and burial grounds; cremations, cremation grounds; (ii) Slum improvement and upgradation; (iii) Regulation of slaughter houses and tanneries; (iv) Cattle pounds; prevention of cruelty to animals; (v) Provision of urban amenities and facilities, such as parks, gardens and playgrounds; (vi) Urban poverty alleviation; (vii) Vital statistics, including birth and death registration; (viii) Public amenities, including street lighting, parking lots, bus stops and public conveniences; (ix) Urban planning, including town planning; and (x) Regulation of land-use and construction of buildings.	Being fully performed	10
2.	(i) Water supply for domestic, industrial and commercial purposes; (ii) Public health, sanitation conservancy[2] and solid waste management[3]; (iii) Promotion of cultural, educational and aesthetic aspects; (iv) Safeguarding the interests of weaker sections of society, including the handicapped and mentally retarded; (v) Planning for economic and social development; and (vi) Roads and bridges.	Being partially performed	06
3.	(i) Urban forestry, protection of the environment, promotion of ecological aspects; and (ii) Fire services.	Not being performed	02

(Source: data furnished by the Department)

Further, ULBs levy and collect various tax and non-tax revenues. Tax revenue comprises of property tax[4] on land and buildings and advertisement tax. Non-tax revenue comprises of user charges, rental income from commercial buildings, town planning and building fee, trade license fee *etc*. ULBs also receive grants from the central and state governments for execution of developmental schemes and payment of salaries (grants and loans both), as well as grants that are given to them on the recommendations of the Finance Commissions.

Section 62(2) of the JMA, 2011, Jharkhand Town Planning Service (Recruitment, Promotion and other Conditions) Rules, 2014 and Jharkhand Municipal Service Cadre Rules, 2014, list out the appointing authorities, for posts under the administrative and municipal cadres, as indicated in **Table 1.3**.

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[2] *"Sanitation conservancy" refers to a body performing services with regard to maintaining sanitation, e.g. provision of clean drinking water, sewage disposal etc.*

[3] *'Solid waste management' is being fully performed by ULBs.*

[4] *'Property tax' is the mainstay of the own revenue of ULBs.*

Table 1.3: Appointing Authorities for posts under different cadres

Post	Authority
Administrative cadre	State Government
Municipal cadre	The Directorate of Municipal Administration

(Source: JMA, 2011)

1.10 Role of ULBs in solid waste management

Section 70 of JMA, 2011 mandates solid waste management as a core function to be provided by the ULBs. The 14th & 15th Finance Commissions (FCs) had also identified solid waste management as one of the core sectors, besides water supply, sewerage and storm water drainage.

Chapter II
Audit Framework

Chapter II

Audit Framework

2.1 Audit Objectives

The objectives of the Performance Audit (PA) were to assess whether the:

- "strategy and planning" of solid waste management, in ULBs, was commensurate with the waste generated and concurrent with the prevailing legal framework;
- municipal tasks, associated with solid waste management, including collection, segregation, storage, transportation, disposal and social inclusion of informal waste workers, were effective, efficient and economical;
- planning, construction, commissioning, operation and maintenance of solid waste management projects, in ULBs, were effective, efficient and financially sustainable; and
- monitoring and evaluation of the solid waste management system, including adequacy of awareness creation, citizen engagement for effecting behavioural change, complaint redressal mechanism for citizens, assessment of environmental impact and implementation of the internal control and monitoring mechanism, was adequate and effective.

2.2 Audit Criteria

The audit criteria were derived from the following sources:

- Municipal Solid Waste Management Manual, 2016, issued by GoI (April 2016);
- Solid Waste Management Rules, 2016, of GoI;
- Construction and Demolition Waste Management Rules, 2016, of GoI;
- Jharkhand Construction and Demolition Waste Policy, 2019;
- Performance parameters set out in Service Level Benchmarking (SLB) Handbook of GoI;
- Water (Prevention and Control of Pollution) Act, 1974, of GoI;
- Air (Prevention and Control of Pollution) Act, 1981, of GoI;
- The Environment (Protection) Act, 1986, of GoI;
- Jharkhand State Urban Sanitation Policy, 2018, of GoJ;
- Bihar Financial Rules, 1950, adopted by the GoJ vide SO No. 6 dated 15 November 2000;
- Motor Vehicles Act, 1988, of GoI;
- Jharkhand Municipal Act (JMA), 2011; and

- Instructions, guidelines and policies issued by the Central Pollution Control Board, Jharkhand State Pollution Control Board, GoI and GoJ, on SWM, from time to time.

2.3 Audit scope and coverage

The Performance Audit (PA) on "Solid Waste Management in Urban Local Bodies in Jharkhand", covering the period from the Financial Year (FYs) 2017-18 to the FY 2021-2022, was conducted between July 2022 and January 2023, at the State level offices (the Department, SUDA, JSPCB and JUIDCO) and in the selected 14 ULBs (out of the 50 ULBs in the State), situated in 12 out of 24 districts (**Appendix 2.1)** of the State.

Out of 50 ULBs, 12 ULBs (three[5] Municipal Corporations, six[6] Municipal Councils and three[7] Nagar Panchayats) were selected through the Simple Random Sampling Method. Two[8] ULBs were selected at the request of the Department, during the entry conference. The 14 selected ULBs covered a population of 20.83 lakh (36 *per cent)* of total population (58.38 lakh) of all ULBs in the State. Selection of different categories of ULBs, for the PA, is shown in **Table 2.1**.

Table 2.1: Number of ULBs selected for PA

Sl. No.	Category of ULB	Total no. of ULBs in the State	Number of ULBs selected (*per cent*)
1.	Municipal Corporation	09	04 *(44)*
2.	Municipal Council	20	07 *(35)*
3.	Nagar Panchayat/ Notified Area Committee	21	03 *(14)*
Total		**50**	**14** ***(28)***

(Source: Annual Report of the Department)

2.4 Audit methodology

An Entry Conference was held on 22 August 2022, with the Secretary of the Department, in which the Audit objectives, criteria, scope and methodology were explained. The audit methodology involved document analysis, issue of questionnaires, responses to audit queries, joint physical verification of SWM activities with the municipal officials and collection of photographic evidence. The exit conference was held on 7 July 2023, with the Additional Secretary of the Department, Government of Jharkhand, to discuss the audit observations. Views of the Department, expressed during the exit conference, along with the replies furnished in July 2023, have been suitably incorporated in the Report.

While framing the audit observations, conclusions and recommendations, some good practices, regarding solid waste management in Jharkhand, have also been included.

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[5] *Deoghar, Medininagar and Ranchi*
[6] *Chakradharpur, Chatra, Jugsalai, Garhwa, Dumka and Pakur*
[7] *Chhatarpur, Jamtara and Koderma*
[8] *Giridih and Jhumritelaiya*

The Report was issued (December 2023) to the Department for response followed by a reminder issued on 5 January 2024. No response has been received (as on 12 January 2024).

2.5 Acknowledgement

Audit acknowledges the co-operation and assistance extended by the Department, SUDA, JUIDCO, JSPCB and the selected ULBs, in conducting the PA.

Chapter III
Planning and Institutional Mechanism

Chapter III

Planning and Institutional Mechanism

3.1 Entities involved in Solid Waste Management

The framework for administration and management of SWM in India is broadly divided into three tiers - Central Government, State Government and Urban Local Bodies (ULBs). Other stakeholders that play a crucial role are households, businesses, the informal sector[9], non-governmental organisations (NGOs), community-based organisations (CBOs), self-help groups (SHGs), *etc*. Involvement of all stakeholders is necessary at several stages of SWM. **Appendix 3.1** lists out the roles and major responsibilities of stakeholders involved in the process of SWM.

3.2 Generation and assessment of waste

A reliable assessment of different kinds of waste, generated in the city limits, is essential, for planning and effective implementation of SWM. Solid Waste is heterogeneous in nature and its composition varies with the place and time. Thus, samples obtained from the same place (sampling point), on the same day, but at different times, may show totally different characteristics.

Audit observed that 42 ULBs (out of 50 ULBs in the State) had submitted their Annual Reports (ARs) on solid waste, to JSPCB, during FYs 2017-18 to 2021-22. The amount of Municipal Solid Waste (MSW) generated, collected and processed, by these ULBs, during FYs 2017-22, as shown in these ARs, are given in **Table 3.1**.

Table 3.1: MSW generated, collected and processed by the State

(In metric ton per day)

Particulars	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Generation	2,326	2,205	2,189	2,226	2,404	11,350
Collection	2,122	2,043	1,847	1,852	1,969	9,833
Uncollected	204	162	342	374	435	1,517
Processed	17	837	732	758	843	3,187
Unprocessed	2,105	1,206	1,115	1,094	1,126	6,646

(***Source: Data (www.pas.org.in) maintained by the Center for Environmental Planning and Technology (CEPT), Ahmedabad, for FY 2017-18 and the ARs of the JSPCB (2018-22)***

Details of the generation, collection and processing of MSW, by 13 out of the 14 test-checked ULBs[10], during FYs 2017-18 to 2021-22, are depicted in **Table 3.2 and *Chart 3.1***.

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[9] *Comprising of the 'Kabadi' system and waste pickers.*

[10] *One test-checked NP (Chhatarpur), did not provide complete data of generation and collection of MSW.*

Table 3.2: MSW generation, collection and processing in test-checked ULBs

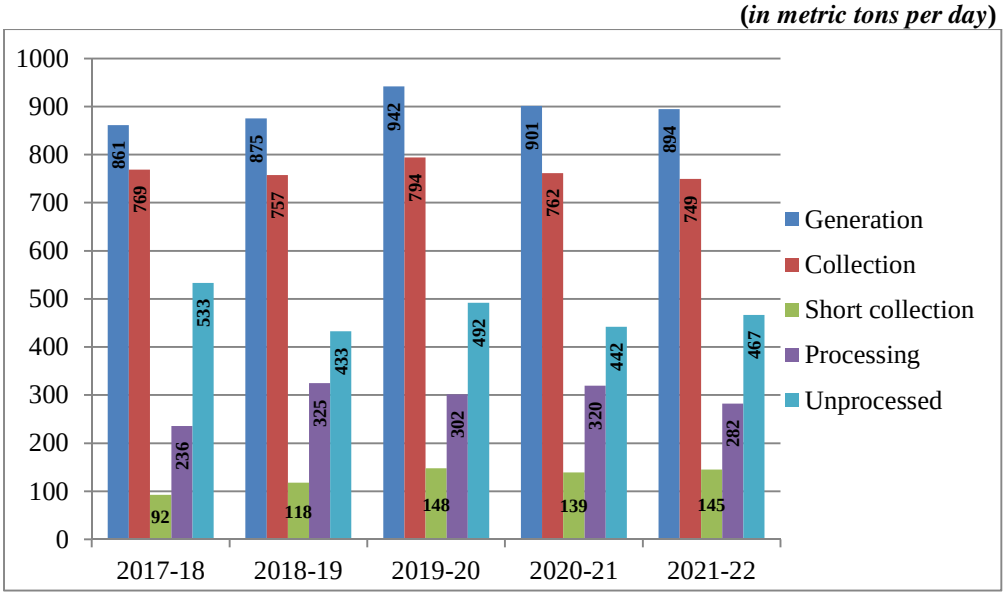
(In metric ton per day)

Financial Year	Generation	Collection (*per cent* of generation)	Uncollected	Processed (*per cent* of collection)	Unprocessed
2017-18	861	769 *(89)*	92	236 *(31)*	533
2018-19	875	757 *(87)*	118	325 *(43)*	433
2019-20	942	794 *(84)*	148	302 *(38)*	492
2020-21	901	762 *(85)*	139	320 *(42)*	442
2021-22	894	749 *(84)*	145	282 *(38)*	467

(***Source: Annual Reports of ULBs***)

Chart 3.1: Status of generation, collection and processing of solid waste in 13 selected ULBs

(*in metric tons per day*)



(***Source: Annual Reports of ULBs***)

As evident from **Table 3.2** and ***Chart 3.1,*** the percentage collection of waste generated, ranged between 84 and 89 *per cent,* while processing of the collected waste, ranged between 31 and 43 *per cent*.

3.3 State policy and strategy on SWM

Rule 11 of the SWM Rules, 2016, stipulates that the State Government shall prepare a state policy and strategy on SWM, in consultation with stakeholders, including representatives of waste pickers**,** Self-Help Groups (SHGs) and similar groups working in the field of waste management, consistent with these Rules, national policies on SWM and the National Urban Sanitation Policy of the Ministry of Urban Development (MoUD), GoI, within a period not later than one year from the date of notification (April 2016) of these rules.

The State Government notified (September 2018), the Jharkhand State Urban Sanitation Policy, 2018. Scrutiny of records revealed that no representatives of waste pickers and SHGs or other similar groups, working in the field of waste management, were involved in the policy making.

In the exit conference (July 2023), the Director, SUDA, stated that there was no requirement of rag pickers' representation in the preparation of the sanitation policy. The Department further replied (July 2023) that clause 4.3 of the Jharkhand State Urban Sanitation Policy, 2018, stipulates the involvement of rag pickers and SHGs in waste management. These groups had been participating in various activities of waste management, in the ULBs of Jharkhand.

The reply is not acceptable, as the involvement of representatives of rag pickers and SHGs, was required in the preparation of state policy on SWM, as per the SWM Rules, 2016. This had, however, not been ensured in the framing of Jharkhand State Urban Sanitation Policy, 2018.

3.4 Municipal Solid Waste Management Plan

Rule 15(a) of the SWM Rules, 2016, stipulates that the local authorities shall prepare a "Solid Waste Management Plan (SWMP)". Further, as per Section 1.1 of the MSWM Manual, short term plans (once in every five years) and long-term plans (20-25 years), were to be prepared, as per the state policy and strategy on SWM, within six months from the date of notification of the state policy and strategy and submitted to the respective department.

The short-term plans were to cover aspects of institutional strengthening, community mobilisation, waste minimisation initiatives, waste collection and transportation, treatment, disposal and financial outlay. They were expected to lead to the achievement of the long-term plans. The short-term plans were to be reviewed once in every 2-3 years, to ensure higher success in the implementation of all plan activities.

The State Government notified (September 2018) the Jharkhand State Urban Sanitation Policy, 2018. Audit, however noticed that the SWMPs (short and long term) were not being prepared, by any of the 14 test-checked ULBs, which had deprived the ULBs of the opportunity of adopting a systematic approach to SWM.

The Department stated (July 2023) that, as per the guidelines of SBM-U, DPRs of all the test-checked ULBs, except one (Chhatarpur), had been prepared, which already incorporated the action plan for implementation of SWM.

The reply is not fully acceptable, as preparation of DPRs is just one of the aspects of SWMP, focussing mainly on the creation of infrastructure, whereas SWMP also includes task specific action plans, like human resource development, capacity building and grievance redressal, besides waste management. Moreover, the DPRs of only 39 ULBs (out of 50 ULBs in the state) had been prepared, as discussed in ***Paragraph 3.6*** and proper assessment of waste generation had not been done in the DPRs of the test-checked ULBs (***Paragraph 3.6.1***).

3.5 Non-preparation of Development Plans

As per Section 381 of JMA, 2011, every Ward Committee[11] is to prepare and submit, every year, a development plan for the ward, along with an estimate of the expenditure, to the municipality concerned. The municipality, in turn, is to prepare, every year, an Annual Development Plan (ADP), for the next year, by consolidating the development plans submitted by the Ward Committees. The ADP, thus prepared, is to be submitted to the District Planning Committee (DPC)[12], for consolidation and preparation of the Draft Development Plan[13] (DDP), for the district as a whole.

Further, each municipality is to prepare a Perspective five-year plan for its development and furnish the same to the DPC/Metropolitan Planning Committee[14], for consolidation and onward submission to the State Government.

Audit observed that Ward Committees had not been constituted in 12 out of the 14 test-checked ULBs (*i.e.*, excepting Medininagar Municipal Corporation and Koderma NP). As such, development plans for the wards had not been prepared at the ward level. ADPs and five-year perspective plans had also not been prepared, in any of the 14 test-checked ULBs. As such, the requirement of resources, for providing public services, including SWM, could not be assessed, by the test-checked ULBs.

In the absence of planning, SWM services were being provided without assessing the requirements, or obtaining inputs from stakeholders, such as civil society, ward councillors and the end users.

The Department accepted (July 2023) the facts and stated that action would be taken in this regard.

3.6 Preparation of DPRs for SWM projects

Government of India launched its flagship scheme, *i.e.* the Swachh Bharat Mission (SBM-U), in October 2014, in which SWM was one of the six major components. The Mission period for SBM-U was initially up to October 2019, but was extended up to September 2021. Thereafter, SBM-U 2.0 was launched from October 2021 onwards. As per Paragraph 7.2 of the SBM-U Guidelines (issued in December 2014), ULBs were to prepare Detailed Project Reports (DPRs), for an integrated SWM system, in consultation with the State Government.

Further, the MSWM Manual, 2016, prescribed checklists for such DPRs, *i.e.* preparation of city profile (detailed data of wards or zones), status of the

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[11] *Comprising of the Councillor of the municipality representing the ward, the Area Sabha representative and not more than 10 persons representing the civil society of the ward, nominated by the municipality.*

[12] *The district planning committee of different districts shall consist of such number of members as may be specified by the state government by notification.*

[13] *The DPC, at the district level, is to consolidate the plans prepared by the LBs and to prepare a DDP and send the same, to the Department, for approval.*

[14] *Metropolitan Planning Committee, means a committee constituted in pursuance of Article 243ZE of the Constitution of India, as referred to in Section 384 of the JMA, 2011. The committee is required to prepare a draft development plan for the Metropolitan area.*

existing SWM in the city, project definition, gap analysis, proposed solid waste management system, institutional aspects and capacity building, Operation & Maintenance (O&M) aspects, cost estimates and financial aspects, of the projects. It also stipulated that the State Government may handhold ULBs, in quickly preparing DPRs, by short listing/identifying private or government agencies. The DPRs, so prepared, were to be administratively approved by the State High Powered Committee (SHPC)/State Level Technical Committee (SLTC)[15] and, thereafter, forwarded to Ministry of Housing & Urban Affairs (MoHUA), for release of Central funds.

The Central Pollution Control Board (CPCB), in compliance to the Hon'ble National Green Tribunal (NGT) order[16] (February 2015), prepared a National Action Plan for MSWM and suggested that the municipal authorities and concerned departments of the State prepare a DPR for integrated SWM[17], in accordance with the SWM Rules, within a time period of six months.

In this regard, Audit noticed that (as of December 2022):

- DPRs of 33 projects, for 39 ULBs (out of the 50 ULBs in the State), had been prepared. Of these, 30 DPRs (pertaining to 36 ULBs) had been sanctioned by the SHPC/SLTC, between May 2016 and April 2022, and submitted to MoHUA (**Appendix 3.2**).
- MoHUA had released central funds against 25 DPRs (pertaining to 30 ULBs), while funds were yet to be released against four DPRs (pertaining to four ULBs[18]), which had been sent to MoHUA in April 2022.
- DPR of one project (Sahebganj and Rajmahal) had been sanctioned (January 2019) by SHPC. However, funds had not been released by MoHUA. Accordingly, the State Government had decided to take up the project from State funds.
- Three DPRs (pertaining to three ULBs[19]) were pending with the Department, for submission before SHPC/SLTC.
- Work orders for preparation of three DPRs (pertaining to six ULBs[20]) had been issued by JUIDCO. The DPR for Mahagama NP, was at the

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15 *The Committee empowered to sanction the DPRs of SWM projects and to send them to MoHUA, GoI, for sanction of funds (as per SBM-U guidelines).*

16 *OA No. 199 of 2014, Almitra H. Patel & Anr. Vs Union of India & others, (regarding the National Action Plan for Solid Waste).*

17 *Integrated SWM proposes a waste management hierarchy, with the aim of reducing the amount of waste being disposed, while maximising resource conservation and resource efficiency.*

18 *Dumka, Gumla, Phusro and Ramgarh*

19 *Basukinath, Hussainabad and Medininagar.*

20 *1. Manjhiaon, Bishrampur and Bansidhar Nagar; 2. Barharwa and 3. Dhanwar and BadkiSaraiya.*

tendering stage, for appointment of a consultant, whereas, consultants for the preparation of DPRs, for the remaining four ULBs[21], were yet to be appointed (**Appendix 3.2)**.

In the test-checked ULBs, 11 DPRs[22], for 12 ULBs[23], had been sanctioned between May 2016 and April 2022, at a project cost of ₹ 1,944.38 crore; DPR for one, *i.e*., Medininagar Municipal Corporation, was pending with the Department; and the consultant for preparation of DPR, for one ULB (Chhatarpur NP), had not been appointed, as the identified land was in a hilly area, which was not found suitable for transportation of waste.

Thus, the DPRs of two, out of the 14 test-checked ULBs, were yet to be finalised, even after lapse of more than eight years of the SBM period.

The Department accepted (July 2023) the audit observations and stated that selection of consultant for Chhatarpur was in process, whereas the DPR of Medininagar had been technically sanctioned and was awaiting administrative approval.

3.6.1 Estimation of the waste generated

Section 1.4.3.3.1 of the MSWM Manual stipulates that, for the purpose of long-term planning, the average amount of waste, disposed by a specific class of generators, may be estimated only by averaging data from several samples. These samples were to be collected continuously, for 7 days, at multiple representative locations within the jurisdiction of the ULB, in each of the three main seasons, *viz*. summer, winter and rainy season. The waste was to be aggregated over the seven-day period, weighed and then averaged. These quantities could then be extrapolated to the entire ULBs and the per capita generation was to be so assessed.

Audit observed that SWM projects, of 12 test-checked ULBs, out of the 14 test-checked ULBs (*i.e*., excepting the Chhatarpur and Medininagar Municipal Corporations), had been sanctioned (between May 2016 and April 2022), for a period of 20 years (except the Ranchi Municipal Corporation, where it had been sanctioned for a period of five years). Scrutiny of the related DPRs revealed that:

1. In the DPRs of 10 ULBs (Chakradharpur, Chatra, Deoghar, Dumka, Giridih, Jhumritelaiya, Jamtara, Jugsalai, Koderma and Pakur), seasonal variations (summer, winter and rainy season) had not been ensured in the collection of samples, for assessment of waste generation.

2. The DPRs, of the remaining two ULBs (Garhwa and Ranchi Municipal Corporation), were not produced to Audit. However, the Deputy Municipal Commissioner of the Ranchi Municipal Corporation (RMC) stated (March 2023), in response to audit queries (December 2022), that

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[21] *Bachra, Domchanch, Chhatarpur and Hariharganj.*

[22] *Including one DPR of the Cluster ULBs (Jhumritelaiya & Koderma)*

[23] *Chakradharpur, Chatra, Deoghar, Dumka, Garhwa, Giridih, Jhumritelaiya, Jamtara, Jugsalai, Pakur, Koderma and Ranchi*

waste generation had been assessed only on the basis of population growth.

Thus, the DPRs of the test-checked ULBs did not contain a proper assessment of the quantum of waste generation, based on the mechanism prescribed in the Manual of MSWM.

The Department accepted (July 2023) the facts and stated that samples had been collected from different waste generation categories, such as high, medium and low-income group households; slums; markets; and institutional areas, for estimation of waste generation.

The reply is not acceptable, as samples for assessment of quantum of waste generation had not been collected in all the three main seasons, as required. Further, RMC had accepted assessment of waste generation, based on population growth.

3.7 Non-preparation of Contingency Plans

Section 5.4 of the MSWM Manual, 2016, stipulates that ULBs should prepare contingency plans for appropriate storage of waste, to tide over situations of non-performance of processing/treatment/disposal facilities.

Audit noticed that no requirement for a contingency plan had been incorporated in the Jharkhand State Urban Sanitation Policy, 2018. It had also not been considered in the DPRs of the 13 test-checked ULBs. Further, none of these ULBs had prepared such contingency plans. Thus, the test-checked ULBs were not prepared to tackle any unforeseen situations, like shutting down of processing units, or disruptions in collection, or disposal of waste *etc*.

The Department accepted (July 2023) the facts and stated that the ULBs had been directed (July 2023) to prepare contingency plans, to tackle any unforeseen situations.

3.8 Strategy for 3R's/5R's approach

Section 2.1 of the MSWM Manual, 2016, prescribes a step-wise approach[24], in the order of environmental priority, for different waste management options, with 'prevention' (*i.e.,* waste minimisation and sustainable use/multi use of products *e.g*., reuse of carry bags/packaging jars) being the most favoured option and 'disposal' (*i.e*., safe disposal of inert residual waste at sanitary landfills) being the least favoured option.

This approach is closely linked to the 3R's (Reduce, Reuse, and Recycle) approach, which helps to reduce the quantity of waste, the costs associated with its handling and its environmental impacts.

Section 2.1.4.2 of the Manual stipulates that waste minimisation strategies require policy interventions, at the national, state and local levels. Further, the Jharkhand State Urban Sanitation Policy, 2018, envisaged that minimal amount of waste was to be sent to landfill sites by following the 5R's approach, namely Reduce, Reuse, Refurbish, Recycle and Recover. This

[24] *Such as creating public awareness for waste minimisation, strategy for integrated SWM hierarchy, need for and benefits of waste minimisation etc.*

approach was also aimed at minimising the use of inputs, so as to generate minimal waste.

Audit observed that, in the 13 ULBs, out of the 14 test-checked ULBs (*i.e*. excepting Chhatarpur NP), 13.98 lakh Metric Ton (MT) waste had been collected during the FYs 2017-22. Of the collected waste, a huge quantity of 8.71 lakh MT (62 *per cent*) waste had reached the landfill sites of the ULBs. Thus, the aim of the State Policy, *i.e.,* to send minimal waste to the landfill sites, by following the 5R's approach, had not been achieved.

Further, Audit observed that only two ULBs (Deoghar Municipal Corporation and Jugsalai), out of the 14 test-checked ULBs, had made some efforts towards reuse or recycle of waste, as shown in ***Photographs 1, 2, & 3*** **(Exhibit 3.1)**.

Exhibit 3.1 : Establishment of old cloth banks, by the test-checked ULBs (Reuse)

Photograph 1	***Photograph 2***
An old cloth bank was established (2019) by the Jugsalai MC, to reuse the old clothes. It was found to be functional during physical verification (carried out on 12 August 2022).	*An old cloth bank ('Neki ki Diwar'), for reuse of old clothes, was found in the Deoghar Municipal Corporation during physical verification, on 05 November 2022. However, clothes and other material, like used bags, shoes etc., were found scattered.*
	

Preparation of tea compost by test-checked ULB (Recycle)	
Photograph 3	
At Jugsalai MC, a tea stall was generating, on an average, 5-8 kgs of used tea leaves per day, as waste. However, the MC was processing the used tea leaves, from the 50 tea stalls, into nutritious compost, with the help of a Self-Help Group (SHG) of ten women. The end product was being packed into eco-friendly material and sold to various nurseries and horticulture offices.	
	
(Source: Physical verification carried out on 12 August 2022)	***(Source: Records of the Jugsalai MC)***

Thus, the aim of the Jharkhand State Urban Sanitation Policy, 2018, *i.e.,* to ensure that the minimum amount of waste reached landfill sites, by following the 5R's approach, had not been achieved, in the test-checked ULBs.

The Department accepted (July 2023) the facts and stated that the ULBs had already improved the collection efficiency and now the entire focus was on improving the processing efficiency. Infrastructure development, for processing and disposal, had already been taken-up and in most of the ULBs, it was on the verge of completion. Gaps in the pace of infrastructural development, for collection, transportation, processing and disposal, had resulted into gaps between the amount of waste collected and the amount of waste processed. However, in due course of time, the gap would be minimised. SWM plans, in Deoghar and Giridih, were complete and, in Pakur, they were in the final stage.

3.9 Non-involvement of stakeholders in planning

Section 1.4.4 of the MSWM Manual, 2016, recommended extensive involvement of the community in waste management. It provided for the constitution of a core/advisory team (consisting of internal stakeholders), involving all departments of the ULBs concerned, with SWM services and the community (external stakeholders, comprising of households, the informal sector, Non-Government Organisations, Community Based Organisations (CBOs), SHGs, women's groups, *etc.*), in MSWM planning and implementation.

Audit observed that neither had a core/ advisory team (consisting of internal stakeholders) been constituted by any of the test-checked ULBs, nor had the participation of the community of external stakeholders been ensured, in planning and implementation. Even the DPRs of the SWM system had no mention of the details of consultations, if any, with internal or external stakeholders, for obtaining their feedback, except for surveys of households.

Thus, the ULBs lacked the feedback of stakeholders, in MSWM planning and implementation.

The Department stated (July 2023) that Sanitation Committees[25], at the ward level, had been constituted in most of the ULBs, for providing advice in the planning and implementation of sanitation activities, including SWM. The remaining ULBs (newly formed) had been directed (July 2023) to ensure the participation of stakeholders, in the planning and implementation of SWM.

The reply is not acceptable, as none of the test-checked ULBs accepted the formation of the Sanitation committee.

3.10 Non-integration of informal waste collectors in waste management

Rules 11(c) and 15(c) of the SWM Rules, 2016, acknowledged the primary role played by the informal sector, comprising of waste pickers, waste collectors and the recycling industry, in reducing waste. The SWM Rules, 2016, required that the State Government provide broad guidelines regarding integration of waste pickers/informal waste collectors, with the waste management system. It was the duty of ULBs to: (i) establish a system for recognising organisations of informal waste collectors and (ii) promote their integration/participation in SWM, including in the process of door-to-door (D2D) collection of waste.

The State Government also directed (September 2019) ULBs to recognise and integrate the informal waste pickers, for carrying out SWM activities, by 31 October 2019.

As per the Annual Report of the JSPCB for FY 2020-21, 716 waste rag pickers had been identified in 42 ULBs of Jharkhand, out of which 691 were engaged in SWM activities.

Audit observed that only five[26] ULBs (out of the 14 test-checked ULBs), had identified and involved 282 waste rag pickers in SWM activities, as on 31 March 2022.

The other nine test-checked ULBs had neither recognised organisations of informal waste picker/collectors, nor integrated them into SWM activities.

The Department stated (July 2023) that the ULBs had already been directed in August 2017 and September 2019, in this regard. Most of the ULBs had identified and integrated the informal waste pickers in SWM activities. It further stated that the remaining ULBs (newly formed) had again been directed (July 2023) to ensure the integration of waste pickers in SWM activities.

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[25] *The Department vide its resolutions directed (August 2014 and May 2018), all ULBs were required to constitute a 10-member Sanitation Sub-Committee (SSC), in each ward, under the Chairmanship of the Ward Councillor. The Committee was required: i) to ensure a fixed time for cleaning and lifting of solid waste ii) intimate the ULB about the solid waste that had been dumped in public places iii) assist in the collection of user charges and iv) decide the places for lifting of MSW, in their wards.*

[26] *Chakradharpur- 02, Deoghar- 24, Jugsalai- 03, Koderma- 05 and Ranchi- 248.*

The reply is not satisfactory, as only five of the test-checked ULBs had identified and involved 282 waste rag pickers in SWM activities, despite the directions of the Department.

3.11 Institutional Mechanism

For planning an efficient and advanced Municipal Solid Waste Management (MSWM) system, it is essential to have an efficient institutional structure, besides being in possession of adequate infrastructure and equipment (Section 1.4.5.4 of the MSWM Manual, 2016).

The State Government had constituted (between March 2015 and January 2022) three State-Level Committees, as required under the SBM Guidelines (2014) and the SWM Rules, 2016.

3.11.1 State High Powered Committee/ State Level Technical Committee

As per paragraph 11.2 of the SBM Guidelines, a State High Powered Committee (SHPC), under the chairpersonship of the Chief Secretary, with members drawn from concerned Departments (including a MoHUA representative), was responsible for the management of SBM-U, at the State level. The Committee was required to meet at least twice a year or more, for this purpose. The Committee was empowered to sanction the DPRs of SWM projects and to send them to MoHUA, GoI, for sanction of funds.

Audit observed that the State Government had constituted the SHPC in March 2015. The Committee had met eight times, against the required 14 meetings, during FYs 2015-16 to 2021-22. It had sanctioned 26 DPRs for 32 ULBs (out of the 50 ULBs in the State), as of January 2019, including 10 DPRs, for 11 of the test-checked ULBs[27]. MoHUA, in turn, had sanctioned funds against the approved DPRs.

Further, as per the SBM 2.0 guidelines[28] (paragraph 3.2.2), a State Level Technical Committee (SLTC) was to be constituted under the Chairmanship of the Secretary of the Department and State Mission Director-SBM as convenor, for review and sanction of DPRs.

The Committee had been constituted in January 2022, and had given (April 2022) its concurrence on DPRs of four SWM Projects[29], of four ULBs, including one of the test-checked ULBs (Dumka MC). These DPRs had been forwarded to MoHUA for release of Central funds. Approval was awaited (as of May 2022).

Thus, the SHPC/SLTC had not ensured the timely preparation of DPRs for the remaining 14 ULBs of the State.

The Department accepted (July 2023) the facts and stated that DPRs of five ULBs (Basukinath, Bishrampur, Medininagar, Shri Banshidhar Nagar and Manjhiaon) had been prepared, while the DPRs of the remaining nine ULBs would be prepared shortly.

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[27] *Excepting Chhatarpur, Dumka and Medininagar.*

[28] *The SBM-Urban was launched in October 2014, and had remained in force upto September 2021. Further, the 2nd phase of SBM-Urban (2.0) had been launched by the MoHUA, GoI, in October 2021.*

[29] *Dumka, Gumla, Phusro and Ramgarh.*

3.11.2 State Level Advisory Body

As per Rule 23 of the SWM Rules 2016, a State Level Advisory Body (SLAB) was to be constituted at the State level. The Body was required to meet at least once in every six months, to: (i) review matters related to implementation of the SWM Rules (ii) review the state policy and strategy on SWM and (iii) give advice, to the State Government, for taking measures that were necessary, for expeditious and appropriate implementation of these Rules.

Audit observed that the State Government had constituted an advisory body, headed by the Principal Secretary, Urban Development and Housing Department, in March 2018. The body had met only twice (April 2018 and May 2019) in five years, since its constitution (as of March 2022). In its first meeting, it had suggested 100 *per cent* segregation of waste collection, as early as possible; mass scale Information, Education and Communication (IEC) activities, on segregation and waste management; and focus on decentralised composting by the bulk waste generators. It had also directed completion of all pending DPRs, by giving technical & administrative approvals, as well as finalisation of tenders, at the earliest. However, none of these suggestions had been fully implemented in the test-checked ULBs. The deficiencies in segregation, collection, IEC activities, as noticed in audit, are discussed in ***Chapters 5 and 6***.

The Department accepted (July 2023) the facts and stated that mass scale IEC activities/ campaigns had been undertaken to achieve 100 *per cent* segregation. ULBs had also been directed to ensure the implementation of suggestions of the SLAB.

The reply is not acceptable, as shortcomings in the implementation of the suggestions of SLAB were noticed during audit, despite the directions given by the Department. Further, the reply was silent about absence of prescribed meetings by SLAB.

3.11.3 Functioning of the Solid Waste Management Cell

Section 1.4.5.4 of the MSWM Manual, 2016, stipulates that an effective institutional setup, capable of designing, implementing and monitoring the MSWM system, needs to be established within the local authority. It strongly recommends that ULBs should have an SWM cell or SWM department, having staff with technical and managerial skills, specific to MSW management.

Audit observed that the Department had not instructed ULBs to create SWM cells. However, GoJ had sanctioned (September 2018) posts of Public Health Officers (PHOs)/Assistant Public Health Officers (APHOs), Chief Sanitary Inspectors (CSIs)/ Sanitary Inspectors (SIs) and Sanitary Supervisors (SSs), in the ULBs, for looking after waste management activities.

The persons-in position (PIP) were less than the sanctioned strength (SS), in the test-checked ULBs, as on 31 March 2022, as shown in **Table 3.3**.

Table 3.3: SS and PIP in the test-checked ULBs (as on 31 March 2022)

Sl. No.	ULB	PHO/APHO			CSI/ SI			Sanitary Supervisor		
		SS	PIP	Vacant	SS	PIP	Vacant	SS	PIP	Vacant (*per cent*)
1.	Chakradharpur MC	01	0	01	0	0	0	15	06	09
2.	Chatra MC	01	0	01	0	0	0	15	02	13
3.	Chhatarpur NP	01	0	01	0	0	0	10	0	10
4.	Dumka MC	01	0	01	0	0	0	15	0	15
5.	Garhwa MC	01	0	01	0	0	0	15	02	13
6.	Giridih Municipal Corporation	01	0	01	0	0	0	15	06	09
7.	Jamtara NP	02	0	02	0	03	(+)3	10	0	10
8.	Jhumritelaiya MC	01	0	01	0	01	(+)1	15	07	08
9.	Jugsalai MC	01	0	01	0	0	0	15	05	10
10.	Koderma NP	02	0	02	0	0	0	10	01	09
11.	Medininagar Municipal Corporation	01	0	01	0	0	0	15	03	12
12.	Pakur MC	01	0	01	0	0	0	15	03	12
Total		**14**	**0**	**14**	**0**	**04**	**(+)4**	**165**	**35**	**130**
13.	Deoghar Municipal Corporation	01	0	01	05	01	04	20	23	(-) 03
14.	Ranchi Municipal Corporation	04	02	02	06	0	06	30	96	(-) 66
Total		**05**	**02**	**03**	**11**	**01**	**10**	**50**	**119**	**(-) 69**
Grand Total		**19**	**02**	**17**	**11**	**05**	**06**	**215**	**154**	**61 *(28)***

(***Source: data provided by the test-checked ULBs***)

It can be seen from **Table 3.3** that:

1. There were no PHOs/APHOs in 13 of the test-checked ULBs (except in the case of Ranchi), out of the 14 sampled ULBs.
2. Posts of CSI/ SI had not been sanctioned in 12 test-checked (out of 14 test-checked ULBs) despite these posts having been provided for in the MSWM Manual.
3. There was an overall vacancy of 61 (28 *per cent*) Sanitary Supervisors, in the test-checked ULBs, whereas in Deoghar and Ranchi 69 (138 *per cent*) Sanitary Supervisors were in excess of the sanctioned strength.

Thus, the State Government had not: (i) exercised due diligence in deployment of personnel against the sanctioned posts and (ii) ensured rational posting of manpower, in the test-checked ULBs, which was bound to have adversely affected the SWM activities.

Further, the MSWM Manual stipulates that measures must be taken for institutional strengthening and internal capacity building, so that the efforts made can be sustained over a period and the system put in place can be managed well. Further, Rules 11(k) and 15(zc) of the SWM Rules, 2016, required the Department and the ULBs, to arrange for capacity building of their staff (PHO/APHO, CSI/SI, Sanitary supervisors *etc*.) including contract

workers, in managing solid waste, segregation and transportation, or processing of such waste at source.

The State Government did not provide information in regard to state level training, if any, that may have been imparted to SWM personnel, for effectively carrying out their activities. Training programmes, for SWM staff, had not been organised by 12 out of the 14 test-checked ULBs.

Two ULBs (Jugsalai and Ranchi), replied (September 2022 and March 2023) that they had conducted training programmes, during FYs 2017-18 to 2021-22. However, records related to these training programmes were not provided to Audit, by the Ranchi Municipal Corporation (RMC).

Absence of training to staff, engaged in SWM, by 13 of the 14 test-checked ULBs, was indicative of the lack of commitment of ULBs towards SWM activities.

The Department accepted (July 2023) shortage of staff and stated that shortage of staff was being improved gradually. It further stated that a City Manager (appointed on contract), at the ULB level, had already been made the nodal officer for SWM. Regarding the conduct of training, it was stated that regular online/offline trainings and exposure visits had been provided to SWM staff. Training was a continuous process and 19 trainings related to SWM had been organised for different stakeholders at the state level. ULBs had been directed (July 2023) to ensure maintenance of records relating to training of SWM staff.

The reply regarding training is not acceptable, as the Department did not provide any documentary evidence in support of the training imparted at the state/ULB level.

3.12 Service Level Benchmarks

The Ministry of Urban Development (MoUD), GoI, had launched (2008) the Service Level Benchmarking (SLB) initiative and identified eight performance indicators[30] of SWM. The Fourteenth and Fifteenth Finance Commissions had also endorsed the principle of benchmarking and included SLB as one of the conditions to be fulfilled, for the allocation of grants to ULBs. The SLBs were to be achieved by the ULBs, by the end of each financial year. MoUD defined a common minimum framework, for monitoring and reporting on the performance indicators of SWM (**Appendix 3.3**).

3.12.1 Notification of Service Level Benchmarks by the State Government

As per Section 328 (3) of the JMA, 2011, the Service Level Benchmarks (SLBs) of SWM, were required to be published, in every March, for the ensuing year, by the State Government.

[30] *(1) Household level coverage of SWM services (2) Efficiency of collection of MSW (3) Extent of segregation of MSW (4) Extent of MSW recovered (5) Extent of scientific disposal of MSW (6) Efficiency in redressal of customer complaints (7) Extent of cost recovery in SWM services and (8) Efficiency in collection of SWM charges.*

Audit observed, in this regard, that the SLBs had been published with delays ranging between six and 17 months, during FYs 2017-22.

It was further seen that the State Government had fixed a lower percentage of targets for achievements, as targets, for the 14 test-checked ULBs, compared to the national target of 80 to 100 *per cent* achievement, in respect of six indicators (*i.e*. excepting in the efficiency of collection of waste and redressal of customer complaints). The lowered targets were observed mainly in regard to 'segregation of MSW', 'scientific disposal of MSW' and 'cost recovery of MSW services'. For these indicators, either no targets had been fixed or the targets had been fixed between two to 20 *per cent* of the National target, for some of the test-checked ULBs (**Appendix 3.4**).

3.12.2 Targets and achievements of the test-checked ULBs

The Handbook on SLB, prescribed by MoUD/MoHUA, emphasizes the need to ensure reliability of measurement and specifies four levels of reliability for each indicator.

Audit analysed the achievements, as declared by the 14 test-checked ULBs, for FY 2021-22, and found that the 'extent of scientific disposal of MSW' was negligible, due to non-completion of SWM projects, in the test-checked ULBs. Achievements against other parameters, viz. 'extent of segregation of MSW', 'extent of recovery of MSW', 'extent of cost recovery in SWM' and 'efficiency in collection of SWM charges', were also lesser than the fixed targets (**Appendix 3.5**). However, the stated achievements could not be verified by Audit, as the ULBs did not furnish any documentary evidence, in support of their claims.

The Department accepted (July 2023) the facts and stated that the percentage of collection and processing of waste was increasing gradually. In most of the ULBs, construction of SWM plants were under progress. As such, targets had been fixed as per the capacities of the concerned ULBs to discharge SWM activities and gradually ULBs would meet the national target.

Recommendation 1: State Government may ensure early preparation of DPRs of all ULBs, for better implementation of SWM activities.
Recommendation 2: State Government/ULBs may encourage involvement of informal waste pickers/collectors in SWM planning and integrate them into SWM activities.
Recommendation 3: State Government may endeavor to fill the vacant staff posts, for effective implementation of SWM and also ensure that requisite training is provided to all personnel engaged in SWM activities, within a specified period.
Recommendation 4: State Government may draw up a time-bound plan for ULBs to achieve the highest/preferred level of Service Level Benchmarks.

Chapter IV
Financial Management

Chapter IV

Financial Management

4.1 Preparation of Budget estimates by ULBs

Sections 108 to 111, of the JMA, 2011, envisage that the executive head of a ULB shall prepare a budget estimate for the ensuing year. Further, the budget estimates shall separately state the income and the expenditure of the municipality to be received and incurred in terms of the various heads of accounts. The Mayor/Chairperson is required to present the budget estimates to the Standing Committee[31], before 15 February each year, for examination. The Standing Committee, with its recommendation, is to place the budget before the Council of the ULB, by first March. The Council is to consider and sanction the budget estimate, by 15 March each year, and forward the budget to the Directorate of Municipal Administration (in case of Municipal Councils and *Nagar Panchayats*) and to the State Government (in case of Municipal Corporations). Such budget estimates, received by the State Government or DMA, are to be returned to the ULBs, before 31 March of the year, with or without modifications of the provisions relating to grants, by the State Governments.

Audit noticed that the budgets of the Department had been prepared scheme-wise, without separately showing the grants to be released to the ULBs.

Audit observed that only nine,[32] out of the 14 test-checked ULBs, had prepared their annual budgets, for FYs 2017-18 to 2021-22.

Out of the remaining five[33] test-checked ULBs, Chhatarpur NP had not prepared its budgets, for any of the five FYs (2017-22); Chakradharpur MC for three years (2019-22); Garhwa MC for two years (2020-22); and two ULBs (Deoghar Municipal Corporation and Koderma NP) for FY 2021-22. As such, these five ULBs had incurred expenditure without preparation of budget estimates, for the FYs mentioned above. Further, the State Government had released grants to these ULBs, without ensuring that they had prepared their budgets. Thus, proper budgetary control had not been ensured, either by the State Government or by the ULBs.

The Department accepted (July 2023) the facts and stated that necessary action had been taken in this regard. However, no detail regarding the action taken was provided to Audit.

4.2 Assessment of requirement of funds for SWM

As per Rule 15(x) of the SWM Rules, 2016, ULBs are required to make adequate provision of funds, for SWM, in their annual budgets, to enable them to prioritise their obligatory functions (*i.e*. construction of processing plants, payment of Tipping fee to Concessionaires, O&M of projects *etc.*).

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[31] *Standing Committee is a committee constituted by the Municipal Council for consideration of budgets, as well as audit reports, and action thereon.*

[32] *Chatra, Dumka, Giridih, Jamtara, Jhumtitelaiya, Jugsalai, Medininagar, Pakur and Ranchi.*

[33] *Chakradharpur, Chhatarpur, Deoghar, Garhwa and Koderma.*

The major items of expenditure[34], in regard to SWM activities, included fixed costs for land, plant and machinery, daily expenses to manage MSW, refurbishment costs, O&M costs and contingent costs.

Audit observed that none of the test-checked 14 ULBs (except for the Ranchi Municipal Corporation) had assessed their requirements of capital and revenue funds for SWM activities. Accordingly, they were unaware of the available resources and their application, though they had spent six *per cent* (₹ 329.90 crore of the total expenditure of ₹ 5,268.60 crore) of their total expenditure on SWM activities, as discussed in ***Paragraph 4.8***.

As such, ULBs had been carrying out SWM activities, without financial planning having been carried out, in regard to such activities, in 13 of the 14 test-checked ULBs.

The Department accepted (July 2023) the facts and stated that necessary action had been taken in this regard. However, no detail, regarding the action stated to have been taken, was provided to Audit.

4.3 Funding pattern

As per the guidelines of the SBM, SWM projects are to be developed under the Public Private Partnership (PPP-the Concessionaire) mode, wherein capital expenditure (CAPEX) is to be shared between the Centre, the States and the Concessionaire, in the ratio of 35:35:30. Further, as per a Resolution (June 2016) of the State Government, the share, in respect of the Ranchi and Dhanbad Municipal Corporations, was to be 20:40:40. The Central Share (CS) was to be released to the State in two instalments.

The State Government released (November 2016 to March 2021) the CS, along with the State Share (SS) to SUDA, which kept the funds in its savings bank account till August 2021 and released them to the ULBs as per their demand. Thereafter, all the funds released by the State, under SBM (including all its components), were retained in a Single Nodal Account (SNA) at the Indian Bank, having same account number, operated by SUDA. SUDA then released the funds, from the SNA, to the ULBs, as per their demands and progress of projects.

4.4 Sources of funds for solid waste management

The various sources of funds, for SWM, are indicated in **Table 4.1**.

Table 4.1: Sources of financing for solid waste management, in ULBs

Sl. No.	Source	Particulars
1.	Central Grants	14th FC Grants- Capital expenditure 15th FC Grants- Capital expenditure Swachh Bharat Mission- Capital expenditure
2.	State Grants	SWM Matching share- Capital expenditure Civic Amenities- Revenue expenditure
3.	Own Sources[35]	Levy of SWM user charges,

[34] *Section 1.4.5.6.1 of the MSWM Manual, 2016.*

[35] *Municipal Fund (including holding tax, settlement of municipal property, miscellaneous fees etc.)*

Sl. No.	Source	Particulars
		Sale of products and by-products (compost) Sale of recyclables (Own sources are utilised for revenue expenditure)

Funds under the 14th Finance Commission (FC) were to be released in the form of 'basic' and 'performance grants' and, under the 15th FC, as 'tied' and 'untied' grants. Further, in the absence of recommendations of the State Finance Commissions (SFCs), the State Government had released state grants, as development grants[36], to the ULBs, in the ratio of 45:45:10, based on the population, area and their requirements/demands, respectively.

4.5 Utilisation of SWM funds

GoI launched SBM-U in October 2014 and released ₹ 93.48 crore to the State, during the FYs 2016-17 to 2021-22, for execution of SWM projects, in 25 projects, of 30 ULBs of the State, including ₹ 43.49 crore in the 10 test-checked ULBs[37]. The State Government also released its matching share of ₹ 106.33 crore, during this period. Details of release and expenditure of funds are shown in **Table 4.2**.

Table 4.2: Details of Central Share (CS)/State share (SS) received and expenditure incurred

(₹ in crore)

Financial Year	OB	Receipts			Total available funds	Expenditure	Savings (*per cent*)
		CS	SS	Total Receipts			
2016-17	0.00	20.55	25.10	45.65	45.65	0.00	45.65*(100)*
2017-18	45.65	49.58	49.42	99.00	144.65	5.17	139.48*(96)*
2018-19	139.48	22.04	20.25	42.29	181.77	40.65	141.12*(78)*
2019-20	141.12	0.00	0.00	0.00	141.12	22.14	118.98*(84)*
2020-21	118.98	0.47	11.01	11.48	130.46	12.61	117.85*(90)*
2021-22	117.85	0.84	0.55	1.39	119.24	30.49	88.75*(74)*
Total		**93.48**	**106.33**	**199.81**	**199.81**	**111.06**	**88.75*(44)***

(Source: data provided by SUDA)

From **Table 4.2**, it can be observed that, against the total available funds of ₹ 199.81 crore, the State Government had utilised only ₹ 111.06 crore (56 *per cent*). The remaining funds (₹ 88.75 crore) were lying in the SNA of SUDA for SWM projects (as on March 2022).

The year-wise savings ranged between 74 and 100 *per cent*. As per the Utilisation Certificates (UCs) for the CS, submitted by the State Government, to GoI, CS of only ₹ 48.73 crore (52 *per cent*) had been utilised.

The State Government could not utilise the SWM funds, mainly due to slow progress of SWM projects, delays in the selection of Concessionaires, public hindrances in the execution of works and delays in the selection of sites, as seen in the test-checked ULBs (***Paragraph 7.1 and 8.3.1 of the report***).

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[36] *'Development grants' are grants released by the State Government, to the ULBs, for development purposes, such as construction of roads, drains, parks, bus stands etc.*

[37] *Chakradharpur, Chatra, Deoghar, Garhwa, Giridih, Jamtata, Jhumritelaiya & Koderma, Pakur and Ranchi*

The Department accepted (July 2023) the facts and stated that the balance funds would be utilised on SWM activities.

4.6 Absence of provision regarding interest earned

The Mission Directorate (SUDA) had earned ₹ 22.92 crore, on account of interest on deposits of SWM funds, kept in Bank as of March 2022. The test-checked Ranchi Municipal Corporation, had also earned interest of ₹ 32.63 lakh, as of March 2022, on SWM funds. However, there were no instructions from GoI or GoJ, or in the SBM (Urban) Guidelines, regarding utilisation of the accrued interest.

The Department accepted (July 2023) the facts and stated that interest (₹ 11.46 crore) on the central fund had been transferred to GoI and interest (₹ 11.46 crore) on the state fund was in the process of transfer to the State Government.

4.7 Idle SWM funds

As per Rule 174 of the Jharkhand Treasury Code (JTC), 2016, no money is to be drawn from the Treasury in anticipation of demands or to prevent the lapse of budget grants. Rule 334 of the JTC also stipulates that the deposit administrator is to review all Personal Deposit Accounts, at the end of each financial year. Money lying unspent, after two consecutive financial years, should not be spent any further and the balance should be transferred, as reduction of expenditure, to the concerned service head from which the money was withdrawn.

Audit observed that Department had sanctioned (between March 2012 and February 2014) SWM Projects of two test-checked ULBs, for an amount of ₹ 21.89 crore and released ₹ 7.50 crore to these ULBs (Chakradharpur: ₹ 2.50 crore and Pakur: ₹ 5 crore) with sanctions.

Out of the released amount of ₹ 7.50 crore, Chakradharpur MC had spent (between March 2018 and September 2021) ₹ 35 lakh on purchase of rickshaw trolley, auto tippers, advertisement of tenders and preparation of DPRs. The remaining amount of ₹ 7.15 crore had remained unutilised, in the Personal Ledger Accounts of these two ULBs, for more than eight to nine years (as of March 2022) from the date of receiving the funds.

The Department accepted (July 2023) the facts and stated that approximately ₹ 1.7 crore had been utilised by Pakur MC and the remaining amount would be utilised soon, as the construction of SWM plant at Pakur was in the final stage. The remaining amount of ₹ 2.15 crore would be utilised by the Chakradharpur MC on SWM activities.

4.8 Status of expenditure on SWM, in the test-checked ULBs

State and Central funds, under SBM, were released to ULBs, based on their demands submitted for execution of SWM projects. Details of the total expenditure, *vis-à-vis* the expenditure on SWM projects, in the test-checked ULBs, during FYs 2017-18 to 2021-22, are given in **Table 4.3**.

Table 4.3: Total expenditure, *vis-à-vis* expenditure on SWM, in test-checked ULBs, during FYs 2017-22

(₹ in crore)

ULB	Total expenditure incurred by the ULBs	Expenditure incurred by the ULBs, on SWM (*per cent* of total expenditure)	Total expenditure (from 14th FC grants)	Expenditure on SWM (*per cent* of expenditure incurred from 14th FC grants)	Total expenditure (from 15th FC grants)	Expenditure on SWM (*per cent* of expenditure incurred from 15th FC grants)
Chakradharpur MC	121.90	5.16 *(4)*	5.28	0	7.51	1.28 *(17)*
Chatra MC	70.43	6.33 *(9)*	43.27	0	2.26	0
Chhatarpur NP	46.12	0.91 *(2)*	0	0	2.34	0.48 *(20)*
Deoghar Municipal Corporation	585.22	35.21*(6)*	50.24	5.00 *(10)*	66.41	0
Dumka MC	137.70	10.69 *(8)*	8.80	0	17.78	6.15 *(35)*
Jhumritelaiya MC	190.54	11.66 *(6)*	21.84	0	27.93	0.04 *(0.1)*
Garhwa MC	107.88	5.70 *(5)*	6.17	0	2.30	0
Giridih Municipal Corporation	318.17	11.94 *(4)*	43.27	0	2.26	0
Jamtara NP	120.71	5.92 *(5)*	9.41	0	1.29	0.26 *(20)*
Jugsalai MC	54.93	6.20 *(11)*	0	0	1.18	0.57 *(48)*
Koderma NP	85.05	3.04 *(4)*	5.74	0	1.36	0.61 *(45)*
Medininagar Municipal Corporation	153.40	17.00 *(11)*	13.76	0	0.63	0
Pakur MC	112.10	5.16 *(5)*	7.88	0	3.86	1.74 *(45)*
Ranchi Municipal Corporation	3164.45	204.98 *(6)*	267.67	0	0	0
Total	**5,268.60**	**329.90 *(6)***	**483.33**	**5.00**	**137.11**	**11.13**

(Source: data furnished by the test-checked ULBs)

It can be observed from **Table 4.3** that the expenditure on SWM, had ranged between two *per cent* and 11 *per cent* of the total expenditure, in the 14 test-checked ULBs, during FYs 2017-22. There had been no expenditure on SWM activities, in 13 and six ULBs, out of the 14 test-checked ULBs, from the 14th and 15th FC grants, respectively.

The Department stated (July 2023) that the DPRs, in 11 out of the 14 test-checked ULBs, had been prepared under SBM-U, where the entire capital was to be funded from the Central share, State share and PPP share. Therefore, the provision of capital expenditure, from FC grants, could not be seen in these projects.

The Department's response is not tenable, as it is evident from the table above that no expenditure had been incurred from the FC grants on SWM activities. Further, there was short expenditure on SWM, against the demand submitted for execution of SWM projects, which, in turn, resulted in savings ranging between 74 and 100 *per cent* during 2017-22 under SWM funds as discussed at ***Paragraph 4.5*** above.

4.9 Levy and collection of SWM user charges

Section 154 (ii) of the JMA, 2011, provides for levy of SWM cess, as a source of revenue, for the purpose of collection, transportation and disposal of solid waste.

Further, as per Rule 15 (f) of the SWM Rules, 2016, the local authorities are to prescribe, from time to time, a user fee, for different types of holdings or Residential Premises (RPs) and Non-residential premises (NRPs), in their areas, and collect the fee from the waste generators, or through an authorised agency, appointed by the ULBs. The State Government issued (March 2016) instructions to all ULBs, for collecting SWM user charges. The rates were fixed for different types of RPs and NRPs. As per the above Rules, the rates of collection of such charges were to be enhanced by 10 *per cent,* in every three years.

4.9.1 Non-collection of SWM user charges

Audit scrutiny brought out that, out of 50 ULBs, only 12 to 26 ULBs had collected SWM user charges, during the FYs 2017-18 to 2021-22.

Although the number of ULBs, collecting SWM user charges, had increased during the FYs 2017-18 to 2021-22, 24 ULBs, out of 50 ULBs in the State, were yet to start collection of SWM user charges (as of March 2022).

In the test-checked ULBs, Audit observed that:

1. In 13 out of the 14 test-checked ULBs, based on the number of RPs and NRPs, 19.45 lakh RPs and 2.80 lakh NRPs were to be covered, for Door-to-Door (D2D) collection of waste, during five FYs (2017-22). Of these, 17.08 lakh RPs and 2.46 lakh NRPs, had been covered, under D2D collection of waste, during the period. Chhatarpur NP was yet to start D2D waste collection.
2. None of the test-checked ULBs had maintained data pertaining to the demand for D2D services. As such, Audit could not ascertain the actual amount of SWM user charges to be collected and the outstanding amounts, in regard of these test-checked ULBs (even though 10 of the test-checked ULBs, had furnished data regarding realisation of user charges, to Audit, for the FYs 2017-22).
3. Out of 13 ULBs, where D2D collection was in practice, 10 of the test-checked ULBs had 18.14 lakh RPs and 2.66 lakh NRPs, of which, 16.04 lakh RPs and 2.33 lakh NRPs, had been covered under D2D services, during the FYs 2017-22. Considering the minimum prescribed[38] user charges, Audit worked out a minimum amount of ₹ 63.12 crore (RPs: ₹ 36.88 crore and NRPs: ₹ 26.24 crore, covered under D2D collection) was to be recovered from these premises, to cover the costs on account of Operation and Maintenance (O&M) of SWM activities. However, only ₹ 26.28 crore was realised, during the FYs 2017-22, by these ULBs. Thus, minimum SWM user charges of ₹ 36.84 crore were less realised (**Appendix 4.1**).
4. The remaining three test-checked ULBs (Dumka, Garhwa and Jamtara) had not collected any user charges, from 1.03 lakh RPs and 0.13 lakh NRPs, covered under D2D services, during the FYs 2017-22.

[38] *Minimum rates of user charges per month for: (i) RPs: Municipal Corporation - ₹ 20, Municipal Council - ₹ 15 and Nagar Panchayat - ₹ 10 (ii) NRPs: Municipal Corporation - ₹ 100, Municipal Council - ₹ 50 and Nagar Panchayat - ₹ 25.*

Considering the minimum prescribed user charges, Audit worked out a loss of ₹ 2.62 crore (RPs: ₹ 185.05 lakh and NRPs: ₹ 76.55 lakh), to these three ULBs, during the FYs 2017-22, as shown in **Table 4.4**.

Table 4.4: Non-realisation of user charges

(Amount in ₹ lakh)

Sl. No.	ULB	Total number of RPs covered during the FYs 2017-22	Total number of NRPs covered during the FYs 2017-22	Minimum user charges to be realised from RPs (at the rate of ₹ 15 per month) in 12 months	Minimum user charges to be realised from NRPs (at the rate of ₹ 50 per month) in 12 months	Non-realisation of user charges
1.	Dumka MC	40,503	2,658	72.91	15.95	88.86
2.	Garhwa MC	35,790	4,751	64.42	28.51	92.93
3.	Jamtara MC	26,513	5,349	47.72	32.09	79.81
Total		**1,02,806**	**12,758**	**185.05**	**76.55**	**261.60**

(Source: Information furnished by test-checked ULBs)

Further, Audit observed that the State Government had not revised the rates of user charges, though their revision had been due since FY 2019-20. Non-revision of rates led to less realisation of revenue resources of ULBs, as well as non-coverage of O&M costs of SWM (as discussed in ***Paragraph 4.9.2***).

The Department accepted (July 2023) the facts and replied that the IEC and citizen sensitisation programme were being undertaken in every ULB for improvement of user charge collection efficiency. It further stated that once the target of user charge collection efficiency was achieved, action would be taken to enhance the rates of user charge.

The fact, however, remains the same that the ULBs had not realised user charges from all users. Further, there was absence of proper documentation/database, in this regard.

4.9.2 Non-coverage of O&M costs of SWM

As per Section 252 of the JMA, 2011, SWM user charges are required to cover the costs on account of Operation and Maintenance (O&M) of SWM activities. Hence, strict enforcement of levy and collection of SWM user charges, is essential.

Audit noticed that the collection of SWM user charges was much lower than the O&M costs of SWM activities, in the test-checked ULBs, during FYs 2017-18 to 2021-22, as shown in **Table 4.5**.

Table 4.5: Coverage of O&M costs of SWM activities in the test-checked ULBs

(₹ in lakh)

Sl. No.	ULB	User charges realised	O&M costs	Coverage of O&M costs from user charges (in *per cent*)
1.	Chakradharpur MC	10.51	172.56	*6.09*
2.	Chatra MC	0.11	202.35	*0.05*
3.	Deoghar Municipal Corporation	129.78	1,452.39	*8.94*
4.	Jhumritelaiya MC	67.26	307.66	*21.86*
5.	Giridih Municipal Corporation	120.56	907.34	*13.29*
6.	Jugsalai MC	39.49	495.27	*7.97*

Sl. No.	ULB	User charges realised	O&M costs	Coverage of O&M costs from user charges (in *per cent*)
7.	Koderma NP	2.82	204.59	*1.38*
8.	Medininagar Municipal Corporation	5.05	3118.19	*0.16*
9.	Pakur MC	12.81	585.22	*2.19*
10.	Ranchi Municipal Corporation	2,239.58	10,253.09	*21.84*
Total		**2,627.97**	**17,698.66**	***14.85***

(Source: Data furnished by the test-checked ULBs)

From **Table 4.5,** it can be observed that, as against the total collection of SWM user charges of ₹ 26.28 crore, the O&M expenditure was ₹ 176.99 crore. As such, SWM user charges had contributed only around 15 *per cent* of the O&M costs, during FYs 2017-22, including negligible contribution in some ULBs, due to non/less realisation of SWM user charges, by the test-checked ULBs, non-coverage of all premises under D2D collection and non-revision of the rates of user charges by the Government.

Thus, ULBs had not ensured sufficient resource generation, through collection of user charges, to sustain their SWM activities.

The Department accepted (July 2023) the facts and stated that IEC and citizen sensitisation programmes were being undertaken in every ULB, for improvement of user charge collection efficiency.

The fact remains the same that the ULBs had not covered their O&M costs through realisation of user charges

Recommendation 5: ULBs may prepare Budget Estimates every year, for better financial planning of SWM projects.

Recommendation 6: ULBs may conduct a realistic assessment of the Operation & Maintenance costs involved in SWM and may levy and collect SWM user charges from all premises.

Chapter V
Information, Education and Communication Activities

Chapter V

Information, Education & Communication Activities

5.1 Introduction

Provisions of the SWM Rules, 2016 (Rule 15 zg) and the MSWM Manual, 2016 (Section 1.4.5.13), require the State Government and ULBs to create public awareness and educate waste generators, to help in achieving the overall objectives of MSWM. Behavioural change is vital in ensuring effective implementation of SWM activities. Information, Education and Communication (IEC) activities serve to promote and sustain risk-reducing behaviour change, in individuals and communities. IEC campaigns for SWM, should, therefore, target households, shops, commercial and institutional premises, as well as other stakeholders, such as municipal officials, elected representatives, schools, non-government organisations (NGOs), the informal sector, media *etc.*, to ensure their participation in managing city waste, by discharging their roles effectively.

Similarly, Section 2.2.2 of the MSWM Manual, 2016, stipulates that ULBs are to create public awareness through IEC campaigns and educate waste generators to minimise waste and prohibit littering in the municipal areas. Municipal authorities are also required to organise awareness generation programmes, promote segregation of waste and recycling or reuse of segregated waste.

5.2 Deficiencies in IEC activities

Audit observed that the test-checked ULBs had conducted IEC activities, during FYs 2017-18 to 2021-22, encouraging waste generators to 'segregate waste into wet and dry' and 'not litter', by issue of pamphlets, banners, stickers, wall paintings and advertisements, in local print and electronic media *etc*.

The usage of various modes of communication for IEC activities (**Appendix 5.1**), in the 14 test-checked ULBs, during FYs 2017-18 to 2021-22, is shown in **Table 5.1**.

Table 5.1: Modes of communication used in the test-checked ULBs

Sl. No.	Modes of communication used	Number of test-checked ULBs		
		Yes	No	Details not available
1.	Audio	12	0	2
2.	Video	2	10	2
3.	Mass communication	6	6	2
4.	Wall Paintings	12 **(Exhibit 5.1)**	2	0
5.	Schools	10	4	0
6.	Hoardings	11	3	0
7.	Street Plays	1	9	4
8.	Pamphlets	8	4	2
9.	Constitution of SHGs, Slum level federations	1	1	12

(Source: Information provided by the test-checked ULBs)

Exhibit 5.1 : IEC activities through Wall Paintings at Koderma NP and Jugsalai MC

Koderma NP (photograph taken on 25 July 2022)

Jugsalai MC (photograph taken on 07 September 2022)

Jugsalai MC (photograph taken on 07 September 2022)

It can be seen from **Table 5.1** that, in the test-checked ULBs, the following issues had not been addressed, through IEC activities:

1. Domestic hazardous waste includes both toxic and bio-medical waste. However, 13 test-checked ULBs (*i.e.*, excepting Jugsalai MC) had not notified and published lists of domestic hazardous waste.

Jugsalai MC had distributed calendars (2020), among the citizens of its municipal area, to create awareness among people, in regard to segregation of different types of waste, such as bio-degradable waste, dry waste, domestic hazardous waste, construction & demolition waste, sanitary waste, plastic waste and E-waste, at source. A photograph of the calendar is given below (**Exhibit 5.2**).

Exhibit 5.2: Calendar distributed among citizens

(***Source: Records of the Jugsalai MC***)

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to notify and publish the list of Domestic hazardous waste.

2. E-waste consists of different components that are both- hazardous and non-hazardous. Hence, it should be segregated at source and should not be mixed with MSW. However, no specific IEC activity, focused on e-waste segregation, had been carried out by the nine ULBs, out of the 14 test-checked ULBs (*i.e.*, excepting the Deoghar Municipal Corporation, Dumka, Jhumritelaiya, Jugsalai and Medininagar Municipal Corporation).

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to establish e-waste collection centres and to conduct IEC activities focused on e-waste segregation.

3. IEC activities, conducted by 13 of the test-checked ULBs (except Jugsalai), had not emphasised the idea of 'not to burn' and 'not to bury' solid waste and had not propagated the concept of waste minimisation through the 5R's concept. Burning of waste was seen during joint physical verification, with the official of the MC, as can be seen in the photographs below (**Exhibit 5.3**).

Exhibit 5.3: Burning of waste in the test-checked ULBs.

Chakradharpur MC (photograph taken on 23 September 2022)

Jamtara NP (photograph taken on 25 November 2022)

The Department stated (July 2023) that ULBs had been directed to propagate waste minimisation (May 2019) and to conduct IEC activities (July 2023), to emphasize 'not to burn' solid waste.

The reply is not acceptable, as the test-checked ULBs did not ensure waste minimisation and awareness about waste management despite directions being issued from the Department, which was evident during JPV.

4. None of the test-checked ULBs had encouraged community participation (except for the Giridih Municipal Corporation and Jugsalai MC- **Exhibit 5.4**) in IEC activities, leading to absence of awareness, in this regard, evidences were found during joint physical verification, conducted with the official of the MC, wherein waste was seen littered in open spaces, as can be seen from the photographs below (**Exhibit 5.5**).

Exhibit 5.4 : Community participation through IEC activities at Jugsalai and Giridih

Jugsalai MC (photograph taken on 07 September 2022)

Giridih Municipal Corporation (photograph taken on 09 November 2022)

Exhibit 5.5: Littering of waste in open areas

Ranchi Municipal Corporation (Photograph taken on 17 February 2023)

Chatra MC (photograph taken on 23 November 2022)

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to ensure community participation in IEC activities related to SWM.

5. Rule 4(6) of the SWM Rules, 2016 envisages that all Resident Welfare Associations (RWAs) and market associations shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material either to the authorised waste pickers or the authorised recyclers.

Audit found that eight[39] out of the 14 test-checked ULBs, had held meetings at regular intervals with representatives of RWAs to ensure community participation in waste segregation, whereas, the remaining six[40] ULBs did not hold any meetings with the representatives of RWAs during the FYs 2017-18 to 2021-22. However, involvement of market associations in segregation, collection and handing over of waste was not found on record in the test-checked ULBs, though called for, from the Department.

6. Eight[41] ULBs had not created adequate awareness, amongst their work force, for using protective equipment, while carrying out SWM activities (as discussed in ***Paragraph 6.2.6***).

Thus, the test-checked ULBs had not ensured sufficiency in terms of IEC activities, to ensure behavioral changes, in individuals and communities, residing in their municipal areas, regarding generation and disposal of municipal waste.

[39] *Deoghar, Dumka, Giridih, Jhumritelaiya, Jugsalai, Koderma, Medininagar and Ranchi*
[40] *Chakardharpur, Chatra, Chhatarpur, Garhwa, Jamtara and Pakur*
[41] *Chakradharpur, Chatra, Chhatrapur, Garhwa, Giridih, Jamtara, Koderma and Pakur.*

5.3 Levy of penalty on littering of waste

Rule 15 (zf) of SWM Rules, 2016, made municipal authorities responsible to frame bye-laws and prescribe criteria for levying of spot fine for persons who litter or fail to comply with the provisions of these rules. However, GoJ prescribed (March 2016) criteria for levying of such fine under the Jharkhand State SWM User Charge Rule, 2016.

Audit observed that though test-checked ULBs had created awareness among the inhabitants of municipal area through the medium of newspapers regarding provision of penalty for violation of rules, but no penalty was levied in three ULBs (Chhatarpur, Garhwa and Jamtara) for irregular dumping/ littering of waste. However, in the remaining 11 ULBs, penalties were imposed but no information regarding the quantum of such penalties realised was furnished to Audit.

Recommendation 7: Information, Education & communication activities may be carried out regularly, for creating public awareness and also for educating waste generators, so that they are better placed to achieve the overall objectives of SWM. ULBs may ensure greater emphasis on segregation of waste at source, with the involvement of community-based organisations, Resident Welfare Associations and non-government organisations.

Recommendation 8: State Government may ensure imposition of penalty to be levied by the ULBs against irregular dumping/ littering of waste.

Chapter VI

Segregation, Collection, Storage and Transportation of Solid Waste

Chapter VI

Segregation, Collection, Storage and Transportation of Solid Waste

6.1 Segregation of Solid Waste

"Segregation" means sorting and separate storage of various components of solid waste, namely: (i) bio-degradable waste, including agriculture and dairy waste (ii) non-biodegradable waste, including recyclable waste, non-recyclable combustible waste, sanitary waste and non-recyclable inert waste (iii) domestic hazardous waste, and (iv) construction and demolition waste. Primary segregation of waste, into wet, dry (recyclables) and inert waste is to be carried out at the household level, while secondary segregation is to take place at the processing sites. Segregated containers are required for collection of different fractions of waste (wet, dry and domestic hazardous). ULBs should collect wet and dry waste, separately. Proper segregation of waste is expected to lead to better options and opportunities for its scientific disposal.

Audit observed certain shortcomings, in the segregation of Municipal Solid Waste (MSW), in the test-checked ULBs, as elaborated in the succeeding sub-paragraphs:

6.1.1 Segregation of waste at the source/household level

The MSWM Manual, 2016 (Section 2.2.1) stipulates that ULBs must accord highest priority to 'segregation of waste at source'. The SWM Rules, 2016, stipulate that segregation of MSW, at source, by waste generators, should be enforced within two years of the notification of the SWM Rules. Further, the Department, notified (September 2018) the Jharkhand State Urban Sanitation Policy, 2018, which envisaged cent *per cent* segregation of MSW at source.

Audit observed that 42 ULBs, out of 50 ULBs in the State (including the 13 test-checked ULBs, excepting for Chhatarpur), had submitted[42] Annual Reports (ARs) of MSW, for the FYs 2018-19 to 2021-22, to the Jharkhand State Pollution Control Board (JSPCB). As per these ARs, 38 to 42 ULBs had segregated MSW, at source, during the FYs 2018-19 to 2021-22. The status of segregation of MSW, at source, by the remaining eight ULBs, was not available with the JSPCB (this included one of the test-checked ULB, *i.e.* Chhatarpur).

As discussed in ***Paragraph 4.9.1***, 13 out of the 14 test-checked ULBs[43] had collected waste from 19.54 lakh premises (RPs: 17.08 lakh and NRPs: 2.46 lakh), during FYs 2017-18 to 2021-22. The year-wise percentages of segregation of waste, at source, in these test-checked ULBs, is shown in **Table 6.1**.

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[42] *The annual reports for FY 2017-18 had not been submitted to JSPCB, by 42 ULBs.*

[43] *13 ULBs had prepared their ARs for FY 2017-18 but had not submitted them to JSPCB.*

Table 6.1: Year-wise percentage of segregation of waste, at source, by the test-checked ULBs

Sl. No.	ULB	FY-wise percentages of segregation of waste at source				
		2017-18	2018-19	2019-20	2020-21	2021-22
1.	Chakardharpur MC	*85*	*84*	*84*	*86*	*87*
2.	Chatra MC	*98*	*98*	*1*	*20*	*20*
3.	Deoghar Municipal Corporation	*58*	*58*	*20*	*20*	*100*
4.	Dumka MC	*48*	*48*	*40*	*40*	*40*
5.	Garhwa MC	*93*	*93*	*93*	*93*	*94*
6.	Giridih Municipal Corporation	*10*	*94*	*10*	*65*	*65*
7.	Jamtara	*0*	*29*	*40*	*40*	*80*
8.	Jhumritelaiya MC	*77*	*77*	*93*	*93*	*93*
9.	Jugsalai MC	*84*	*84*	*60*	*75*	*75*
10.	Koderma	*57*	*57*	*60*	*60*	*60*
11.	Medininagar Municipal Corporation	*76*	*76*	*79*	*20*	*5*
12.	Pakur MC	*53*	*53*	*62*	*61*	*61*
13.	Ranchi Municipal Corporation	*40*	*90*	*20*	*20*	*20*

(***Source: annual reports of solid waste of the test-checked ULBs***)

Note: In Jamtara NP, source segregation of MSW was absent during the FY 2017-18.

As may be observed from **Table 6.1,** one to 98 *per cent* of waste (except Deoghar Municipal Corporation (DMC) with 100 *per cent* segregation during 2021-22), could be source segregated in the test-checked ULBs, from 19.54 lakh covered premises, during the FYs 2017-22. DMC had claimed *cent per cent* source segregation during the FY 2021-22, whereas Audit observed that only 23 *per cent* premises[44] had been covered under D2D, during the FY 2021-22. The performance of five ULBs, out of the 13 test-checked ULBs (Chatra, Dumka, Jugsalai, Medininagar Municipal Corporation and RMC), was observed to have deteriorated over the period, as Chatra and Medininagar Municipal Corporations had purchased only 4,000 domestic bins[45] for source segregation, against requirement of 90,069 domestic bins[46], whereas the concessionaire of RMC was terminated twice, due to unsatisfactory performance.

During joint physical verification, the Jugsalai MC was found to have been using Auto Tippers, with different containers, for segregation of bio-degradable waste, dry waste, domestic hazardous waste, sanitary waste, plastic waste and E-waste, during the D2D collection of solid waste, as can be seen from **Exhibit 6.1**.

[44] *13,575 premises (23 per cent) out of 58,845.*
[45] *Chatra MC- 1,000 and Medininagar Municipal Corporation -3,000.*
[46] *Chatra MC- 20,144 and Medininagar Municipal Corporation- 69,925.*

Good practice

Exhibit 6.1: Jugsalai MC, using Auto-Tippers with different containers of bio-degradable waste, dry waste, domestic hazardous waste, sanitary waste, plastic waste and E-waste for lifting of household solid waste **(photograph taken on 18 August 2022)**.

Thus, ULBs had been unable to achieve the target of segregation of 100 *per cent* municipal waste, during the FYs 2017-22, in terms of the SWM Rules, 2016 and the Jharkhand State Urban Sanitation Policy, 2018.

The Department stated (July 2023) that segregation was being done in 80 *per cent* wards of ULBs in the State and the entire focus now, was on improving the efficiency of waste segregation.

The reply is not fully acceptable, as, in eight ULBs, out of the 13 test-checked ULBs, the percentage of source segregation was below 80 *per cent* in FY 2021-22. This included three ULBs, where it was below 40 *per cent* (**Table 6.1**).

6.1.2 Utilisation of domestic bins for primary collection

The specific strategy of the Jharkhand State Sanitation Policy, 2018, envisaged *cent per cent* source segregation of solid waste at the household level, by the ULBs. Further, for facilitating segregation of waste, the MSWM Manual (Section 2.3.5) states that efficient primary collection *i.e.,* D2D collection, requires two domestic bins, for collection of wet and dry waste, separately. Accordingly, ULBs had assessed their requirements, in their DPRs, for purchase and one-time supply of domestic bins, to each household.

Audit observed that:

1. As per the DPRs for solid waste management, of the test-checked ULBs, against the requirement of 7.43 lakh domestic bins[47], for 13 ULBs, out of the 14 test-checked ULBs (*i.e.* excepting Chhatarpur NP, where requirements had not been assessed), 10 ULBs had purchased[48] (between December 2017 and January 2022) 2.55 lakh domestic bins[49] (72 *per cent*), costing ₹ 3.95 crore, whereas these 13 ULBs had covered 17.08 lakh households during the FYs 2017-22.

2. Five ULBs (Chakradharpur, Chatra, Deoghar, Giridih and Medininagar) had short purchased 0.99 lakh (39 *per cent*) domestic bins, as compared to their projected requirements of 2.52 lakh bins. Further, no dustbins had been purchased by three ULBs (Dumka, Jugsalai[50] and Ranchi[51]), although they had placed a requirement of 3.89 lakh bins.

3. In four test-checked ULBs (Chakradharpur, Deoghar, Jhumritelaiya and Medininagar), out of 1.74 lakh domestic bins[52] procured (between July 2018 and May 2021), only 0.55 lakh bins[53] (32 *per cent)* were distributed to the households, while the remaining 1.19 lakh bins[54] were lying idle in stock, as of March 2022. Further, Koderma NP had received[55] (July 2019) 2,500 domestic bins from the Jhumritelaiya cluster; of which 1,009 bins were lying in the stocks for more than two years, as on March 2022. ***Details of the same are discussed in paragraph 9.1.2.***

4. Two ULBs had procured 57,658 bins (Giridih Municipal Corporation: 36,000 and Pakur MC: 21,658), at a cost of ₹ 102.47 lakh. However, the concerned concessionaires (M/s Aakansha Enterprises & M/s Aakansha Pakur Waste Management Pvt. Ltd., respectively) did not produce any records relating to the distribution of these bins, to Audit, though they were requisitioned for.

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47 *Chakradharpur: 11,706, Chatra: 20,144, Deoghar: 1,09,755, Dumka: 33,000, Jhumritelaiya: 47,795, Koderma: 10,400, Garhwa: 9,000, Giridih: 40,000, Jamtara: 12,830, Jugsalai: 8,811, Medininagar: 69,925, Pakur: 21,658 and Ranchi: 3,47,534.*

48 *The Department invited (August 2017) bids, for a rate contract, for purchase of domestic bins and approved (February 2018), a rate of ₹ 149.01 per bin, which was valid till February 2019 (one year). Thereafter, the ULBs themselves purchased domestic bins, as per this rate contract.*

49 *Chakradharpur: ₹ 7.45 lakh (5,000), Chatra: ₹ 1.49 lakh (1,000), Deoghar: ₹ 156.84 lakh (1,08,000), Jhumritelaiya & Koderma: ₹ 86.77 lakh (58,200), Garhwa: ₹ 13.41 lakh (9,000), Giridih: ₹ 70.20 lakh (36,000), Jamtara: ₹ 21.81 lakh (12,830), Medininagar: ₹ 5.07 lakh (3,000) and Pakur: ₹ 32.27 lakh (21,658).*

50 *Jugsalai MC states that it had distributed domestic bins during the FY 2016-17.*

51 *The concessionaire of RMC had to purchase, 3.48 lakh domestic bins. However, it did not do so and was terminated due to unsatisfactory performance.*

52 *Chakradharpur- 5,000, Deoghar- 1,08,000, Jhumritelaiya- 58,200 and Medininagar- 3,000.*

53 *Chakradharpur- 3,180, Deoghar- 41,796, Jhumritelaiya- 10,000 and Medininagar- 498*

54 *Chakradharpur- 1,820, Deoghar- 66,204, Jhumritelaiya - 48,200 and Medininagar- 2,502*

55 *The bins had been purchased by Jhumritelaiya and had, subsequently, been transferred to the Koderma NP, being its cluster.*

Thus, five test-checked ULBs had purchased lesser numbers of bins (as compared to their requirements), whereas the bins purchased by four test-checked ULBs had not been fully distributed to households and users. As such, *cent per cent* source segregation, as specified in the Jharkhand State Sanitation Policy, 2018, could not be ensured (December 2022) by the test-checked ULBs. The reason being short procurement (only 2.55 lakh against 7.43 lakh) of domestic bins. In addition, 1.20 lakh (including Koderma) domestic bins remained undistributed to the targeted households even on their purchase.

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to purchase the required number of domestic bins and to ensure their distribution among households.

6.1.3 Utilisation of Community bins for secondary collection

As per the MSWM Manual (Section 2.3.2), a pair of community bins (ranged between 60 litres and 120 litres) is required for secondary collection of waste, *i.e.* for picking up waste from domestic bins and transporting it to the waste processing sites or to the final disposal site.

Against the projected requirement of 3,021[56] community bins, as per the DPRs, 12 ULBs out of the 14 test-checked ULBs (Chatra and Jugsalai MCs did not purchase the community bins) had purchased 1,759 community bins[57], costing ₹ 10.10 crore, during the FYs 2017-22. Less procurement (42 *per cent*) of required community bins had resulted in littering of waste around public places, roadside etc. Further, sub-optimal utilisation of the procured community bins is discussed in ***Paragraph 9.1.1***.

6.1.4 Non-segregation of domestic hazardous waste

As per Section 7.1 of the MSWM Manual, 2016, Domestic Hazardous Waste (DHW), including domestic bio-medical waste, requires special handling and disposal, because of its harmful physical and chemical characteristics. There is a greater need for proper segregation of such waste, as lack of segregation of such waste at source or improper collection systems, could imply that the waste ends up in the mixed MSW stream.

As discussed in ***Paragraph 5.2***, 13 ULBs (*i.e.,* excepting Jugsalai MC consisting 0.53 lakh premises), out of the 14 test-checked ULBs, had not notified the list of DHW. As such, people covered under 13 test-checked ULBs[58] were not aware of the effect of non-segregation of DHW.

JSPCB also requested (June 2020 and September 2021) the Department to direct all the ULBs, to provide reports on the action taken for the implementation of DHW, in terms of the SWM Rules. However, none of the ULBs had provided the required information, to the JSPCB, as of

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[56] *Chakradharpur: 48, Chhatarpur: 162, Chatra: 78, Deoghar: 1,055, Dumka: 431, Jhumritelaiya: 187, Koderma: 101, Garhwa: 80, Giridih: 113, Jamtara: 30, Jugsalai: 52, Medininagar: 400, Pakur: 62 and Ranchi: 222.*

[57] *Chakradharpur: 48, Chhatarpur: 162, Deoghar: 266, Dumka: 328, Giridih: 113, Jhumritelaiya: 45, Koderma: 25, Garhwa: 50, Jamtara: 30, Medininagar: 333, Pakur: 137 and Ranchi: 222.*

[58] *Excepting Chhatarpur NP for which no data was available.*

January 2023. Data/ information, relating to the quantum of DHW generated or collected, was also not available with the test-checked ULBs.

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to segregate DHW completely at source.

6.1.5 Non-segregation of plastic waste

As per the Plastic Waste Management Rules, 2016, the local body is responsible for setting up, operationalisation and co-ordination of the waste management system and for ensuring segregation, collection, storage, transportation, processing and disposal of plastic waste.

Further, Section 7.4.7.1 of MSWM Manual stipulates that the use of plastic waste in construction of bituminous roads have several advantages including decreasing the susceptibility of the road to infiltration. There are also no observed deleterious impacts on the strength or properties of the road.

Audit observed that segregation of plastic waste, at the source of generation, or at the collection and transfer stations, was not found to have been done in any of the ULBs and plastic waste was found mixed with other solid waste at the dumping sites, as evident during joint physical verification (July 2022 to September 2022).

As a result, it was observed to have been scattered by stray animals, creating unhygienic conditions around the dumping sites, as shown in the photographs below (**Exhibit 6.2**).

Exhibit 6.2 : Plastic waste dumped in the landfill sites, resulting in scattering by stray animals and unregistered rag pickers

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Chakradharpur MC (photograph taken on 23 September 2022)</td><td>Jugsalai MC (photograph taken on 18 September 2022)</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Koderma NP (photograph taken on 15 July 2022)</td><td>Medininagar Municipal Corporation (photograph taken on 20 September 2022)</td></tr>
</table>

Audit further observed that the test-checked ULBs had not taken initiatives for using shredded plastic waste in road making, although this was stipulated under the MSWM Manual and also incorporated in the Jharkhand State Urban Sanitation Policy, 2018.

The Department accepted (July 2023) the facts and stated that ULBs had created enforcement teams to ensure the plastic ban. Imposition of fines and seizure of banned plastic, was being done in all the ULBs. IEC activities, in this regard, were also being undertaken regularly. It was further stated that the ULBs had been directed to strictly prohibit the use of banned plastic waste in their municipal area.

However, the Department was silent on segregation of the plastic waste.

6.1.6 Absence of an incentive mechanism and enforcement

Section 2.1.4 of the MSWM Manual, 2016, specifies various activities and methodologies, required to be adopted by ULBs, to ensure proper segregation of waste at source. One such methodology is providing tax incentives (subsidy in property tax, reducing rate of user charge, cash incentives *etc*.), in the form of rewards/ grants/ subsidies.

Audit observed that none of the 14 test-checked ULBs, having 19.54 lakh premises[59] with D2D collection facility, had provided any tax incentive, to waste generators, to promote segregation of waste at source.

The Department accepted (July 2023) the fact and stated that action would be taken accordingly.

6.1.7 Colour-coded sticker system, for segregation of MSW

The Department directed (August 2019) all ULBs to ensure pasting of colour-coded stickers, through Concessionaires, in households, for providing segregated MSW. Further, as per the ARs of the JSPCB, for FYs 2018-19 to 2021-22, in 42 ULBs, out of the 50 ULBs, green stickers were being pasted on households, which were giving segregated waste, and red stickers on those households which were giving mixed waste.

However, as per the information furnished by the 14 test-checked ULBs, Audit observed that none of ULBs had adopted pasting of coloured stickers on households, either through the Concessionaires/by themselves.

The Department accepted (July 2023) the fact and stated that ULBs had been directed (July 2023) to paste green stickers on households who give segregated waste and red sticker on those who give mixed waste.

6.1.8 Secondary segregation and segregation at transfer stations

As per Section 2.3.10.1 of the MSWM Manual, 2016, unsegregated waste, which has not been sorted at primary level, should be segregated, either at an intermediate stage (*e.g.,* transfer station) or at the processing plant, prior to treatment, in cases where waste is brought directly to the plant from the waste collection areas. Segregation may be accomplished either manually or by mechanised means. Further, as per Rule 15 (h) of the SWM Rules, local authorities are required to set up Material Recovery Facilities centre (MRF) or secondary storage facilities, for sorting of recyclable materials.

Audit noticed that the segregation of MSW, at source, was either not being carried out, or was being carried out partially, by the test-checked ULBs. As

[59] *Excluding the premises of the Chhatarpur NP, as data in its regard, was not provided to Audit.*

such, secondary storage facilities or MRF, were required to be established, to avoid transportation of mixed waste to the dumping sites. However, none of the test-checked ULBs (except for a temporary MRF, set up at Jugsalai MC- **Exhibit 6.3**) had established secondary storage facilities or MRF, for segregation of waste at the secondary level. Thus, segregation of MSW, at the stage of secondary storage, had not been ensured by the 14 test-checked ULBs, and mixed waste was reaching the dumpsites/landfill sites.

Exhibit 6.3: A temporary MRF set up at Jugsalai MC

Jugsalai MC (photograph taken on 07 September 2022)

The Department accepted (July 2023) the facts and stated that because of small size of ULBs, decentralised MRFs were not planned and the MRF facility was incorporated at the processing facilities. Now, bigger cities were planning to have separate decentralised MRFs, for which necessary steps were being taken.

The reply is not acceptable, as the test-checked ULBs were processing only 38 *per cent* of the solid waste collected and the remaining waste was being dumped at the dumpsites (***Paragraph 8.1.2***).

Recommendation 9: State Government may encourage segregation of waste at source through distribution of domestic bins, by giving incentives to waste generators and collectors for segregation of waste, and ensure that ULBs take measures to prevent mixing of segregated waste, during various stages of SWM.

Recommendation 10: State Government may ensure the usage of shredded plastic waste in the construction of bituminous road by the ULBs, while segregating and shredding the plastic waste.

6.2 Collection of Solid Waste

Collection of segregated waste is the second step of the SWM process. Waste collection service is divided into primary and secondary collection. As defined in the SWM Rules, 2016, 'primary collection' means collecting, lifting and removal of segregated solid waste, from the source of its generation, including households, shops, offices and any other non-

residential premises, or from any collection points, or from any other locations specified by the local bodies concerned. Secondary collection means collection of solid waste from secondary waste storage depots, MRFs, community bins for onward transportation of the waste to the processing or disposal facility.

Audit observed certain shortcomings in the collection of MSW, in the test-checked ULBs, as elaborated in the succeeding sub-paragraphs:

6.2.1 Per capita generation and disposal of solid waste

The *per capita* generation, disposal and collection efficiency of solid waste, in the test-checked ULBs, during FY 2021-22, is shown in **Table 6.2**.

Table 6.2: Per capita generation and disposal of solid waste

State/ test-checked ULBs	*Per capita* generation of MSW (gms/capita/day)	*Per capita* collection of MSW (gms/capita/day)	Collection efficiency of MSW (Percentage)
Jharkhand*	425	348	*82*
Chakradharpur MC	231	219	*95*
Chatra MC	298	230	*77*
Chhatarpur NP	*Data not available*		
Deoghar Municipal Corporation	450	375	*83*
Dumka MC	357	339	*95*
Garhwa MC	375	339	*90*
Giridih Municipal Corporation	241	228	*95*
Jamtara NP	279	251	*90*
Jhumritelaiya MC	346	319	*92*
Jugsalai MC	306	262	*86*
Koderma NP	285	183	*64*
Medininagar Municipal Corporation	250	225	*90*
Pakur MC	297	267	90
Ranchi Municipal Corporation	494	401	81

(Source: ARs on Solid Waste of JSPCB and the test-checked ULBs, for FY 2021-22)
**** data of per capita generation and collection of MSW in Jharkhand was calculated as per the ARs of solid waste (2021-22) of 42 ULBs of the State.***

It can be seen from **Table 6.2** that the collection efficiency of solid waste, in the test-checked ULBs, ranged between 64 *per cent* and 95 *per cent.*

The Department accepted (July 2023) the facts and stated that ULBs had already improved the collection efficiency. The State's average percentage of waste collection was 95 *per cent*. Around 1,400 SWM vehicles were being used for waste collection. ULBs were being regularly directed to improve further.

6.2.2 Inadequate collection of waste generated

A waste collection system is necessary in order to ensure that the waste stored at source is collected regularly and is not disposed of on the streets, drains, water bodies *etc*. Inefficient waste collection has an impact on public health, as well as on the aesthetics of urban areas. As per Rule 12 of the SWM Rules, 2016, the time frame prescribed for D2D collection of

segregated waste and its transportation in covered vehicles, to processing or disposal facilities, was to be ensured in two years (*i.e.* by April 2018). Further, as per the Service Level Benchmarks (SLB), prescribed (2008) by the Ministry of Urban Development (MoUD), GoI, 100 *per cent* efficiency of collection of municipal solid waste is required.

The quantum of waste generated and collected, during the FYs 2017-18 to 2021-22, in the State (42 ULBs) and in 13 out of the 14 test-checked ULBs (*i.e.* excepting Chhatarpur), is shown in **Table 6.3**.

Table 6.3: MSW generated and collected in Jharkhand and in the test-checked ULBs

(in lakh metric tons per year)

Financial Year	State			Test-checked ULBs		
	Generated	Collected	Uncollected (in *per cent*)	Generated	Collected	Uncollected (in *per cent*)
2017-18	8.49	7.75	0.74 (9)	3.14	2.81	0.33 (11)
2018-19	8.05	7.46	0.59 (07)	3.20	2.76	0.44(14)
2019-20	7.99	6.74	1.25 (16)	3.44	2.90	0.54 (16)
2020-21	8.13	6.76	1.37 (17)	3.29	2.78	0.51 (16)
2021-22	8.77	7.18	1.59 (18)	3.26	2.73	0.53 (16)
Total	**41.43**	**35.89**	**5.54**	**16.33**	**13.98**	**2.35**

(Source: ARs of the ULBs and www.pas.org.in, maintained by CEPT, Ahmedabad)

From **Table 6.3**, it can be seen that seven to 18 *per cent* of the waste generated in the State, had remained uncollected, while the quantum of uncollected waste, in the test-checked ULBs, from 22.26 lakh premises, was 11 to 16 *per cent,* during FYs 2017-18 to 2021-22 due to shortage of manpower and SWM vehicles, as discussed in ***paragraphs* 3.11.3 and 6.4.1**, respectively.

This led to uncollected waste being littered around the community bins, public places, roadside *etc*., **(Exhibit 6.4)** which was likely to have had a harmful impact on health and environment.

Further, Section 1.4.3.3.1 of the MSWM Manual, 2016, stipulates that every landfill site shall have a weighbridge, for assessing the quantum of waste.

Audit observed that, out of the 14 test-checked ULBs, two ULBs[60] had their own weighbridge facilities; five ULBs[61] were using private weighbridge facilities; and seven ULBs[62] had no weighbridge facilities. These seven ULBs were reckoning the base capacity of the vehicles engaged for assessment of the quantum of collection of solid waste. In the absence of a weighbridge facility in these ULBs, the actual extent of the collection of MSW, was not known. This led to poor oversight and monitoring, as ULBs had no means of quantifying the quantum of solid waste, in order to address it suitably.

The Department accepted (July 2023) the audit observation in regard to inefficient waste collection and stated that ULBs had been directed (July 2023) to assess the gap in this regard and ensure *cent per cent* collection of solid waste from their municipal areas. Regarding installation

[60] *Deoghar and Giridih.*
[61] *Chatra, Jhumritelaiya, Koderma, Pakur and Ranchi.*
[62] *Chakradharpur, Chhatarpur, Dumka, Garhwa, Jamtara, Jugsalai and Medininagar.*

of weighbridge, it was stated that the Concessionaires had been appointed in several ULBs and the provision of weighbridge had been already incorporated in the projects. Weighbridges would be installed very soon.

6.2.3 Door-to-Door collection of waste

As per Rule 15 (b) of the SWM Rules, 2016, ULBs are required to arrange door-to-door (D2D) collection of segregated solid waste, from all RPs, including slums and informal settlements, commercial, institutional and other NRPs.

During FYs 2017-18 to 2021-22, D2D collection of waste had been carried out from 15.55 lakh RPs and 2.06 lakh NRPs, by the Concessionaires[63], appointed[64] (between October 2015 and January 2021) in ten of the test-checked ULBs[65], whereas in three[66] ULBs, D2D collections were carried out from 1.52 lakh RPs and 0.40 lakh NRPs by the ULBs themselves. No evidence of D2D collections was found in the Chhatarpur NP, as of March 2022.

Further, as per the Concessionaire agreement, D2D collection and transportation was to be started by the concessionaire, after six months of the date of signing the agreement.

In this regard, Audit observed that:

- The concessionaires appointed (June 2017 and December 2017) in two of the test-checked ULBs (Pakur and Koderma) had started (June 2018 and December 2019) D2D collection of waste after delays of five and 17 months, beyond the prescribed six months.
- The Jamtara NP had appointed a concessionaire in May 2018, but the concessionaire had not started collection of waste, as of December 2022 due to local dispute. The NP had, therefore, continued to carry out D2D collection of waste, by itself.
- The Concessionaire appointed (October 2015) at Ranchi had carried out D2D collection till the agreement was terminated in June 2019, due to its unsatisfactory performance[67]. Further, another Concessionaire started D2D collections, after its appointment in January 2021. However, this agreement was also terminated in April 2022, due to unsatisfactory performance.

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[63] *The Concessionaire is a private partner of ULBs selected through competitive bid is responsible for D2D collection, designing and constructing the requisite transfer station, transporting waste from the transfer station to the waste management facility and identifying, designing, constructing and operating waste management facilities.*

[64] *Chakradharpur: June 2020, Chatra: February 2019, Deoghar: November 2017, Garhwa: November 2018, Giridih: March 2017, Jamtara: May 2018, Jhumritelaiya: December 2017, Koderma: December 2017, Pakur: June 2017 and Ranchi: October 2015 and January 2021.*

[65] *Chakradharpur, Chatra, Deoghar, Garhwa, Giridih, Jamtara, Jhumritelaiya, Koderma, Pakur and Ranchi.*

[66] *Dumka, Jugsalai and Medininagar.*

[67] *Due to non-coverage of all premises under D2D collection, delay in obtaining environmental clearance, non- carrying out of source segregation etc.*

6.2.3.1 Coverage of households for D2D collection of MSW

The SWM Rules, 2016, stipulates that all the MSW generated is to be collected and no waste, that poses risk to public health and environment, should remain uncollected.

Audit observed that there were 357 wards in the 14 test-checked ULBs. However, only 327 wards had been covered, under D2D collection, during FYs 2017-18 to 2021-22, by the 13 test-checked ULBs, as of March 2022. Chhatarpur NP, comprising of 16 wards, was not carrying out D2D collections at all, whereas the Medininagar Municipal Corporation had not covered 14 wards (out of 35 wards).

The coverage of premises (RPs and NRPs), for D2D collections, in 13 of the test-checked ULBs, during FYs 2017-18 to 2021-22, is shown in **Table 6.4**.

Table 6.4: Coverage of premises for D2D collection of MSW, during FYs 2017-22

(*in lakh*)

Period	No. of RPs	No. of NRPs	No. of RPs covered (*per cent*)	No. of NRPs covered (*per cent*)
2017-18	3.61	0.51	2.95 *(82)*	0.42 *(82)*
2018-19	3.85	0.56	3.38 *(88)*	0.51*(91)*
2019-20	3.80	0.53	3.55 *(93)*	0.53 *(100)*
2020-21	4.14	0.60	3.72 *(90)*	0.57 *(95)*
2021-22	4.06	0.60	3.48 *(86)*	0.43*(72)*
Total	**19.46**	**2.80**	**17.08 *(88)***	**2.46 *(88)***

(Source: ARs of SWM and data provided by the test-checked ULBs)

It can be seen from **Table 6.4** that the coverage of RPs ranged between 82 and 93 *per cent* and that of NRPs between 72 and 95 *per cent (*excepting 100 *per cent* during 2019-20), during the FYs 2017-22.

This implied that, five to 28 *per cent* of the premises were throwing waste on the streets/ public places, or in nearby open areas, as was seen during joint physical verification (between 25 July 2022 and 21 December 2022), with the officials of the ULBs. Photographs of waste being thrown in open places are given in **Exhibit 6.4**.

Exhibit 6.4 : Waste thrown on the streets/ public place

Koderma NP (photograph taken on 25 July 2022)

Chakradharpur MC (photograph taken on 23 September 2022)

Chatra MC (photograph taken on 17 November 2022)

Pakur NP (photograph taken on 21 December 2022)

Giridih Municipal Corporation (photograph taken on 10 November 2022)

Koderma NP (photograph taken on 25 July 2022

The Department accepted (July 2023) the facts and stated that, currently, the state average percentage of waste collection was 95 *per cent*. Directions had been issued, from time to time, to ULBs, to ensure 100 *per cent* coverage. ULBs had been directed (July 2023) to take strict action against RPs/NRPs who were throwing waste in streets and to impose fines, as per SWM User Charges Bye-Laws, 2016.

6.2.3.2 Collection of solid waste in slum area

Rule 15 of the SWM Rules, 2016, envisages that municipal authorities shall arrange for D2D collection of segregated solid waste from all households, including slums.

Audit, however, observed that:

- Five ULBs[68] did not furnish reports on coverage of slum households, for D2D collection of waste under SWM, during the FYs 2017-22. Two ULBs (Garhwa and Jamtara) had no identified slums.

[68] *Chatra, Giridih, Koderma, Pakur and Ranchi.*

- Four ULBs (Deoghar, Dumka, Jhumritelaiya and Jugsalai) had covered all 17,955 households of the slums, under D2D collection of waste, during the FYs 2017-22.
- Chakradharpur MC had covered 3,670 out of 3,953 households, of one slum area, for D2D collection of waste, resulting in short coverage of 283 households, whereas the Medininagar Municipal Corporation had not arranged D2D collection of solid waste, from 2,290 households, from four identified slum areas, during the FYs 2017-22.

Thus, the two test-checked (Chakradharpur MC and Medininagar Municipal Corporation) had, thereby, failed to keep the streets of the slum areas clean and hygienic.

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to ensure collection of solid waste even from slum area.

6.2.4 Sweeping of Roads/Streets

Section 2.4.2 of the MSWM Manual, 2016, envisaged that ULBs should have a well-planned time-bound daily system for street sweeping. The streets were to be classified based on their location, traffic intensity, type of street surface, character of area (*i.e.* commercial or residential) *etc.*

The Department had directed (January 2022) all ULBs to ensure daily sweeping of the roads of commercial areas (two times a day) and residential areas (once a day).

As per the ARs of the MSW, for the FYs 2018-19 to 2021-22 of 13 ULBs (excepting Chhatarpur), the percentage of coverage of daily street sweeping, had ranged between 15 and 75 *per cent,* in nine of the test-checked ULBs and between 15 and 90 *per cent,* in four of the test-checked ULBs. The Jamtara NP had claimed *cent per cent* daily sweeping during the FY 2021-22.

Thus, the ULBs had not ensured daily cleaning of public roads/streets, during FYs 2018-19 to 2021-22.

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to ensure coverage of daily street sweeping from RPs/NRPs.

6.2.5 Non-involvement of Self Help Groups in D2D waste collection

The MSWM Manual, 2016 and the SWM Rules, 2016, require ULBs to establish a system for formation of Self Help Groups (SHGs) and also integrate them into the SWM activities, including for D2D collection of waste.

Audit observed that 12 ULBs, out of the 14 test-checked ULBs, had not involved SHGs in the D2D collection of solid waste. The Dumka MC had formed 34 SHGs and had engaged them for SWM services, from time to time, during the FY 2017-22 (as stated by the ULB).

Also, Jugsalai MC had engaged an SHG, which was preparing compost out of used tea leaves, as depicted in **Exhibit 3.1**. However, the remaining 12 test-checked ULBs had not ensured formation of SHGs and their integration, for carrying out SWM activities, including D2D collections, during FYs 2017-22.

In reply, the Department, stated (July 2023) that since the work of D2D had been outsourced, the SHGs had been involved in IEC and sensitisation.

The reply of the Department is not acceptable, as SHGs had not been formed in the 12 test-checked ULBs and the Department had not ensured involvement of SHGs, even in IEC activities and sensitisation, in these test-checked ULBs.

6.2.6 Personal Protection Equipment

As per clause 15(zd) of the SWM Rules, 2016, local bodies are to ensure that the operator of a facility provides personal protection equipment (PPE), including uniform, fluorescent jacket, hand gloves, raincoats, appropriate foot wear and mask, to all workers handling solid waste and the same is used by workforce.

Audit observed that at least 24,012 members of the work force had been engaged for handling of solid waste, in 13 ULBs (*i.e*., excepting Chhatarpur NP), out of the 14 test-checked ULBs. Of these, five[69] ULBs had purchased PPE (Fluorescent jacket: 6,999, Hand gloves: 51,481, Rain coat: 68,051 and Foot wear: 2,838) during the FYs 2017-22 and provided the same to the work force involved in the handling of waste. Further, three of the test-checked ULBs (Dumka MC, Jhumritelaiya MC and Koderma NP), stated (July 2022 to December 2022) that they had provided PPE to the work force, from time to time, but did not furnish records relating to purchase of PPE. The remaining five ULBs[70] stated that they had not provided PPE to the work force.

During joint physical verification, waste collectors were seen to be handling waste, without wearing the required PPE, in two of the test-checked ULBs (Jugsalai MC and Medininagar Municipal Corporation), as shown in the photographs **(Exhibit 6.5):**

[69] *Deoghar, Jugsalai, Medininagar, Pakur and Ranchi*
[70] *Chakradharpur, Chatra, Garhwa, Giridih and Jamtara*

Exhibit 6.5 : Work force handling solid waste, without wearing personal protective equipment

Medininagar Municipal Corporation (photograph taken on 22 September 2022)

Jugsalai MC (photograph taken on 22 August 2022)

Non-provision and non-utilisation of required PPE was risky and could have led to serious health hazards, especially in view of the continuing non-segregation of waste.

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to ensure that the workforce handling waste should have PPE and also maintain records relating to PPE procurement and distribution.

Recommendation 11: ULBs may ensure 100 per cent collection of MSW generated from all sources and also ensure that the workers, involved in handling of waste, follow occupational health and safety protocols by wearing safety gear and other protective equipment. Coverage of D2D collections of MSW, in all RPs/ NRPs, may be ensured by the ULBs.

6.3 Storage of Solid Waste

ULBs are responsible for establishing and maintaining storage facilities, as well as for taking up measures for avoiding unhygienic and insanitary conditions around such facilities. Audit findings, regarding irregularities noticed in the storage of solid waste, in the test-checked ULBs, are discussed in the following paragraphs.

6.3.1 Irregular management of storage facilities

As per SWM Rules, 2016, storage facilities are to be created through covered street bins, containers, masonry, concrete bins, enclosures, open waste storage sites, or any other method. They are to be so designed that the stored waste material is not exposed to the open atmosphere, and is aesthetically acceptable, so as not to create unhygienic conditions. Further, as per the MSWM Manual, 2016, storage facilities are to be attended to regularly, or before they start overflowing, for clearing of waste, in order to avoid odour and environmental pollution.

The ARs[71] of the 13 test-checked ULBs, for FYs 2017-18 to 2020-21, did not reflect complete information on their storage capacities, waste stored per day and status in regard to bins being attended to regularly. Scrutiny of ARs, for FY 2021-22, of the 13 test-checked ULBs (except Jugsalai MC[72]), revealed that:

1. The Jamtara NP had not provided data relating to its MSW storage capacity, but had showed 100 *per cent* daily collection of waste, from the primary storage facilities.
2. 10 ULBs[73] were not collecting waste from all the community bins, on a daily basis. Out of the available 1,808 community bins, they had collected waste daily from only 1,354 bins; on alternate days, from 202 bins; twice a week, from 155 bins; once a week, from 89 bins; and occasionally, from 8 bins.
3. The Giridih Municipal Corporation had not maintained bin-wise data. However, it had shown collection of 70 *per cent* waste daily; 20 *per cent,* on alternate days; five *per cent,* twice a week, and five *per cent,* once a week, from primary storage facilities.

Non-collection of waste, on a daily basis, from the storage facilities, in the test-checked ULBs, was also seen during joint physical verification (September 2022 and January 2023), as shown in the photographs (**Exhibit 6.6**).

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[71] *The Chhatarpur did not prepare solid waste reports for the period 2017-22.*

[72] *The Jugsalai MC did not have the primary storage facilities i.e., community bins.*

[73] *Chakradharpur, Chatra, Deoghar, Dumka, Garhwa, Jhumaritilaiya, Koderma, Medininagar, Pakur and Ranchi.*

Exhibit 6.6 : Solid waste exposed to open atmosphere

Chakradharpur MC (photograph taken on 22 September 2022)

Chatra MC (photograph taken on 17 November 2022)

Ranchi Municipal Corporation (photograph taken on 10 January 2023)

Jhumritelaiya MC (photograph taken on 22 November 2022)

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to ensure collection of waste, from the community bins, on a regular basis.

6.3.2 Absence of storage for domestic hazardous waste

As per Rule 15 of the SWM Rules, 2016, ULBs shall establish waste deposition centres for domestic hazardous waste (DHW), and give directions to waste generators, to deposit DHW, at these centres, for its safe disposal.

Audit observed that none of the test-checked ULBs (except for Jugsalai MC, which had collected DHW, during D2D collection, through a separate container, attached with Auto Tippers) had created storage facilities for DHW. As a result, such waste was getting mixed with other waste, in the test-checked ULBs.

The Department accepted (July 2023) the fact and stated that ULBs had been directed to ensure their DHW collections with separate containers.

6.3.3 Transfer Stations

As per Section 1.4.1.3.1 of the MSWM Manual, a city with a population of over one lakh, where dry and inert waste is being transferred to a regional facility, a Transfer Station[74] (TS) should be constructed for the storage of waste. Section 1.4.5.10 of the MSWM Manual stipulates that a TS may be established, if the distance from the city jurisdiction to the final treatment and disposal points of waste, exceeds 15 km.

[74] *Facility created to receive solid waste from collection areas and transport it in bulk, in covered vehicles or containers, to waste processing and/ or, at disposal facilities*

Further, as per Section 2.3.10.1 of the MSWM Manual, unsegregated waste, which has not been sorted at the primary level, should be segregated at TS. The primary garbage, so collected, is to be transferred, through primary vehicles, to the concerned TS, for further transportation to processing facility centres[75]. The following deficiencies were noticed, in regard to the availability of TS facilities:

6.3.3.1 Lesser availability of Transfer Stations

As per the DPRs[76] of seven ULBs[77], out of the 14 test-checked ULBs, there was a requirement of 28 TSs. Of these, only 12 TSs[78] (43 *per cent*) had been created in the three test-checked ULBs.

Audit observed that out of 12 TSs, only 10 TSs were functional (as of December 2022) and remaining two at Ranchi (Karbala Chowk and Madhukam) were not functional, since their completion in June 2019, as discussed in ***paragraph 9.1.3***.

Further, two TSs (DMC and Jhumritelaiya MC) were temporarily functioning in government office premises[79]. This had resulted in creation of unhygienic conditions in and around these premises, causing a threat to the surrounding areas (**Exhibit 6.7)**.

Exhibit 6.7 : TSs temporarily functioning in Government office premises

Temporary TS in the guest house compound at Jasidih, Deoghar Municipal Corporation (photograph taken on 20 September 2022)

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75 *'Processing facility centre' means the place at which the segregated solid waste is handled, for the purpose of re-use, recycling or transformation, into new products, by way of a scientific process.*

76 *The DPRs of another four test-checked ULBs (Chatra MC, Garhwa MC, Jugsalai MC and Pakur MC) did not have provision of TSs, as their population was less than one lakh. The Jamtara NP did not furnish its DPR and the DPR of the Chhatarpur NP, was yet to be prepared.*

77 *Chakradharpur: 01, Deoghar: 04, Dumka: 01, Giridih: 01, Jhumritelaiya: 01, Medininagar: 01 and Ranchi: 19.*

78 *Deoghar: 02, Jhumritelaiya: 01 and Ranchi: 09.*

79 *Deoghar: In the guest house compound of the Drinking Water & Supply Division, Jasidih and Jhumritelaiya: in the premises of the Agricultural Produce Market Committee, Jhumritelaiya.*

Temporary TS in the premises of APMC, Jhumritelaiya MC (photograph taken on 23 November 2022)

Further, proper infrastructure arrangements, for segregation and regular transfer of waste, were not found at the TSs, during joint physical verification with the officials of ULBs (September and December 2022), as may be seen from photographs in **Exhibit 6.8**.

Exhibit 6.8: Lack of proper infrastructure at transfer stations

TS at Trekker stand in Ranchi (photograph taken on 30 December 2022)

A transfer station in Ward no 13 (Raja Bagicha), Deoghar Municipal Corporation

The Department accepted (July 2023) the facts and stated that the required number of transfer stations would be created. Further, the non-functional TSs at Ranchi would be made functional soon.

Recommendation 12: Since ULBs are responsible for complete establishment and maintenance of storage facilities such as their clearance, ensuring attendance on a daily basis, to avoid littering and prevent unhygienic conditions, State Government may ensure that ULBs are not just engaging in peripheral activities, but are also fulfilling their entire set of responsibilities in regard to creating clean and hygienic living spaces in their areas.

ULBs may also construct Transfer Stations, as provisioned in DPRs, and ensure operationalization of the TSs already constructed, for safe storage and segregation of waste to minimize the harmful impact on the environment.

6.4 Transportation of Solid Waste

Transportation of waste, collected from households, community bins and collection points, needs to be safely transported to the processing and disposal sites, using a variety of vehicles. Depending on the local conditions and locations of the landfill sites, ULBs use different types of vehicles, such as Tractor-trailers, Auto tippers, Trucks, Modern Hydraulic vehicles *etc*., for the transportation of MSW.

6.4.1 Transportation of solid waste

As per the DPRs and information furnished by the ULBs, against the requirement of 2,101 MSW vehicles[80], for collection and transportation of waste, 1,862 vehicles[81] (89 *per cent*) were available with the 13 test-checked ULBs (i.e., excepting Chhatarpur). The status of collection and transportation of MSW, in these 13 test-checked ULBs, during FYs 2017-18 to 2021-22, is shown in **Table 6.5**.

Table 6.5: Status of MSW collected and transported during FYs 2017-22

Financial Year	MSW (in lakh MT)		
	Collected	Transported	Not transported
2017-18	2.81	2.60	0.21
2018-19	2.76	2.67	0.09
2019-20	2.90	2.37	0.53
2020-21	2.78	2.29	0.49
2021-22	2.73	2.35	0.38
Total	**13.98**	**12.28**	**1.70**

(***Source: ARs of JSPCB and www.pas.org.in, maintained by CEPT, Ahmedabad***)

From **Table 6.5**, it may be seen that only 12.28 lakh MT of MSW, out of 13.98 lakh MT of collected MSW, had been transported to the dumpsites, by

[80] *Chakradharpur: 28, Chatra: 20, Deoghar: 101, Dumka: 18, Garhwa: 17, Giridih: 47, Jamtara-13, Jhumritelaiya-30, Jugsalai-26, Koderma-09, Medininagar-51, Pakur-21 and Ranchi- 1,720.*

[81] *Chakradharpur-22, Chatra-20, Deoghar-99, Dumka-08, Garhwa-14, Giridih-47, Jamtara-16, Jhumritelaiya-28, Jugsalai-22, Koderma-08, Medininagar-41, Pakur-19 and Ranchi-1,518.*

the test-checked ULBs, during FYs 2017-18 to 2021-22. The remaining 1.70 lakh MT (12 *per cent*) of MSW had remained un-transported, being littered around the community bins, public places, road sides *etc*., contributing to environmental pollution, besides being a health hazard to human life (as discussed in ***Paragraph 6.2.2***).

The Department stated (July 2023) that recovery of recyclable waste, after collection of waste, was the main reason for this gap.

The reply of the Department is not acceptable, as 100 *per cent* of the collection of solid waste had not been transported, as evident in **Exhibit 6.6**, which shows instances where waste from community bins was found littered.

6.4.2 Use of open vehicles for transportation of waste

Section 2.3.2 of the MSWM Manual, 2016, stipulates that the vehicles used for transportation of waste, should be covered, so that waste is not visible to the public, or exposed to the open environment, in order to prevent scattering during transportation. Further, vehicles used in SWM activities, need to be provided with two separate containers, or a single container, with an effective partition for wet and dry waste.

Audit observed that Auto Tippers were mainly used for D2D collection of MSW in the test-checked ULBs. Additionally, tractors were also used for MSW transportation. Scrutiny of information furnished by the test-checked ULBs revealed that, in nine of the test-checked ULBs, all 192 Auto Tippers[82], had two separate containers with cover facility. However, in the remaining five test-checked ULBs, 340 (76 *per cent*)[83] out of 447 Auto Tippers[84], did not have cover facility and 230 Auto Tippers at RMC did not have separate containers, with effective partitions. Audit further observed that uncovered Auto Tippers and open Tractors were used for transportation of MSW in Giridih and Chhatarpur ULBs, despite having available cover facility in the Auto Tippers (**Exhibit 6.9)**.

Exhibit 6.9: Use of uncovered and single container vehicles

Ranchi Municipal Corporation. (photograph taken on 03 January 2023)

Giridih Municipal Corporation. (photograph taken on 10 November 2022)

[82] *Chhatarpur- 03, Deoghar- 74, Dumka- 05, Garhwa- 05, Giridih- 42, Jhumritelaiya & Koderma - 31, Jugsalai- 13 and Pakur-19.*

[83] *Chakradharpur- 01, Chatra- 18, Jamtara- 04, Medininagar- 12 and Ranchi- 305.*

[84] *Chakradharpur- 18, Chatra- 18, Jamtara- 14, Medininagar- 12 and Ranchi- 385.*

	
Uncovered vehicles at Chhatarpur NP (photograph taken on 15 July 2022)	*Uncovered vehicles at Medininagar Municipal Corporation (photograph taken on 22 November 2023)*

The Department stated (July 2023) that collapsible heavy duty prop (HDP) based shutters had been provided for covered transportation of waste, in each vehicle.

The reply is not acceptable, as, during joint physical verification, uncovered vehicles were found carrying waste, in the test-checked ULBs, as shown in **Exhibit 6.9.**

6.4.3 Use of unauthorised vehicles without renewal of registration

As per Section 39 of the Motor Vehicles Act, 1988, all public transport vehicles are required to be registered by registering authorities, in whose jurisdictions the vehicles are normally kept.

Audit observed that 1,868 vehicles (including six vehicles of the Chhatarpur NP) were being used for the collection and transportation of MSW, by the 14 test-checked ULBs. Out of these, 529[85] (28 *per cent*) vehicles, used by 11 of the test-checked ULBs, did not have the required registrations, as of March 2022. Further, the status of registration of another 277 vehicles was not known to six of the test-checked[86] ULBs, while five of the test-checked ULBs[87] did not furnish any information regarding 45 vehicles.

Thus, the test-checked ULBs did not have complete information about their vehicles, or were plying vehicles without the required registration, which indicated lack of an internal control mechanism in these ULBs.

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to obtain the required registration of SWM vehicles from the concerned authorities.

6.4.4 Procurement of SWM vehicles without following codal provisions

As per the approved DPR of DMC for SWM projects, CAPEX was required to be met from the SBM funds to be shared with Central/State/Concessionaire. Further, DMC was required to procure one

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[85] *Chakradharpur- 14, Chhatarpur- 02, Deoghar- 87, Garhwa- 07, Giridih- 37, Jamtara- 06, Jhumritelaiya- 24, Jugsalai- 08, Koderma- 08, Pakur- 19 and Ranchi- 317.*

[86] *Chakradharpur- 07, Chatra- 20, Chhatarpur- 04, Dumka- 05, Medininagar- 15 and Ranchi- 226.*

[87] *Deoghar- 12, Garhwa- 07, Giridih- 10, Jhumritelaiya- 04 and Koderma- 12.*

Backhoe Loader[88] (JCB) and eight Tractors with trollies and, for SWM activities.

As per Rule 131H of the Bihar Financial Rules, 1950[89], procurement of goods of an estimated value of ₹ 25 lakh and above, is to be made through the process of inviting tenders, by advertisement. Further, as per departmental resolution (August 2014), purchases in excess of ₹ 10 lakh, are to be made through e-tender.

Audit noticed that, Municipal Commissioner, DMC, had invited two quotations (September 2018 and October 2018), from the authorised dealers, for purchase of said vehicles, without following the codal provisions stated *ibid.* Against the purchase order issued (January 2019) to three suppliers[90], the said vehicles were supplied to DMC in February 2019.

Audit further noticed that the DMC requested (between February 2019 and January 2020) the Department to provide allotment of ₹ 77.78 lakh for payment to the suppliers. But, the Department denied (February 2020) release of funds on the ground that the procurements had not been made by following the Rules. Ultimately, DMC paid (between March 2021 and May 2021) ₹ 77.78 lakh[91] to the suppliers, from its own revenue/ grants and lost the opportunity to avail SBM funds of ₹ 77.78 lakh.

The Department accepted (July 2023) the facts and stated that necessary action would be taken.

The fact, however, remained that DMC had been deprived of SBM funds of ₹ 77.78 lakh, owing to which it had to utilise its own resources for the said procurement.

6.4.5 Management of SWM vehicles in Ranchi

RMC engaged Ranchi MSW Pvt. Ltd. (October 2015), as a Concessionaire, for carrying out the SWM project[92]. The CAPEX cost of the project was ₹ 64.00 crore, which include the cost of vehicles, construction of TS, landfill sites *etc*. The CAPEX cost was to be borne by the RMC and the Concessionaire, in the ratio 60:40. The Concessionaire was to ensure that the vehicles/ equipment/ machinery were in operational condition. In the event of breakdown or repair or maintenance of any vehicle/ equipment/ machinery, the concessionaire was to make necessary arrangements for spare vehicles/ MSW equipment/machinery, at its own cost and expense, to ensure that operations were not affected and were performed as per the approved plan.

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[88] *Backhoe Loader is used for excavation and maintenance of ditches and loading of waste and cover material.*

[89] *Enforced in the State of Jharkhand vide SO No. 6 dated 15 November 2000.*

[90] *M/s New Deoghar Tractors; M/s Bhagirathi Enterprises; and M/s Prince Construction, Deoghar*

[91] *Tractor & Trolley: ₹ 51.84 lakh (8) and Backhoe Loader (JCB): ₹ 25.94 lakh (1).*

[92] *Including the development, operation and management, of MSW collection, transportation, processing, as well as construction of a landfill facility for Ranchi city.*

Also, as per the agreement, RMC was to hand over 894 old vehicles[93] (433 vehicles required major/minor repairing) to the Concessionaire. Further, as per clause 27.3.1 of the agreement, upon termination for any reason, the RMC had to take possession and control of the vehicles and equipment.

The Concessionaire's agreement was terminated (June 2019), due to its unsatisfactory performance. As such, the RMC was required to take the possession and control of the vehicles lying on and around the site.

Audit observed that:

- The Concessionaire had purchased (between December 2017 and February 2018) 305 vehicles[94], costing ₹ 10.11 crore, on a cost sharing basis[95] for the purpose of D2D collection of waste. However, after termination of the agreement, the Concessionaire had not handed over the vehicles to RMC. RMC prepared a list of 317 vehicles[96] (including the 305 vehicles that had been purchased by the Concessionaire) that were lying with the Concessionaire. Audit noticed the following deficiencies in these vehicles:
- Road tax of ₹ 35.73 lakh, for 143 vehicles[97] was outstanding, as of March 2023. Further, the status of road tax, of the remaining 174 vehicles was not confirmed to Audit.
- These 317 vehicles were still (March 2023) registered in the name of the Concessionaire, whose service had been terminated in June 2019.
- Out of the above mentioned vehicles, three[98] vehicles were in police custody, 10[99] were lying in workshops and seven (Auto tippers) were missing (as of 31 March 2023).
- Out of the 305 Auto tippers, purchased, 55 Auto tippers were lying in a broken down condition, at the transfer stations (as of March 2023) **(Exhibit 6.10).**

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93 *Dupmer: 19, Tractor: 85, Tata Ace: 62, Tempo:5, Scavenger: 6, JCB Robot:2, Dumper Placer: 9, Bull Tractor:2, Escorts Loader:1, Escorts Loader:1, Sweeping machine:4 Refuse Compactor: 15, Multipurpose Hi jetting machine:2, Cattle lifting machine:1, Dead Animal Vehicle:1, Bin washer: 1, Wheelbarrows: 300 and Collection Rickshaw:378*

94 *Auto tippers (Tata Mega: 169 and Tata Zip: 136).*

95 *Sharing basis means 40 per cent is to be borne by the Concessionaire and 60 per cent by the Ranchi Municipal Corporation as per sanctioning of the project.*

96 *Tata Mega: 169, Tata Zip: 135 and Hook loader: 13.*

97 *Tata Ace: 50, Tata Zip: 80 and Hook loader: 13*

98 *Auto tipper: 1, and Hook loader: 2.*

99 *Six Auto tipper was kept in Budhiya Agency, four in Bebbco (Auto tipper: 3)/Ashok Leyland (Hook loader: 1) workshop, Jamshedpur.*

Exhibit 6.10: Auto Tippers lying in a broken down condition, at Nagababa Khatal, for minor/major repairing, since October 2019, in the Ranchi Municipal Corporation (photographs taken on 03 January 2023)

Thus, RMC had not ensured proper management of the SWM vehicles, which had been in the possession of the Concessionaire.

The Department accepted (July 2023) the facts and stated that RMC had been directed (July 2023) to obtain the ownership of vehicles in its own name, pay the dues of road tax, take action for release of vehicles from the police custody, take over the vehicles from the workshop, utilise the vehicles lying broken-down and take action to search for the missing vehicles.

6.4.6 Non-disposal of scrap vehicles

Rule 142 of the Bihar Financial Rules, enforced in the State of Jharkhand, vide S.O No. 6, dated 15 November 2000, envisaged that an item may be declared surplus or obsolete or unserviceable, if the same was of no use to the Department.

RMC appointed (February 2021) a Consultant, for survey and valuation of old vehicles and scrap items. The Consultant submitted (March 2021) a Report in regard of 65 vehicles, including 52 vehicles[100] that had been lying unused since the last 4 to 5 years. These vehicles were valued at ₹ 61.10 lakh, as their sale price. However, no action had been taken for their disposal, as of December 2022 **(Exhibit 6.11)**.

[100] *Tata Ace: 27, Compactors: 10, Bajaj tempo: 5, Dumpers: 6, Road Sweeping vehicles: 4.*

Exhibit 6.11: SWM scrap vehicles lying with the Ranchi Municipal Corporation

SWM scrap vehicles, at the Naga Baba Khatal and Bakari Bazar, Ranchi (photograph taken on 03 January 2023)

While accepting the audit observation, the Department stated (July 2023) that necessary direction had been issued (July 2023) to RMC.

6.4.7 Monitoring of transportation vehicles through GPS Integration

Section 2.2.12.1 of the MSWM Manual, 2016 stipulates the management of transportation of SWM, through Management Information Systems (MIS), including usage of a Global Positioning System (GPS) for tracking the vehicles engaged in carrying MSW, and their clearance at secondary collection points. Thus, waste transport vehicles can be fitted with a GPS, to enable real-time monitoring of vehicle movement. The requirement of GPS, for monitoring of SWM vehicles, had also been addressed in the DPRs of the eight test-checked ULBs.

Monitoring of MSW transportation vehicles, by means of such MIS, was, however, seen to be lacking, in the test-checked ULBs, as mentioned in the succeeding paragraphs:

1. Audit noticed that 464[101] GPS devices had been purchased, by the concessionaires of six test-checked ULBs, against the requirement of 517 GPS devices[102], having 1,720 SWM vehicles. Although two ULBs, out of the remaining four ULBs[103], having requirement of 36 GPS devices (Chatra: 17 and Garhwa: 19), had appointed concessionaires, they had not purchased any GPS services.

Further, out of the 464 GPS devices purchased, the GPS devices, installed in 337 vehicles[104], of two ULBs, were not functional, while 69 GPS devices, procured for two ULBs[105], had not been installed on the vehicles.

Thus, the test-checked ULBs had not ensured GPS-based monitoring of their vehicles, engaged in SWM activities.

2. RMC entered into (June 2021) an agreement with M/s Stesalit Systems Limited, for implementation of a "GPS enabled vehicle and field worker

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[101] *Deoghar: 40, Giridih: 50, Jhumritelaiya: 18, Koderma: 06, Pakur: 19 and Ranchi: 331.*

[102] *Deoghar: 87, Giridih: 50, Jhumritelaiya: 18, Koderma: 06, Pakur: 25 and Ranchi: 331.*

[103] *Chakradharpur, Chatra, Garhwa and Jamtara.*

[104] *Koderma : 06 and Ranchi: 331.*

[105] *Giridih: 50 and Pakur: 19.*

Tracking Solution", at a cost of ₹ 5.01 crore (Capital expenditure: ₹ 2.95 crore and O & M: ₹ 2.06 crore), for a period of five years.

The Agency was to create infrastructure, by December 2021, to monitor the daily activities of 300 vehicles and 2,500 members of the workforce, engaged in SWM and sanitation activities.

However, GPS devices had been installed only in 99 vehicles (33 *per cent)* and only 958 members of the workforce (38 *per cent*) had been enabled for GPS tracking, by the agency (as of March 2023).

Thus, the target of the RMC, to equip its vehicles and the workforce engaged in SWM activities with GPS enabled devices, for monitoring the daily activities of the vehicles and the workforce, had not been achieved.

The Department accepted (July 2023) the facts and stated that RMC had been directed (July 2023) to ensure installation of GPS devices in the required number of vehicles and enable field workers for GPS tracking.

Recommendation 13: ULBs may ensure that the vehicles procured by them, for SWM activities, comply with the statutory requirements of registration, obtaining of authorisations, being in possession of fitness certificates etc. It may be ensured that the vehicles procured are covered, for the purpose of collecting and transporting segregated waste, in an efficient manner. GPS based tracking technology may be utilised for effective monitoring of the daily activities of the vehicles and workforce.

Chapter VII
Implementation of SWM Projects

Chapter VII

Implementation of SWM Projects

Implementation of SWM Projects required identification of land for landfill sites, preparation of DPRs, appointment of Concessionaires for D2D collection of waste, segregation, transportation, processing, construction of processing plant/landfill sites, commissioning of projects and operation & maintenance. The Project Management Consultants were required to monitor the commissioning and operation & maintenance of SWM activities, carried out by the Concessionaires.

7.1 Solid Waste Management projects

The State High Powered Committee (SHPC)/ SLTC, had accorded (between May 2016 and April 2022) administrative approvals, for 30 SWM projects, of 36 ULBs (as discussed in ***Paragraph 3.6***). Out of these 30 approved projects, the Concessionaires for 23 projects, of 25 ULBs, had been selected for implementation of these projects on the PPP mode. Selection of Concessionaires for four projects[106], of eight ULBs, was under process (April 2022), while three projects[107], of three ULBs, had been forwarded to GoI, for release of funds.

Out of the 23 projects, for which the Concessionaires had been selected, projects, of two ULBs[108], were complete; 12 projects, of 14 ULBs[109], were in progress; and nine projects, of nine ULBs, had not been started, due to land issues, local hindrances, statutory environmental compliance issues and non-release of funds, as of 31 March 2022 (**Appendix 7.1)**.

Further, as per the Central Pollution Control Board's Annual Reports on environmental performance based ranking of SWM in India, Jharkhand had ranked 12th in FY 2019-20, but, due to delays in the implementation of SWM projects, its performance, among all states, had reduced by 10 ranks, to the 22nd position, in FY 2020-21.

As per the agreements executed between the concessionaires and the test-checked ULBs, the SWM Projects were required to be completed within 15 months of the dates of agreement. The status of SWM projects, in the test-checked ULBs, is shown in **Table 7.1**.

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106 *1. Cluster ULBs (Adityapur, Jamshedpur, Jugsalai, Kapali, and Mango) 2. Hazaribag 3. Simdega 4. Lohardaga.*

107 *Dumka, Gumla and Ramgarh.*

108 *Deoghar and Chakulia.*

109 *Bundu, Chatra, Chirkunda, Giridih, Godda, Jhumritelaiya & Koderma Cluster, Khunti, Madhupur, Mihijam, Sahebganj & Rajmahal, Pakur and Ranchi.*

Table 7.1: Status of implementation of SWM projects, in the test-checked ULBs

(₹ in crore)

Sl. No.	ULB	Project cost for 20 years, as per DPR			Cost to be shared, as per concession agreement			Total expenditure	
		Total cost	Capital cost (CAPEX)	Vehicle/ equipment cost	Total capital cost	Share of the Concessionaire	Share of ULBs	On CAPEX (%)	On vehicles and equip-ment
1.	Chakradhapur MC	113.53	11.23	2.14	**Land had not been identified**				0.71
2.	Chatra MC	95.06	8.27	1.70	8.37	NA	NA	NIL	1.35
3.	Chhatarpur NP	**DPR not prepared**							
4.	Deoghar Municipal Corporation	593.40	37.21	11.29	22.80	8.04	14.76	19.39 (*85*)	10.75
5.	Dumka MC	**Proposal for release of central grants forwarded to MoHUA**							
6.	Garhwa MC	105.25	10.24	1.72	NA	NA	NA	NIL	0.90
7.	Giridih Municipal Corporation	170.88	14.95	3.11	12.12	4.91	7.21	9.45 (*78*)	2.61
8.	Jamtara NP	76.19	8.32	1.08	6.77	2.03	4.74	NIL	1.08
9.	Jhumritelaiya MC	252.43	16.59	4.76	10.23	3.38	6.85	8.37 (82)	3.49
10.	Koderma NP								
11.	Jugsalai[110] MC	1,355.05	78.64	0.00	**Concessionaire not appointed**				
12.	Medininagar Municipal Corporation	**Under administrative approval stage**							
13.	Pakur MC	95.18	10.64	1.70	9.13	2.74	6.39	1.69 (*19*)	2.36
14.	Ranchi Municipal Corporation	269.67	64.00	14.05	**Constructed by GAIL under CSR**				14.05
Total		**3,126.64**	**260.09**						

(*Source: data provided by the test-checked ULBs*)

From **Table 7.1**, it can be seen that:

- No DPR had been prepared for the Chhatarpur NP; no Concessionaire had been selected for the Jugsalai MC; land had not been identified for the Chakradharpur MC; and proposal for release of central assistance had been forwarded to GoI, for Dumka MC; while, the project of the Medininagar Municipal Corporation, was pending with the Department, for administrative approval.
- A Concessionaire was to be selected for Ranchi, after termination (June 2019 and April 2022) of the concession agreements, due to unsatisfactory performance. However, GAIL (Gas Authority of India Limited) was constructing a bio-degradable processing plant, for Ranchi, under Corporate Social Responsibility (CSR).
- In the remaining eight ULBs, no expenditure had been incurred on SWM projects, by three ULBs (Chatra, Garhwa and Jamtara), while SWM projects, in five test-checked ULBs (Deoghar[111], Giridih, Jhumritelaiya & Koderma and Pakur) were ongoing, with expenditures ranging between 19 and 85 *per cent*.

[110] *A cluster of the Jamshedpur Urban Agglomeration.*

[111] *The construction work has been physically completed and operationalised from December 2021.*

The status of incomplete SWM Projects is shown in **Exhibit 7.1**.

Exhibit 7.1: Status of Solid waste processing plants at the test-checked ULBs

	
MSW plant at the Deoghar Municipal Corporation. (photograph taken on 12 November 2022)	*Ongoing work of construction of SWM Plant at the Giridih Municipal Corporation. (photograph taken on 10 November 2022)*
	
Koderma, a cluster of the Jhumritelaiya MC (photograph taken on 12 July 2022)	*A Five TPD Compressed Bio-gas plant at Jhiri, Ranchi Municipal Corporation. (photograph taken on 30 December 2022)*
	
Ongoing work of construction of SWM Plant at the Pakur MC (photograph taken on 21 December 2022)	*Ongoing work of construction of boundary wall at the Chatra MC (photograph taken on 30 September 2022)*

Thus, SWM projects had been delayed in the 10 test-checked ULBs, with the delays ranging between 24 months to 62 months (**Appendix 7.2**), leading to non-processing and improper disposal of municipal waste.

In reply, the Department stated (July 2023) that the selection of the DPR consultant, for the Chhatarpur SWM Project, was in process. The Jugsalai SWM Project was under the Adityapur cluster. Currently, a concessionaire had been selected for the Adityapur Cluster. Land for the Chakradharpur had been identified. DPRs for the Medininagar and Dumka had already been prepared, technically sanctioned and administrative approval was under process. The concessionaire for secondary transportation of waste had been appointed for RMC, while appointment of Concessionaire for D2D collection of RMC, was in process. The SWM Projects of Deoghar, Giridih, Jhumritelaiya & Koderma were complete. Other ULBs (Chatra, Garhwa, Jamtara and Pakur) would be directed to expedite the progress of SWM projects. Further, hindrances at the selected sites and delays in receipt of environmental clearances were attributed as the main reasons behind the delays in the progress of projects.

The fact, however, remains the same that SWM projects were yet to be completed in 10 ULBs, out of the 14 test-checked ULBs.

7.2 Environmental Clearances

As per Section 5.1 of the MSWM Manual, Municipal Solid Waste Management processing, treatment, and disposal facilities, require legal or statutory clearances and approvals for their establishment, depending on the type of facilities to be created. Further, as per the Environment Impact Assessment (EIA) Notification, 2006, Environmental Clearance (EC) is required for an SWM project, either from the Ministry of Environment, Forests and Climate Change (MoEF&CC), GoI, or from the State Environment Impact Assessment Authority (SEIAA), based on the category[112] of the project, prior to start of construction activities.

However, MoEF&CC stipulated (November 2017) that the above SWM activities, except a landfill site, if proposed as standalone activities, do not require prior environmental clearance.

Further, under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981, Consent to Establish (CTE) is required from the State Pollution Control Board, prior to establishing such a project and Consent to Operate (CTO), prior to commencement of its operations.

Audit noticed that:

- The Deoghar Municipal Corporation had obtained (between July 2020 and December 2021) the required EC, CTE and CTO, for construction of a project for processing 200 TPD of Municipal Solid Waste, including an Aerobic Windrow compost Plant of 90 TPD and RDF Processing Plant of 110 TPD. However, a Bio-methanation plant[113] had been established (November 2019) in addition, for which no CTE or CTO had been obtained, as discussed in ***Paragraph 9.1.6.1***.
- Three ULBs (Chatra, Garhwa and Ranchi)[114] had not obtained the required CTE, although construction works at landfill sites were under progress.

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[112] *All projects and activities are broadly categorised in two categories – 'Category A' and 'Category B', based on the spatial extent of potential impacts and the potential impacts on human health, as well as, natural and man-made resources. All Projects for common MSWM facilities are categorised under 'Category-B'. Further, any project or activity, specified in 'Category B' is to be treated as 'Category A', if it is located in whole, or in part, within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972 (ii) Critically Polluted areas, as identified by the CPCB from time to time (iii) Eco-sensitive areas, as notified under Section 3 of the Environment (Protection) Act, 1986 and (iv) inter-state boundaries/international boundaries.*

[113] *A bio-methanation plant is required for micro-biologically converting organic material, under anaerobic conditions, to biogas.*

[114] *Chatra-Composting plant, Garhwa-Composting plant and Ranchi Municipal Corporation-Waste to energy Plant.*

- The Jhumritelaiya MC (including the Koderma NP) had spent ₹ 8.37 crore on construction works (that had commenced in September 2018), of a processing plant of 52 TPD capacity (including landfill site), without obtaining the required EC and CTE. EC had, however, been subsequently applied for, to GoI, almost after four years, in May 2022. **(Exhibit 7.2)**.

Exhibit 7.2 : Construction (including landfill site), at the Jhumritelaiya & Koderma cluster MC, without obtaining EC (photograph taken on 23 November 2022)

Thus, the test-checked ULBs had not ensured mandatory clearances in all cases, after due environment impact assessment, before commencing the construction of waste processing plants.

The Department accepted the facts and stated (July 2023) that EC had been granted (April 2023) for the Jhumritelaiya & Koderma Cluster, Deoghar and Giridih. Other ULBs had been directed to obtain the required ECs and CTEs, from the concerned authority.

The reply confirmed the fact that the test-checked ULBs had started construction works without obtaining the required ECs and CTEs, as required.

7.2.1 Non-adherence to the conditions of EC

As per EC granted (July 2020) to the Deoghar Municipal Corporation, for establishing processing plants of 200 TPD, treatment, and disposal facilities, the ULB/Concessionaire were required to adhere to specific/standard conditions[115], *viz.*: (i) Ambient Air Quality monitoring was to be carried out regularly, in and around the landfill site (ii) sufficient numbers of Piezometer[116] wells were to be installed, in and around the project site, to monitor the ground water quality, in consultation with JSPCB/CPCB (iii) An Emergency Plan was to be drawn, in consultation with the JSPCB/CPCB, to minimise the hazards to human health or environment, from fires, explosions or any unplanned sudden or non-sudden releases of hazardous waste, or hazardous waste constituents, to air, soil or surface water (iv) two *per cent*

[115] *Para no. no. VII, X, XX & XXII of specific conditions and para no. VIII of standard conditions.*

[116] *A 'Piezometer' is a geotechnical sensor, that is used to measure pore water pressure in the ground.*

(₹ 0.74 crore) of the project cost (₹ 37.21 crore) was to be spent on infrastructure development, such as clean drinking water, sanitation work *etc.* at nearby villages of the SWM project, by the Concessionaire (v) a well laid down environmental policy, which prescribed standard operating procedures, was to be formulated, in order to have proper checks and balances and to bring into focus any infringements/ deviations/ violations of environmental/ forest/wildlife norms and (vi) a separate Environmental Cell was to be set up, for this purpose, by the Concessionaire.

However, Audit observed that the above specific/standard conditions had not been adhered to, by the Deoghar Municipal Corporation. Thus, proper checks and balances, which were required to bring into focus any infringements/deviations/violations of environmental/forest/wildlife norms, could not be ensured.

The Department accepted the facts and stated (July 2023) that the Deoghar ULB had been directed (July 2023) to ensure adherence to the specific conditions of the EC.

7.3 Non-deduction of liquidated damages

As per Clause 4.4 (a) of the Concessionaire agreements, "in the event that i) the Concessionaire does not procure fulfilment of any or all of the conditions within a period specified in respect thereof and ii) the delay has not occurred as a result of failure to fulfill the obligations under clause 4.2.1[117] or other breach of this agreement by the Authority or due to force majeure, the concessionaire shall pay to the authority, damages in an amount calculated at the rate of 0.2 *per cent* of the Performance Guarantee (PG) for each day's delay, until the fulfilment of such conditions subject to a maximum of 20 *per cent* of the PG."

Out of the 14 test-checked ULBs, concessionaires for SWM activities had been appointed in 10 ULBs[118]. Of these, the concessionaires of three ULBs[119], could not start the work, due to delay in grant of EC. Further, the concessionaire of Ranchi was terminated due to unsatisfactory performance, while the identified land at the Chakradharpur MC could not be acquired (till September 2022), due to a local dispute.

Five ULBs (Deoghar, Giridih, Jhumritelaiya & Koderma cluster and Pakur) had executed (between March 2017 and December 2017) agreements with the concessionaires, for implementation of SWM projects, with an overall agreement value of ₹ 54.28 crore. As per the concession agreements, the Commercial Operations Dates (CoDs) were to be achieved within 15 months from the appointed dates (i.e., dates of agreement). The Concessionaires of these five test-checked ULBs had submitted Bank Guarantees (BGs) of ₹ 3.17[120] crore, as Performance Guarantee (PG).

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[117] *i.e., preparation of DPR, approval from the independent engineer, approval of construction plans from the concerned authorities and preparation and approval of environment and social impact assessment report.*

[118] *Except Chhatarpur, Dumka, Medininagar and Jugsalai*

[119] *Chatra, Garhwa and Jamtara*

[120] *Deoghar- ₹ 1.30 crore, Giridih- ₹ 0.75 crore, Cluster of Jhumritelaiya and Koderma- ₹ 0.59 crore and Pakur- ₹ 0.53 crore.*

Audit observed that the Concessionaires of all four projects of five ULBs, had completed works to the extent of ₹ 38.89 crore[121], as of March 2022, against the overall agreement value of ₹ 54.28 crore. The progress of these projects ranged between 19 *per cent* and 85 *per cent*. Thus, the SWM Projects had not been completed, even after lapse of three to four years of the scheduled CoD. However, the concerned ULBs had not realised liquidated damages of ₹ 63.40 lakhs[122] (*i.e.,* 20 *per cent* of ₹ 3.17 crore).

Audit further observed that the BGs, submitted by the Concessionaires of the five test-checked ULBs, had lapsed between March 2019 and August 2022, but no action had been taken by the ULBs, for renewal of the BGs.

As a result, the five test-checked ULBs lost the opportunity of forfeiting the BGs, which had also lapsed.

The Department accepted the facts and stated (July 2023) that the concerned ULBs had been directed to deduct liquidated damages from the subsequent bills of the concessionaires, in cases of default, and to renew the BGs submitted by the concessionaires.

7.4 Non-renewal of BGs furnished against Mobilisation advances

As per the Concessionaire agreements, Mobilisation advances (MAs), up to a maximum of 10 *per cent* of the total capital grant, were to be paid to the concerned Contractors, on submission of Bank Guarantees (BGs) of an equivalent amount. The said advances were to be recovered on *pro-rata* basis[123]. If there were any balance amounts of MA, yet to be recovered on expiry of 80 *per cent* of the contract period, the contractors were to immediately deposit the amounts, in cash, failing which ULBs could realise the balance amount, by revoking the BGs of contractors, and the decisions of the ULBs would be final and binding, on all concerned, in such cases.

The agreements with two Concessionaires, for three of the test-checked ULBs (Deoghar and Jhumritelaiya & Koderma cluster), for capital grants of ₹ 14.76 crore and ₹ 6.85 crore, respectively, had been executed in November 2017 and December 2017, respectively. The CoD being 15 months, MA should have been recovered within 12 months.

Audit noticed that:

- The Concessionaire of the Deoghar Municipal Corporation had been granted (June 2018) MA of ₹ 1.47 crore, against BG for the same amount. However, the ULB had recovered only ₹ 1.38 crore, as of March 2022, and the remaining ₹ 9 lakh was yet to be recovered. The BG was also found to have lapsed in December 2018.

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[121] *Deoghar- ₹ 19.39 crore, Giridih- ₹ 9.44 crore, Cluster of Jhumritelaiya &Koderma- ₹ 8.37 crore and Pakur- ₹ 1.69 crore.*

[122] *Deoghar- ₹ 26 lakh, Giridih- ₹ 15 lakh, Cluster of Jhumritelaiya & Koderma - ₹ 11.80 lakh and Pakur- ₹ 10.60 lakh.*

[123] *After 10 per cent of work has been completed and fully recovered, by the time 80 per cent of the work, in terms of value, is completed, or expiry of 80 per cent of the contract period, from the date of letter of Intent, whichever is earlier.*

- Similarly, the Concessionaire of the Jhumritelaiya and Koderma cluster had outstanding MA of ₹13 lakh, as of March 2022, against the total advance of ₹ 69 lakh, granted in June 2018. The BGs were also found to have lapsed in December 2018.

Thus, these ULBs had not ensured recovery of MA in time, or ensured the availability of the required BGs, with themselves, in violation of the conditions stipulated in the agreements with the concessionaires.

The Department accepted the facts and stated (July 2023) that the ULBs had been directed to recover the MAs at the earliest.

7.5 Tipping fees

"Tipping fee" means a fee or support price, determined by the local authorities, or any state agency authorised by the State Government, to be paid to the concessionaire or operator of a waste processing facility, or for disposal of residual solid waste at a landfill. As per the concession agreements, tipping fee was payable to the concessionaires per ton of the actual D2D collection of MSW and transportation, to the waste processing sites, for maintenance and operations of SWM activities, during the concession period, commencing from the Commercial Operation Date (COD)[124], as per the rates quoted by the selected bidders, in these financial proposals.

D2D collections were carried out in 10 ULBs[125], out of the 14 test-checked ULBs, by the Concessionaires appointed[126] by these ULBs, between the period October 2015 and January 2021. D2D collections, in the remaining three ULBs (Dumka, Jugsalai and Medininagar), were being carried out by ULBs themselves. The Concessionaire of Jamtara had not started D2D collections, while the Concessionaires of the Ranchi Municipal Corporation, appointed in October 2015 and January 2021, respectively, had been terminated in June 2019 and April 2022, respectively, due to their unsatisfactory performance.

A total sum of ₹ 44.73 crore[127] had been paid as Tipping fee, to the concessionaires of nine out of the 14 test-checked ULBs, during FYs 2017-18 to 2021-22, in regard to which, the following irregularities were noticed:

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[124] *As per the concession agreements, "COD" means the commercial operations date of the Project on which the Construction Supervisor has issued the Provisional Completion Certificate or Completion Certificate.*

[125] *Chakradharpur, Chatra, Deoghar, Garhwa, Giridih, Jamtara, Jhumritelaiya, Koderma, Pakur and Ranchi.*

[126] *Chakradharpur: June 2020, Chatra: February 2019, Deoghar: November 2017, Garhwa: November 2018, Giridih: March 2017, Jamtara: April 2015, Jhumritelaiya: December 2017, Koderma: December 2017, Pakur: June 2017 and Ranchi: October 2015/January 2021.*

[127] *Chakradharpur- ₹82.44 lakh, Chatra- ₹111.28 lakh, Deoghar- ₹1,209.36 lakh, Garhwa-₹88.67 lakh, Giridih- ₹519.09 lakh, Jhumritelaiya- ₹302.47 lakh, Koderma- ₹30.78 lakh, Pakur- ₹169.83 lakh and Ranchi- ₹1,958.80 lakh.*

7.5.1 Payment of Tipping fees

As per concessionaire agreement, the Tipping fee, for carrying out SWM services, was payable to the Concessionaire within 30 days of receipt of the Tipping fee statement. Further, the Tipping fee statement was to be verified and approved by the Project Management Consultant (PMC), before making payment. No payment was to be made, if any quantity of MSW had not been verified by the PMC.

Details of the Tipping fees (payable, paid to the Concessionaires and outstanding thereof), in the test-checked ULBs, are shown in **Table 7.2**.

Table 7.2: **Tipping fees payable, paid to the Concessionaires and outstanding thereof**

(₹ in lakh)

Sl. No.	ULB	Tipping fee payable	Tipping fee paid	Tipping fee due for payment
1.	Chakradharpur MC	95.01	82.44	12.57
2.	Chatra MC	222.60	111.28	111.32
3.	Deoghar Municipal Corporation	1,367.35	1,209.36	157.99
4.	Garhwa MC	113.35	88.67	24.68
5.	Giridih Municipal Corporation	519.09	519.09	0.00
6.	Jhumritelaiya MC	307.65	302.47	5.18
7.	Koderma NP	34.47	30.78	3.69
8.	Pakur MC	248.40	169.83	78.57
9.	Ranchi Municipal Corporation	1,958.80	1,958.80	0.00
Total		**4,866.72**	**4,472.72**	**394.00**

(*Source: data provided by the test-checked ULBs*)

It can be seen from **Table 7.2** that Tipping fee of the Concessionaires, worth ₹ 3.94 crore was outstanding, as of March 2022, had not been paid till December 2022, due to paucity of funds.

The Department accepted the facts and stated (July 2023) that the ULBs had been directed to pay the outstanding Tipping fees of the concessionaires at the earliest.

Audit further noticed that the PMCs had been appointed (between April 2017 and January 2018), in only six out of the 10 test-checked ULBs (Giridih, Jhumritelaiya, Koderma, Jamtara, Pakur and Ranchi) where Concessionaires had been appointed. The tenders for appointment of PMCs, in four ULBs (Chakradharpur, Chatra, Deoghar and Garhwa), had been finalised by JUIDCO in October 2019 and the proposal to issue letter of acceptance (LoA) had been approved (October 2019) by the Secretary of the Department. However, LoA had not been issued by JUIDCO, as of March 2022, for which no reasons were found available on records.

In the absence of PMCs, these four test-checked ULBs had themselves verified the Tipping fee bills submitted by the concessionaires. Thus, Tipping fee of ₹ 14.91 crore[128], had been paid (between the period November 2018 to March 2022), to the Concessionaires of the four test-checked ULBs, without verification by the PMCs.

[128] *Chakradharpur: ₹ 0.82 crore. Chatra: ₹ 1.11 crore, Garhwa: ₹ 0.89 crore and Deoghar: ₹ 12.09 crore.*

The Department accepted the facts and stated (July 2023) that: (i) PMCs would soon be appointed in the remaining ULBs (ii) the ULBs had been directed to pay the Tipping fees, after verification by PMCs appointed.

7.5.2 Post-Closure Performance Accounts

As per the concession agreements, the parties were to open a special account, designated as the Post-Closure Performance Account (PCPA)[129], within 30 days from the appointed date[130]. Five *per cent* of the Tipping fee was to be kept in the PCPA (except in the case of RMC, where it was two *per cent*). The amounts kept in PCPA were to be utilised for post-closure obligations, such as Operation & Maintenance (O&M) requirements after the concession period and were to be released to the Concessionaires in 60 quarterly instalments.

Audit observed that none of the test-checked ULBs had opened PCPAs. Further, not all the ULBs had deducted the required amounts, as shown in **Table 7.3**.

Table 7.3: Deductions for PCPA, from the bills of concessionaires

(₹ in lakh)

Sl. No.	ULB	Tipping fee paid	Amounts deductible for PCPA	Amounts deducted	Less/short deduction
1.	Chakradharpur MC	82.44	4.12	4.12	0.00
2.	Chatra MC	111.28	5.56	0	5.56
3.	Deoghar Municipal Corporation	1,209.36	60.47	17.98	42.49
4.	Garhwa MC	88.67	4.43	0	4.43
5.	Giridih Municipal Corporation	519.09	25.95	25.95	0.00
6.	Jhumritelaiya MC	302.47	15.12	10.36	4.76
7.	Koderma NP	30.78	1.54	0.34	1.20
8.	Pakur MC	169.83	8.49	8.49	0.00
9.	Ranchi Municipal Corporation	1,958.80	39.18	39.18	0.00
Total		**4,472.72**	**164.86**	**106.42**	**58.44**

(*Source: data provided by the test-checked ULBs*)

It can be seen from **Table 7.3** that two ULBs had not deducted any amount towards the PCPA. Further, five ULBs, out of the remaining seven ULBs, had short deducted ₹ 58.44 lakh, on account of PCPA. In the absence of PCPAs, these ULBs had kept the deducted amounts, with their municipal funds.

Thus, the PCPA deductions, amounting to ₹ 106.42 lakh, had not been credited in the designated accounts, which were required to be opened, to fulfil the O&M requirements.

The Department accepted the facts and stated (July 2023) that the test-checked ULBs had been directed to open PCPAs and to keep the deducted amounts in the PCPAs.

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[129] *The amounts in the PCPA would be payable to the Concessionaire, after the post closure period, in sixty quarterly instalments.*

[130] *The date of agreement executed between the ULB and the concessionaire for carrying out the SWM project.*

Recommendation 14: State Government may ensure early completion of the SWM projects of ULBs.

Recommendation 15: State Government may ensure that all landfill sites operate with valid authorisations and environmental clearances.

Recommendation 16: State Government/ULBs may ensure timely payment of Tipping fees to the Concessionaires, for smooth functioning of SWM activities in municipal areas. State Government may also ensure appointment of Project Management Consultants for all projects, to monitor the operation & maintenance of SWM activities, and authentication of the Tipping fee bills, of the Concessionaires.

Chapter VIII
Processing, Treatment and Disposal of Solid Waste

Chapter VIII

Processing, Treatment and Disposal of Waste

8.1 Processing

In accordance with Section 4.1 of the MSWM Manual, 2016 (Volume I), the selection and adoption of MSW processing technologies should be based on a detailed due diligence study, which ascertains the appropriateness of the technology, to the prevailing conditions of the respective ULBs.

Treatment and processing of segregated waste streams, not only reduces operational costs but also increases the efficiency of the process. The waste processing technologies, available for ULBs, include composting, waste-to-energy, bio-methanation, *etc*.

8.1.1 Segregation of waste for processing

Primary segregation of waste, into wet, dry (recyclables), and inert waste, is to be carried out at the household level, while secondary segregation is to take place at the processing sites, to ensure that the processed output (such as compost) meets the regulatory standards.

As discussed in ***Paragraph 6.1.1***, one to 98 *per cent* (except for the absence of source segregation at the Jamtara NP, during FY 2017-18, and 100 *per cent* source segregation, in the Deoghar Municipal Corporation, during FY 2021-22) of waste, against 100 *per cent* segregation, as envisaged in the service level benchmarks, had been segregated at source in the test-checked ULBs, during FYs 2017-22. As such, unsegregated waste (ranged between two *per cent* and 99 *per cent*) was used for processing, resulting in non-compliance with the prescribed regulatory standards and service level benchmarks.

The Department accepted these facts and stated (July 2023) that: (i) waste segregation was being practiced in 80 *per cent* of wards (ii) ULBs were being directed regularly to ensure segregation of waste and (iii) the test-checked ULBs had been directed to ensure processing of segregated waste at the processing plants.

8.1.2 Status of Solid Waste processing

Audit observed that 41.43 lakh metric tons and 35.89 lakh metric tons of solid waste, had been generated and collected, respectively, in Jharkhand, during the FYs 2017-18 to 2021-22. However, only 11.57 lakh metric tons (*32 per cent*) of this collected waste had been processed. The status of waste collected and processed by the 13 test-checked ULBs (except Chhatarpur), during FYs 2017-18 to 2021-22, is given in **Table 8.1**.

Table 8.1: Status of waste collected and processed by the test-checked ULBs

(In lakh metric tons per year)

Financial Year	MSW collected	Quantity of waste processed (in *per cent*)	Landfill sites/Dumpsites
2017-18	2.81	0.86 (*31*)	1.95
2018-19	2.76	1.11 (*41*)	1.65
2019-20	2.90	1.10 (*38*)	1.80
2020-21	2.78	1.17 (*42*)	1.61
2021-22	2.73	1.03 (*38*)	1.70
Total	**13.98**	**5.27 *(38)***	**8.71**

(Source: Annual reports of solid waste of the test-checked ULBs)

It is evident from **Table 8.1** that only 31 to 42 *per cent* of solid waste had been processed, during FYs 2017-18 to 2021-22. Low processing of waste was mainly due to incomplete infrastructure, such as secondary storage, treatment plants, landfill sites, *etc.*, with the test-checked ULBs (as discussed in ***Paragraph 7.1*** of the report). Thus, non-processing of 58 to 69 *per cent* of MSW carried the risk of water and air contamination, due to dumping of unprocessed waste at the landfill sites/ dumping sites.

The Department accepted the facts and stated (July 2023) that ULBs had been directed to process maximum quantity of MSW, to prevent the risk of water and air contamination.

8.1.3 Bulk Waste Generators

As per the SWM Rules, 2016, Bulk Waste Generators (BWGs) include buildings occupied by the Central/ State Government departments or undertakings, local bodies, hospitals, educational institutions, hostels, hotels, commercial establishments, places of worship and sports complexes *etc*., having an average waste generation rate exceeding 100 kg waste per day.

BWGs are responsible for processing of wet waste (bio-degradable waste) by themselves and also for developing systems of reuse of the products of such processing, *i.e*. compost or biogas *etc*. Further, they are required to separately store horticulture and garden waste, generated from their premises, in their own premises and carry out composting, in compost pits, within their premises.

As per the ARs of the JSPCB on Solid Waste, 183 BWGs, of 42 out of the 50 ULBs[131] in the State, were carrying out onsite composting. However, this included only 13 BWGs, of two ULBs, out of the 14 test-checked ULBs (Jugsalai: 2 and Deoghar: 11). The quantum of compost, produced by the BWGs of these two ULBs, was not made available to Audit. Further, the remaining 12 test-checked ULBs replied that they had not identified BWGs in their municipal areas.

Thus, the 12 test-checked ULBs had not ensured identification of BWGs, within their municipal areas, for promoting them for onsite composting of feasible waste.

[131] *Data in regard to eight ULBs, was not available in the Reports.*

The Department accepted the facts and stated (July 2023) that: (i) ULBs had already been directed to identify BWGs in municipal area and to ensure on-site composting by them and (ii) ULBs had also been directed (July 2023) to ensure maintenance of records related to BWGs, the quantum of waste processed and the compost prepared by them.

8.2 Waste processing technologies adopted by the test-checked ULBs

The test-checked ULBs had adopted different methods for processing of municipal waste, as shown in ***Chart 8.1***.

Chart 8.1: Processing technologies adopted by the test-checked ULBs

8.2.1 Composting

As per the SWM Rules, 2016, 'composting' means a controlled process, involving microbial decomposition of organic matter. Composting is a biological process of decomposition, carried out under controlled conditions of ventilation, temperature, moisture. In composting, the organisms present in the waste convert the waste into humus-like material, by initiating action on the organic portion of the solid waste, called 'compost'. Compost is non-odorous and free of pathogens, has very high agricultural value and is used as fertilizer. Composting is used to utilise organic waste to minimise legacy waste.

Rule 7 of the SWM Rules, 2016, emphasizes market development, for sale of compost, through an appropriate mechanism. Further, Section 3.2.4 of the MSWM Manual, 2016, states that, based on the quality and quantity produced, the pricing mechanism, for sale of compost, is to be assessed by the ULBs.

As per the ARs of ULBs on solid waste, seven out of the 14 test-checked ULBs had maintained data on the compost produced, wherein three ULBs[132] had produced 22.31 MT of compost, during FYs 2018-19 to 2021-22; three ULBs[133] had produced 17.79 MT of compost, during FYs 2019-20 to 2021-22 and the Jamtara NP had produced 0.91 MT of compost, during FY 2021-22.

The remaining seven test-checked ULBs[134] did not provide information regarding the quantum of compost produced by them, during FYs 2017-18 to 2021-22. Further, none of the test-checked ULBs produced records relating to use of the compost produced and the sale prices realised, if any.

The Department accepted the facts and stated (July 2023) that ULBs had been directed (July 2023) to ensure maintenance of records related to use of the compost produced and the sale proceeds realised, if any.

8.2.2. In-house composting

The strategic interventions of the Jharkhand State Urban Sanitation Policy, 2018, envisage carrying out the promotion of in-house composting facilities, to ascertain that a minimum amount of solid waste reaches the landfill sites.

Audit observed that, in 13 of the test-checked ULBs (*i.e.,* excepting Jugsalai MC), in-house composting had not been promoted. The Jugsalai MC had organised training programmes to create awareness among people, in regard to house composting, as shown in **Exhibit 8.1.**

Exhibit 8.1: A training programme on in-house composting conducted at the Jugsalai MC (photograph taken on 12 August 2022)

Thus, the test-checked ULBs (except Jugsalai MC) had not ensured awareness among the public regarding in-house composting, so as to ensure that minimum waste reached the landfill sites.

The Department accepted the facts and stated (July 2023) that: (i) necessary directions had been issued (July 2023) to the ULBs for promotion of in-house

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[132] *Deoghar-12.41 MT, Giridih-7.70 MT and Medininagar-2.20 MT*
[133] *Dumka-0.82 MT, Jugsalai-1.09 MT and Ranchi-15.88 MT*
[134] *Chakradharpur, Chatra, Chhatarpur, Garhwa, Jhumritelaiya, Koderma and Pakur*

composting (ii) the progress of implementation would be monitored, to ensure compliance of the directions issued.

8.3 Disposal of waste

All waste, that cannot be reused/recycled/processed further, finds its way to the landfills. Landfills are designed to minimise the impact of the waste on the environment, by containment of the waste.

8.3.1 Status of Sanitary landfills

As per the Annual Report (2021-22) of the JSPCB, out of 50 ULBs in the State, land for sanitary landfill sites, as well as for processing facilities, had been identified for 42 ULBs. Further, the land so identified, was found to have been made available to 36 ULBs.

Audit observed that land for landfill site was available in 12 out of the 14 test-checked ULBs, while two ULBs (Chakradharpur & Chhatarpur) had temporary dumpsites, for the purpose of waste disposal. In regard to the four out of 12 test-checked ULBs, it was seen that: (i) selection of concessionaires was under process for the Jugsalai MC (ii) DPR had not been approved, by the Department, for the Medininagar Municipal Corporation (iii) central funds were awaited for the Dumka MC and (iv) construction work, at the Jamtara NP, had not been started, due to local hindrances, even though the concessionaire had been appointed in April 2018.

In eight out of 12 test-checked ULBs, the construction work for landfill sites had been started (between October 2015 and February 2019), and was to be completed (between January 2017 and May 2020) within 15 months of the respective agreements. However, construction of the landfill sites had been completed only in the Deoghar Municipal Corporation (as of December 2021) **Exhibit 8.2**. No construction work at other four sites was initiated where the land was made available for landfills.

Exhibit 8.2 : Status of landfill sites in the test-checked ULBs

Functional Landfill site at the Deoghar Municipal Corporation. (photograph taken on 12 November 2022)	*Landfill site under construction at the Giridih Municipal Corporation. (photograph taken on 02 November 2022)*
	
Incomplete landfill site of the Jhumritelaiya and Koderma cluster (photograph taken on 15 July 2022)	*Landfill site under construction, at the Pakur MC (photograph taken on 11 December 2022)*


Despite availability of landfill sites, but due to non-construction, these 12 ULBs were dumping MSW in the temporary dumping sites that were near a nursing home (Chakradharpur MC); at public places (Jugsalai MC and Koderma NP); along the river side (Medininagar Municipal Corporation) *etc.*, causing risk to environment and human life, due to contamination of soil and ground water **(Exhibit 8.3)**. Further, delay in the completion of landfill sites had led to accumulation of legacy waste at the dumpsites (as discussed in ***paragraph 8.4.1***).

Exhibit 8.3: Status of dumpsites in the test-checked ULBs

MSW dumped near a private nursing home at the Chakradharpur MC (photograph taken on 22 September 2022)	*MSW dumped near a residence at the Jugsalai MC (photograph taken on 12 August 2022)*
	
MSW dumped near the river Koyal at the Medininagar Municipal Corporation (photograph taken on 20 September 2022)	*MSW dumped near a residential area at the Dumka MC (photograph taken on 12 December 2022)*
	

Municipal waste dumping site at Jhiri, Ranchi Municipal Corporation (photograph taken on 30 December 2022)

The Department accepted the facts and stated (July 2023) that: (i) landfill sites had been completed at Deoghar and Jhumritelaiya & Koderma and (ii) other ULBs had been directed to complete the construction of their landfills at the earliest, to avoid dumping of MSW in the temporary dumping sites.

8.3.2 Acquisition of land for setting up land fills

The provisions of Rules 11 (f) and 12 (a) of the SWM Rules, 2016, state that the State and District authorities shall facilitate identification and allocation of suitable land, to local authorities, for setting up solid waste processing and disposal facilities, within one year from the date of notification of the Rules.

In this regard, Audit observed that:

- Construction work had not been started (July 2022 and September 2022) in two ULBs (Chhatarpur NP and Chakradharpur MC), out of the 14 test-checked ULBs, as land had not been made available for land-fills, even after a lapse of six years from the proposed date of identification and allocation of land for the purpose.
- The Department had released (July 2017) ₹ 131.04 lakh, to the Chakradharpur MC, for acquisition of land. The Executive Officer had transferred (December 2017) ₹ 84.28 lakh, to the District Land Acquisition Officer (DLAO), West Singhbhum, for acquisition of land. However, the land had not been acquired, as of March 2022. The balance funds of ₹ 46.76 lakh, were lying unutilised in the PL account of the ULB, even after a lapse of 5 years.

  In the absence of acquisition of land, though the Concessionaire had been appointed (June 2020), it could not start the construction activities.
- The Department had released (September 2016) ₹ 4.79 crore, for acquisition of land, to the Dumka MC. The funds were transferred (January 2017) to the DLAO, Dumka, and 11.14 acres of land was acquired (September 2021), at a cost of ₹ 3.61 crore. The Executive Officer, Dumka MC, requested (February 2022) the DLAO, to refund the balance funds of ₹ 1.47 crore (including interest), However, the same had not been transferred, as of December 2022.

Thus, SWM funds of ₹ 1.47 crore were lying with the DLAO. However, construction work had not been started at the acquired site, as the approval of DPR was pending with MoHUA, which was required for release of central funds, as of March 2022.

The Department accepted the facts and stated (July 2023) that: (i) necessary action would be taken for acquisition of land for SWM at Chhatarpur and Chakradhapur and (ii) the test-checked ULBs (Chakradhapur and Dumka) had been directed to get the funds refunded from the DLAOs concerned.

8.3.3 Declaration of buffer zones around landfill sites

As per the SWM Rules, 2016, 'a buffer zone', of no development, is to be maintained around solid waste processing and disposal facilities exceeding five tons per day (TPD) of installed capacity, to contain harmful emissions generated from the processing of solid waste. This zone is to be maintained within the total area of the solid waste processing and disposal facility. The buffer zone is to be prescribed on a case-to-case basis, by the local body, in consultation with the JSPCB. Further, it has to be incorporated in the Town Planning Department's land use plans.

Audit observed that the prescribed buffer zones, in the adjoining areas of landfills/ dumpsites having MSW generation capacity ranging between 7.6 TPD and 530 TPD (excepting Chatra, which had a capacity of 1.49 TPD only), had not been declared in 12 of the test-checked ULBs, where landfill sites/ dumpsites had already been identified, while, at two ULBs (Chhatarpur NP and Chakradharpur MC), land, for landfill sites, had not been identified.

Thus, the test-checked ULBs had not ensured declaration of buffer zones of no development, around solid waste processing and disposal facilities.

The Department accepted the facts and stated (July 2023) that the ULBs had been directed to ensure declaration of buffer zones of no development, around the solid waste processing and disposal facilities.

8.3.4 Burning of waste in landfill sites

The National Green Tribunal directed (December 2016) ULBs to: (i) implement complete prohibition on the open burning of waste on land, including at landfill sites and (ii) penalise violators, including ULBs, responsible for such burning, with an environmental compensation of ₹ 5,000, in case of simple burning, and ₹ 25,000, in cases of burning of bulk waste. As per directives issued by NGT (December 2016) for CPCB and the State Pollution Control Boards, to monitor such burning incidents and report them to the Tribunal. However, no such instances had been reported, by JSPCB, to the NGT.

During joint physical verification (JPV) of landfill sites, Audit noticed instances of burning, or traces of burning, of mixed waste, in the test-checked ULBs (**Exhibit 8.4**). However, no penalties, in this regard, had been imposed, in the test-checked ULBs. Thus, proper monitoring in this regard had not been ensured by the JSPCB.

The Department did not furnish any specific reply to the observation of audit.

Exhibit 8.4: Burning of solid waste at landfill sites

Giridih Municipal Corporation (photograph taken on 10 November 2022)	*Jamtara NP (photograph taken on 10 November 2022)*
	
Telai Basti (Ward no. 3), Jhumritelaiya MC (photograph taken on 23 November 2022)	*Medininagar Municipal Corporation (photograph taken on 20 September 2022)*
	

8.4 Disposal of Legacy Waste

The Central Pollution Control Board (CPCB) recommended[135] (January 2021) Bio-remediation/ Bio-mining method as an effective method of disposal for Legacy Waste[136] (LW).

8.4.1 Deficiency in the disposal of legacy waste

As per Rule 22 of the SWM Rules, 2016, bio-remediation, or capping of old and abandoned dumps, was to be completed by April 2021. The Ministry of Housing and Urban Affairs (MoHUA), GoI, informed (October 2020) the GoJ, that the funding for SWM included remediation of LW dumpsites and suggested remediation of all the LW dumpsites, in cities with population more than one lakh, before 15 August 2022.

Audit observed that the Department had approved (March 2022) DPRs for remediation of 27 lakh metric tons of LW, lying at temporary dumpsites,

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[135] *Direction under Section 5 of the Environment (Protection) Act, 1986, for enforcement of provisions of SWM Rules, 2016, regarding bio-mining/ bio-remediation of legacy waste.*

[136] *'Legacy waste' refers to the waste that has collected and been kept for years, on any barren land, or dedicated landfills.*

having an area of 76.38 acres, in 11 ULBs[137], out of 50 ULBs in the State, including three of the test-checked ULBs (Deoghar, Giridih and Ranchi). The project cost of the DPRs was ₹ 219.22 crore and the Department had submitted (May 2022) DPRs to the MoHUA, GoI, for approval. Approval was awaited (as of May 2022).

In this regard, in the remaining 11 test-checked ULBs, Audit noticed that:

- In nine ULBs, 28.77 lakh[138] MT of legacy waste was available for remediation.
- DPRs for disposal of 8.38 lakh MT legacy waste, in six[139] of the test-checked ULBs, had not been prepared, as of March 2022.
- In the Jugsalai MC, the DPR of SWM included a provision for disposal of 0.24 lakh MT of LW. However, the Concessionaire, who would be responsible for such disposal, was yet to be appointed (as of August 2022).
- In one ULB (Chhatarpur NP), there was no LW, while the remaining three ULBs (Chatra, Garhwa and Jamtara) had not conducted surveys of LW, for assessing the quantity of legacy waste. The LW, at the test-checked ULBs, can be seen in **Exhibit 8.5**.

Exhibit 8.5: Legacy waste in the test-checked ULBs

	
Giridih Municipal Corporation (photograph taken on 10 November 2022)	*Medininagar Municipal Corporation. (photograph taken on 20 September 2022)*

Thus, the test-checked ULBs had not started the disposal of LW through bio-remediation, bio-mining or capping, as of March 2022, though this was required to have been completed by April 2021, as per SWM Rules, 2016.

The Department accepted the facts and stated (July 2023) that DPRs for the Legacy Waste Management Project had been prepared for another nine test-checked ULBs (Jugsalai, Pakur, Chakradharpur, Jhumritelaiya, Koderma, Dumka, Garhwa, Medininagar and Jamtara), in addition to the DPRs of the three test-checked ULBs (Deoghar, Giridih and Ranchi).

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[137] *Eight Municipal Corporations (Dhanbad, Giridih, Hazaribag, Chas, Ranchi, Deoghar, Mango and Adityapur), one Municipal Council (Ramgarh), one Notified Area Committee (Jamshedpur) and one Nagar Panchayat (Bundu).*

[138] *Chakradharpur- 6.40 lakh MT, Deoghar- 1.02 lakh MT, Dumka- 0.20 lakh MT, Giridih- 1.33 lakh MT, Jhumritelaiya- 0.63 lakh MT, Koderma- 0.06 lakh MT, Medininagar- 0.89 lakh MT, Pakur- 0.20 lakh MT and Ranchi- 18.04 lakh MT.*

[139] *Chakradharpur- 6.40 lakh MT, Dumka- 0.20 lakh MT, Jhumritelaiya- 0.63 lakh MT, Koderma- 0.06 lakh MT, Medininagar- 0.89 lakh MT and Pakur- 0.20 lakh MT*

The fact remained that these DPRs were still in the approval stage and remediation of LW was yet to be started. Further, the reply was silent in regard to the absence of survey of LW, at the Chatra MC.

- The findings of a PA on "Management of Water Supply, Sanitation and SWM Services", had been included in ATIR on Local Bodies for the year ended 31 March 2016. In the report, dumping of waste, in close proximity to the river side at Medininagar, had been highlighted. Audit noticed that a police picket had now been constructed at the said dumpsite, by capping of legacy waste (**Exhibit 8.6**).

Exhibit 8.6: A police picket constructed at the LW dumpsite, in the Medininagar Municipal Corporation (photograph taken on 20 September 2022)

Recommendation 17: State Government may ensure that ULBs maximise processing of waste and its scientific disposal at landfills through early completion of SWM projects.

Recommendation 18: State Government may take early initiatives for bio-remediation of the legacy waste in the ULBs.

Chapter IX
Unfruitful/Wasteful Expenditure

Chapter IX

Unfruitful/Wasteful Expenditure

As per Rule 9 of the Bihar Financial Rules, 1950 "every Government Servant incurring or authorizing expenditure from public funds should be guided by high standards of financial propriety".

Audit observed that the test-checked ULBs had procured/ created the SWM infrastructure, *viz.* domestic/community bins, Radio Frequency Identification (RFID) tags, vehicles, machines, transfer stations and processing units for segregation, collection, transportation and processing of solid waste, during the FYs 2017-18 to 2021-22. Audit observed instances of financial impropriety, which are discussed below.

9.1 Unfruitful/ Idle Expenditure

9.1.1 Community bins

Audit noticed that 12 ULBs out of the 14 test-checked ULBs (Chatra and Jugsalai MCs did not purchase the community bins) had purchased 1,759 community bins at a cost of ₹ 10.10 crore, during the FYs 2017-22. However, the procured bins were found either lying idle or utilized sub-optimally in two (Chakradharpur MC and Pakur MC) out of 12 test-checked ULBs, which are discussed as under:

9.1.1.1 Twin Steel Community Bins

The Chakradharpur MC had purchased (December 2021) 48 pairs of community (twin) bins with stands, costing ₹ 10.08 lakh. Of these, five twin bins were lying in store, as of August 2022, and 43 twin bins were stated to have been installed. However, out of the 43 twin bins, reported to have been installed, the locations of only 34 twin bins could be furnished to Audit.

During joint physical verification (14 September 2022) of 34 known locations, twin bins were found to have been installed intact with stands at five locations; six locations were found with only single bins; 21 locations were found with only stands, without bins, while at two locations, twin bins were found without stands. After this verification, the ULB lodged a complaint regarding 29 stolen twin bins/ missing parts thereof, with the police, on 19 September 2022. However, the remaining nine twin bins, which though were reported to have been installed, were not traceable.

Thus, expenditure of ₹ 9.03 lakh on purchase of 43 twin bins was rendered unfruitful, owing to the absence of whereabouts of nine bins, 29 sets of installed bins with missing parts at their locations and five bins lying idle in store.

Partial installation of bins can be seen in the photographs shown in **Exhibit 9.1**.

Exhibit 9.1 : Partial installation of community bins at the Chakradharpur MC (photographs taken on 14 September 2022)

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td colspan="2">Only single bin found</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Stands found without bins</td><td>Stands found without bins</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Twin bins not fixed with stands</td><td>Twin bins not fixed with stands</td></tr>
</table>

The Department accepted (July 2023) the facts and stated that necessary action had been taken. However, the Department was silent in regard to the non-traceable nine twin-bins.

9.1.1.2 Steel single/twin community bins

The Pakur MC engaged (December 2021) a supplier, for supply and installation of 75 twin steel community bins, with stands, at a cost of ₹ 20.02 lakh and 50 steel single bins, with stands, for ₹ 6.67 lakh, through the Government e-Marketplace (GeM). Full payment of bins was made to the supplier, without ensuring installation of the bins supplied (February 2022).

Sixty four (pair of two bins: 53 and single bins: 11) bins, out of the total of 125 bins so procured (February 2022), were issued (between June 2022 and August 2022) to the supplier, for installation. However, the supplier had installed only 59 (double bins: 53 and single bins: 6) bins, as of November 2022 and the five single bins remained with the supplier. Further, remaining 61 bins (double bins: 22 and single bins: 39) were lying in store due to non-issuance of the procured bins by the ULB, as found in joint physical verification (9 December 2022)

Photographs of the bins lying in store can be seen in **Exhibit 9.2**.

Exhibit 9.2 : Community Steel Bins lying un-installed at the Pakur MC (photographs taken on 9 December 2022)

Thus, expenditure of ₹ 11.75 lakh on purchase of 66 bins (single bins: 44 and twin bins: 22) rendered unfruitful.

The Department accepted (July 2023) the facts and stated that the ULB had been directed (July 2023) to install idle bins without further delay, in its municipal area.

9.1.1.3 Refuse community bins

Joint physical verification of the Pakur MC revealed that, it had also purchased (August 2018) 12 Refuse Bins[140] (community bins, with a large capacity, *i.e.* 2.5 cum), at a cost of ₹ 6.24 lakh, but these bins had been lying uninstalled for more than four years. As per the DPR of the Pakur MC, two dumper placers[141] were required. However, the Executive Officer, Pakur MC, had mentioned unavailability of dumper placers, as the reason behind not installing these refuse bins.

Thus, the expenditure of ₹ 6.24 lakh, on purchase of 12 Refuse Bins, was rendered unfruitful.

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[140] *'Refuse bins' refer to metal receptacles having an internal volume of one cubic yard or greater, by actual measurement, which temporarily receives and holds refuse (waste) for ultimate disposal, either by unloading into the body or by loading into the hopper of a refuse collection vehicle or by the other means.*

[141] *'Dumper Placers' are used for transportation of skips (dumper bins) of different sizes. to treatment or disposal sites. When a full skip (container) is lifted, an empty skip should be replaced, to prevent littering. These are also appropriate vehicles for transportation of inert or construction and demolition waste.*

Photographs of refuse bins lying uninstalled can be seen in **Exhibit 9.3**.

Exhibit 9.3 : Refuse Bins lying uninstalled at Pakur MC (photographs taken on 9 December 2022)

The Department accepted (July 2023) the facts and stated that the ULB had been directed (July 2023) to install refuse bins in its municipal area, without delay.

9.1.2 Domestic bins

Audit observed that, four (Chakradharpur, Deoghar, Jhumritelaiya and Medininagar) of the test-checked ULBs had procured (between July 2018 and May 2021) 1.74 lakh domestic bins[142] at a cost of ₹ 2.56 crore. Out of which, only 0.55 lakh bins[143] (32 *per cent)* had been distributed to households, and the remaining 1.19 lakh bins[144] were lying in the stock, as of March 2022. Further, Koderma NP had received[145] (July 2019) 2,500 domestic bins from the Jhumritelaiya cluster, against its projected requirement of 10,400 bins. Further, 1,009 undistributed bins had been lying in the stock of Koderma NP, for more than two years, as on March 2022. As such, 1.20 lakh domestic bins[146] worth ₹ 1.76 crore were lying idle.

Photographs of the bins, found lying idle in the stores during joint physical verification (between July 2022 and November 2022), are shown in **Exhibit 9.4**.

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[142] *Chakradharpur- 5,000 (₹ 7.45 lakh), Deoghar- 1,08,000 (₹ 156.84 lakh), Jhumritelaiya- 58,200 (₹ 86.77 lakh) and Medininagar- 3,000 (₹ 5.07 lakh).*

[143] *Chakradharpur- 3,180, Deoghar- 41,796, Jhumritelaiya- 10,000 and Medininagar- 498*

[144] *Chakradharpur- 1,820, Deoghar- 66,204, Jhumritelaiya- 48,200 and Medininagar- 2,502*

[145] *The bins had been purchased by Jhumritelaiya and had, subsequently, been transferred to the Koderma NP, being its cluster.*

[146] *Chakradharpur- 1,820 (₹ 2.71 lakh), Deoghar- 66,204 (₹ 96.14 lakh), Jhumritelaiya- 48,200 (₹ 71.86 lakh) & Koderma-1,009 (₹ 1.50 lakh) and Medininagar- 2,502 (₹ 4.23 lakh).*

Exhibit 9.4 : Domestic Bins lying idle in the test-checked ULBs

	
Chakradharpur MC (photograph taken on 18 September 2022)	*Koderma NP (photograph taken on 15 July 2022)*
	
Medininagar Municipal Corporation (photograph taken on 18 September 2022)	*Jhumritelaiya MC (photograph taken on 29 November 2022)*

9.1.3 Non-functional transfer stations

Audit observed that two (Karbala Chowk and Madhukam at Ranchi, constructed at a cost of ₹ 41.73 lakh) out of the 12 completed Transfer Stations (TSs) under three test-checked ULBs had remained non-functional, since their completion in June 2019 for which no reason was furnished to Audit (**Exhibit 9.5**). However, RMC in its reply stated (March 2023) that operation of the TSs would be started soon.

Exhibit 9.5 : Non-functional Transfer Stations

	
Non-functional TS at Madhukam, Ranchi Municipal Corporation (photograph taken on 02 January 2023)	*Non-functional TS at Karbala Chowk, Ranchi Municipal Corporation (photograph taken on 02 January 2023)*

Thus, the expenditure of ₹ 41.73 lakh, incurred on the construction of such TSs, remained idle.

9.1.4 Purchase of vehicles for transportation of MSW

As provisioned in the DPRs, two of the test-checked ULBs had purchased (between March 2018 and August 2018) E-rickshaws and vehicles mounted with Refuse Compactors[147] worth ₹1.15 crore[148] (Giridih Municipal

[147] *Refuse Compactor vehicles are designed for lifting and unloading garbage from garbage containers/bins.*

[148] *Giridih: Refuse Compactor (01): ₹ 32.70 lakh, E-Rickshaws (09): ₹ 28.67 lakh and Koderma: Refuse Compactor (02): ₹ 53.80 lakh.*

Corporation: ₹ 0.61 crore and Koderma NP: ₹ 0.54 crore), from SBM funds, for primary collection (E-rickshaws) and secondary transportation[149] (Refuse compactor) of MSW. However, these vehicles/ equipment had not been used for more than four years, since their purchase (as of October 2022).

During joint physical verification (between July 2022 and November 2022) with the officials of the ULBs, these vehicles were found parked in the open areas, at SWM Plant sites and where such vehicles were exposed to unfavourable weather conditions, leading to the possibility of such vehicles being rendered not useful.

As such, idle expenditure of ₹ 1.15 crore, on the purchase of these vehicles, had been incurred by these two ULBs **(Exhibit 9.6)**.

Exhibit 9.6: SWM vehicles lying idle in the test-checked ULBs

Nine E-Rickshaws lying idle at Giridih (photograph taken on 10 November 2022)

Refuse Compactor lying idle at Giridih (photograph taken on 10 November 2022)

Vehicle mounted with refuse compactor, lying idle, at Koderma NP (photographs taken on 15 July 2022)

The Department accepted (July 2023) the facts and stated that ULBs had been directed (July 2023) to utilise the idle vehicles immediately.

9.1.5 Purchase of machines for SWM activities

Scrutiny of records revealed that two machines (Brick Making Machine: 01; and Weighbridge Machine: 01), purchased (between December 2019 and November 2021), at a cost of ₹ 53.26 lakh, by two of the test-checked ULBs, for carrying out SWM activities, had been lying idle since their purchases, as discussed below:

[149] *'Secondary transportation' refers to transportation of waste from the secondary collection points (depot or transfer station), to the processing and treatment facilities or landfills, through larger capacity vehicles.*

9.1.5.1 Brick making machine

A brick making machine was proposed in the DPR of the SWM at the Deoghar Municipal Corporation. The machine was expected to utilise the inert waste, to the extent of 15 *per cent* or more, by crushing it to a powder form and, thereafter, mixing it in the mixer, with bonding ingredients, to prepare bricks.

Audit noticed that a brick making machine, with a production capacity of 2,500 bricks per shift, had been set up (November 2021) near the landfill site, by the Concessionaire at the Deoghar Municipal Corporation, at a cost of ₹ 43.26 lakh. Consent to operate (CTO), of the plant, had been granted by the JSPCB, in December 2021. However, during joint physical verification (12 November 2022), the plant was found to be non-functional, despite CTO having been accorded and inert waste having been regularly extracted, during composting.

No data, in regard to the bricks produced by the machine, was available with the Concessionaire and it was also found that the inert waste extracted regularly during composting, was being dumped at the landfill site **(Exhibit 9.7)**.

As such, the expenditure of ₹ 43.26 lakh, incurred on purchase of the brick making machine, had remained idle.

Exhibit 9.7: Non-functional brick making plant at the Deoghar Municipal Corporation (photograph taken on 12 November 2022)

The Department accepted the facts and stated (July 2023) that the concerned ULB had been directed (July 2023) to utilise the brick making machine for carrying out SWM activities.

9.1.5.2 Weighbridge machine

The cluster ULBs (Jhumritelaiya MC and Koderma NP) had executed their concession agreement in December 2017 and handed over land for construction of the landfill site, to the Concessionaire, in May 2018. The concessionaire had started D2D collections, from December 2019 onwards.

In this regard, Audit observed that a weighbridge (₹ 10 lakh), for weighing solid waste, had been procured in November 2018 and installed in May 2019, by the concessionaire (**Exhibit 9.8**), at the landfill site.

However, the weighbridge machine had not been utilised, for more than three years, by the concessionaire, for weighing solid waste, as the Tipping fee of the collection of MSW, was being paid by the Jhumritelaiya MC, by weighing waste at a private weighbridge, whereas, at Koderma NP, it was being paid on the average weight of 810 kg per tipper.

As such, the expenditure of ₹ 10 lakh, incurred on purchase of the weighbridge machine, had remained unfruitful.

Exhibit 9.8: Weighbridge machine, installed at the cluster ULBs Jhumritelaiya MC and Koderma NP (photograph taken on 15 July 2022)	**Exhibit 9.8: Landfill site at the cluster ULBs Jhumritelaiya MC and Koderma NP (photograph taken on 15 July 2022)**
	

9.1.6 Infrastructure created for processing of MSW

9.1.6.1 Bio-methanation plant

Anaerobic digestion is a process used for the biological decomposition of organic waste, wherein organic wastes is hydrolyzed, liquefied and gasified, with the help of methanogen bacteria. There is a large potential for generating power from urban and municipal waste and also from industrial waste, in India. The potential is likely to increase further with economic development. The process of bio-methanation serves not only to mitigate issues regarding to disposes of organic solid waste, but also to provide sustainable energy, in the form of biogas. It is economic, eco-friendly and less labour intensive.

A bio-methanation plant had been established (November 2019), at a cost of ₹ 2.21 crore, at the Deoghar Municipal Corporation. However, it was not put to use for a period of more than three years since installation, due to dumping of legacy waste around the plant site. During joint physical verification (12 November 2022), it was confirmed that the bio-methanation plant had never been put to use (**Exhibit 9.9)**. Thus, the expenditure of ₹ 2.21 crore, incurred on installation of the bio-methanation plant, had proved idle.

Exhibit 9.9: Idle bio-methanation plant at the Deoghar Municipal Corporation (photograph taken on 12 November 2022)

The Department accepted the facts and stated (July 2023) that the Deoghar Municipal Corporation had been directed (July 2023) to utilise the bio-methanation plant soon and submit the necessary reports.

9.1.6.2 Vermi-composting pits

Vermi-composting is the process of using earthworms and micro-organisms, to turn kitchen waste into black and nutrient rich humus. Audit observed that nine Vermi-composting pits, constructed (February 2019) at a cost of ₹ 5.22 lakh, at Chakradharpur MC, had remained unutilised for more than three years, due to lack of awareness of the local public about Vermi-composting technology. As such, the expenditure of ₹ 5.22 lakh remained idle.

9.1.6.3 Aerobic Bio Composters

Four Aerobic Bio Composters[150] (ABC) were purchased (March 2021) at a cost of ₹ 7.55 lakh for the purpose of conversion of wet waste to rich compost by the households. They were installed at four places, in the Medininagar Municipal Corporation, without displaying any instructions for operation, to create awareness among local public. As a result, three out of four composters had remained unutilised for more than 12 months of their installation (as of July 2023).

During joint physical verification of three unused composters, it was seen that one ABC, installed near a fish market in Ward number 23, was being used by the public as a community bin, whereas the other two ABCs, installed in Belwatika (Ward number 23) and at Hamidganj (Ward number 26), were lying idle (**Exhibit 9.10)**.

[150] *The three-chamber aerobic bio composter can convert the entire waste of 200-220 households per month, to compost, in 30 days, without electricity.*

Exhibit 9.10: Non-functional Aerobic Bio-Composters in the Medininagar Municipal Corporation.

1.Aerobic Bio-Composter at Fish market (photograph taken on 20 September 2022)

2. Aerobic Bio Composter lying idle at Belwatika (photograph taken on 20 September 2022)

3. Aerobic Bio Composter lying in a dilapidated condition, at Hamidganj (photograph taken on 20 September 2022)

The Department accepted the facts and stated (July 2023) that the ULBs had been directed (July 2023) to utilise the created SWM infrastructure.

9.1.6.4 Trommel Bio-Remediation Machine

The Jugsalai MC had procured (April 2022) a Trommel Bio-Remediation (TBR) machine, at a cost of ₹ 54.94 lakh, for remediation of LW, out of 15th FC grants, which was yet to be installed, as of August 2022 (**Exhibit 9.11**).

Exhibit 9.11: Idle Trommel Bio-Remediation machine and LW, at Jugsalai MC

	
Idle Trommel Bio-Remediation machine, at Jugsalai MC (photograph taken on 12 August 2022)	*Dumped waste, at the Jugsalai MC (photograph taken on 12 August 2022)*

Thus, the expenditure of ₹ 54.94 lakh, incurred on purchase of the TBR machine, was rendered unfruitful.

The Department accepted the facts and stated (July 2023) that the Jugsalai MC had been directed (July 2023) to install the Trommel machine soon.

9.2 Wasteful expenditure

9.2.1 Smart Semi Underground Bins

The RMC executed (January 2021) an agreement, with a service provider, to provide the service of transportation of MSW, from the secondary collection point, to the dumping site, through the supply and installation of 222 Smart Semi Underground Bins[151] (Smart Bins). The service provider was also required to provide a software solution, namely the 'smart fill level tracking system', for carrying out the operations relating to smart bins. To implement this solution, Bin Level Sensors (BLSs) were to be installed by July 2021. These sensors had a provision for alerting the operators, once the bins were filled up to 80 *per cent.* The total CAPEX cost of the work was ₹ 14.17 crore[152], which was payable to the service provider on *percentage* basis[153].

The service provider purchased (January 2021) 122 Smart bins and an amount of ₹ 3.12 crore was paid (May 2021), as per the agreement.

Audit observed that, though the BLSs had not been installed in 122 smart bins, by the provider, till February 2022, 100 smart bins had been again purchased (February 2022) by the provider. Of these 222 smart bins purchased, 172 had been installed (February 2022) at different locations and an amount of ₹ 5.84 crore (cost of 100 Smart bins: ₹ 2.55 crore and installation charges of 172 bins: ₹ 3.29 crore) had been paid (March 2022) to the service provider.

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[151] *Semi-underground bins, made of galvanized steel; water proof, closed construction with the fixable top cover lid. They are suitable for handling Municipal Solid Waste with the help of crane specialised smart trucks. They are also fitted with Ultrasonic fill level sensors that alert the truck drivers and the administrator with an SMS.*

[152] *Supply and delivery of smart bins: ₹ 8.65 crore, Installation cost of smart bins: ₹ 1.02 crore, supply and installation of BLS: ₹ 0.62 crore and cost of smart trucks: ₹ 3.88 crore.*

[153] *40 per cent of CAPEX cost on supply and delivery of 222 nos. of Smart bins, 30 per cent of CAPEX cost on installation of Smart bins and 20 per cent on delivery of smart trucks and 10 per cent after two months of O&M from the Commercial Operation Date.*

Further, the service provider had installed 47 smart bins, at different locations and submitted a claim of ₹ 90.01 lakh. However, RMC had not paid the claim to the service provider, as BLSs had not been installed in the smart bins.

Since BLSs had not been installed, as of March 2023, even after incurring expenditure of ₹ 8.96 crore, the smart bins were operating as normal bins, defeating the very purpose of procuring smart bins, as shown in the photographs in **Exhibit 9.12**.

Exhibit 9.12 : Smart Bins without BLS at the Ranchi Municipal Corporation

Smart Bins at Morabadi (photograph taken on 2 January 2023)

Smart Bins at the Forest Colony, Doranda (photograph taken on 2 January 2023)

The Department accepted (July 2023) the facts and stated that RMC had been directed (July 2023) to ensure installation of BLSs, in smart bins, immediately.

Thus, the expenditure of ₹ 8.96 crore, incurred on the purchase and installation of smart bins, was rendered wasteful, as the very purpose of installation of smart bins was defeated.

9.2.2 Radio Frequency Identification Tags for monitoring collection of MSW

As per Section 6.1.3 of the MSWM Manual, 2016, the Radio Frequency Identification (RFID) system provides real-time data on vehicles, collection of waste, bin pickup, and transportation of waste to treatment or disposal facilities. These systems are now being suitably adopted by cities, to improve the service efficiency of MSWM. Accordingly, assessments for RFID were made by the ULBs in their respective DPRs. The Director, SUDA, directed (August 2019) the Concessionaires of the ULBs, to implement the RFID based SWM monitoring system.

As per the DPRs, of eight[154] out of the 14 ULBs (excepting Chhatarpur) these 08 ULBs had a requirement of 3.29 lakh RFID tags, while the DPRs of the four test-checked ULBs[155] did not have any assessment of

[154] *Chatra: 13,734, Deoghar: 67,651, Garhwa: 13,000, Giridih: 25,000, Jhumritelaiya & Koderma: 20,000, Pakur: 15,354 and Ranchi: 1,73,767.*

[155] *Chakradharpur: 8,628, Dumka: 9,665, Jugsalai: 10,771 and Medininagar: 34,179 (no. of premises covered)*

requirements[156], though these ULBs had 63,243 premises, as on March 2022. The DPR of the Jamtara NP was not produced to Audit, though requisitioned for.

Audit observed that 1.38 lakh RFID Tags[157] had eventually been purchased (2018-22), by six ULBs, at a cost of ₹ 51.72 lakh[158] (RMC did not provide purchase cost of RFID tags), which were less than the requirements projected in the DPRs. Further, the purchased RFID tags had not been activated, as of March 2022.

The ULBs replied (November 2022 and June 2023) that, while the purchased RFID tags had been activated by the Concessionaires, they were non-functional, as of March 2022. Thus, tracking of the day-to-day operations of MSW activities, through the RFID system, had not been ensured in the test-checked ULBs. As such, the expenditure of ₹ 51.72 lakh, incurred on purchase of RFID tags, by six of the test-checked ULBs (except RMC), had proved wasteful.

The Department accepted (July 2023) the facts and stated that 'ULBs had been directed (July 2023) to purchase the required number of RFID tags, install them in households and activate them, for monitoring of SWM activities'.

Recommendation 19: State Government may fix responsibility on concerned officials of the ULBs responsible for domestic bins lying idle in the stores, partial installation of community bins, uninstalled Refuse bins, idle transportation vehicles, SWM machines lying idle since purchase and non-functional RFID Tags and transfer stations. ULBs may ensure creation of awareness amongst the local public about the Vermi/ Aerobic Bio Composting, for effective utilization of Composters.

Recommendation 20: State Government may ensure that responsibility is fixed by RMC on concerned officials of the ULB who are responsible for payments being made to the suppliers for supply and installation of smart bins without bin level sensors. The recovery of such amounts paid may be monitored. It may be ensured that RMC is not just engaging in peripheral activities, such as purchasing of bins in large numbers. RMC may also ensure timely installation of BLSs in the smart bins, for their efficient functioning.

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156 *Information in respect of requirement of RFID tags was not furnished by Jamtara NP.*

157 *Deoghar: 15,000, Giridih: 25,000, Jhumritelaiya & Koderma cluster: 12,577, Pakur: 8,117 and Ranchi: 77,159.*

158 *Deoghar: ₹ 15.00 lakh, Giridih: ₹ 17.24 lakh, cluster ULBs Jhumritelaiya & Koderma ₹ 12.58 lakh and Pakur: ₹ 6.90 lakh.*

Chapter X
Construction and Demolition Waste

Chapter X

Construction and Demolition Waste

10.1 Introduction

Construction and Demolition (C&D) waste refers to the waste comprising of building material, debris and rubble, resulting from construction, re-modelling, repair and demolition of a civil structure. C&D waste is utilised for making bricks, pavement blocks and construction material (such as aggregates *etc).* It generally constitutes about 10-20 *per cent* of the total urban solid waste. A report of the Hon'ble Supreme Court's expert committee in 1999 and the SWM Rules, 2016, recommended that the ULBs should facilitate separate collection and transportation of C&D waste.

Further, Rule 9(1) of the C&D Waste Management Rules, 2016, envisaged that the State should prepare its policy document, with regard to management of C&D waste, within one year from date of final notification (March 2016) of these rules. However, the Department had prepared (October 2019), the Jharkhand C&D Waste Policy, 2019, after a delay of over two years.

10.2 Deficiencies in management of C&D waste

The following deficiencies were noticed in the management of C&D waste, during FYs 2017-22, in the 14 test-checked ULBs:

- ***Annual Report of C&D waste:*** As per clause 15 of the Jharkhand C&D Waste Policy, 2019, all service providers/ bulk waste generators were required to submit monthly reports, on the quantity of C&D waste, transported, processed and sold, to the concerned local bodies. The ULBs were to consolidate these monthly reports and submit annual reports, in regard to C&D waste, to the JSPCB, by 30th May of each year. JSPCB, in turn, was to forward these reports to the CPCB, before 31st July of each financial year, for consolidation. The Ministry of Housing & Urban Affairs (MoHUA) also directed (July 2018) ULBs to submit data regarding C&D waste, to the JSPCB, for finalisation of the Annual Compliance Report by the CPCB. Further, as per the C&D Waste Management Rules, 2016, ULBs were required to keep track of the generation of C&D waste within their respective jurisdictions, establish a data base in this regard and update it once in a year.

Audit observed that none of the 14 test-checked ULBs had submitted Annual Reports/data of C&D waste, to the JSPCB. Further, 12 of the test-checked ULBs (*i.e.,* excepting Koderma and Ranchi) did not have data on the C&D waste generation in their jurisdictions.

- ***Publication of status of C&D waste in State:*** The Jharkhand C&D Waste Policy envisaged that: (i) a detailed report, regarding C&D waste, be compiled by the Department, on the basis of the information received from

ULBs and different Departments and (ii) it should be displayed on the Departmental website.

Audit observed that such data had not been prepared by 12 out of the 14 test-checked ULBs (*i.e.,* excepting Koderma and Ranchi). As such, a compiled report of C&D waste, could not be displayed on the Department's website.

The Department accepted the facts and stated (July 2023) that the test-checked ULBs had been directed (July 2023) to: (i) maintain data on generation of C&D waste and (ii) submit annual reports, to the JSPCB, for preparation of a compiled report on C&D waste, to be displayed on the website.

- ***Identification of dump site:*** The Jharkhand C&D Waste Policy envisaged that the ULBs identify and publish the list of sites, for collection and processing of C&D waste, within 18 months of the notification of the policy (October 2019).

In reply to audit queries (July 2022 to December 2022), in this regard, five[159] out of 10 test-checked ULBs replied that dumpsites for C&D waste had been identified. However, only one (Koderma NP) ULB, out of these five ULBs, was found to have published the name and location of one site. The remaining nine ULBs accepted that no dumpsites for C&D waste had been identified, as of December 2022, even after a delay of 15 months from the due date of identification of sites, for collection and processing of C&D waste.

The Department accepted the facts and stated (July 2023) that the ULBs had been directed to identify and publish the list of sites, for collection and processing of C&D waste.

- ***Ward-level debris deposit:*** As per the SWM Manual, ward-level debris deposit sites were to be created. Containers were to be provided at such locations and a small collection charge could be levied for receiving such waste and transporting it for disposal. Rates could be prescribed, for such collection, by the concerned ULBs and contracts could be given for managing such sites.

Audit observed that facilities for collection and transportation of debris, at the ward-level, had not been established by any of the test-checked ULBs. In the absence of a mechanism for collection and disposal of debris, C&D waste was seen to have been dumped in the low-lying areas or along the roadside (**Exhibit 10.1**), during joint physical verification, conducted along with ULBs officials, during September 2022 and November 2022.

[159] *Deoghar; Jhumritelaiya, Jugsalai, Koderma and Ranchi.*

Exhibit 10.1: C&D waste lying uncovered, in the dumpsite at the Jugsalai MC *(photograph taken on 07 September 2022)*

C&D waste lying on the road side, at the Medininagar Municipal Corporation. (Photograph taken on 20 September 2022)

Chatra MC (photograph taken on 22 November 2022)

The Department accepted the facts and stated (July 2023) that the test-checked ULBs had been directed (July 2023) to create facilities for collection and transportation of debris, at the ward level, and to avoid dumping of C&D waste in the low-lying areas or the roadside.

As per clause 8 (n) of the Jharkhand State C&D Waste Management policy, ULBs are responsible for taking penal action for non-compliance of the

policy. Audit observed that, eight out of the 14 test-checked ULBs[160], had levied penalties for illegal dumping of debris, though they had not notified any dumpsites for C&D waste. Six ULBs (Chakradharpur, Chatra, Chhatarpur, Garhwa, Giridih and Jamtara) had not imposed such penalties.

The Department accepted the facts and stated (July 2023) that the ULBs had been directed to impose penalties for illegal dumping of debris.

Recommendation 21: State Government may ensure identification and publication of sites by ULBs, for disposal of construction and demolition (C&D) waste. State Government/JSPCB and ULBs, may also ensure maintenance of a database of C&D waste.

[160] *Deoghar, Dumka, Jugsalai, Jhumritelaiya, Koderma, Medininagar, Ranchi and Pakur.*

Chapter XI
Monitoring

Chapter XI

Monitoring

11.1 Lack of monitoring

Section 7.1 of the MSWM Manual envisaged that a comprehensive monitoring and evaluation system should be adopted, for assessing progress towards meeting the targets laid down in the MSWM plan and for monitoring successful implementation of the plan. Also, the monitoring system so adopted should ensure: (i) regular collection of data (ii) analysis of the information so collected (iii) initiation/proposing of corrective measures and (iv) support to the planning and implementation process. Audit noticed the following shortcomings in the monitoring of SWM activities, at all levels, during FYs 2017-18 to 2021-22, which had affected the progress of projects.

11.1.1 State level monitoring

Rule 24 of the SWM Rules, 2016, envisages that the LB shall submit its Annual Report (AR), containing detailed information regarding SWM services, *viz.,* the quantity of waste generated, collected and processed; facilities available for the management of waste; details of landfill sites *etc.,* to the Jharkhand State Pollution Control Board (JSPCB) and to the Director of Municipal Administration (DMA) of the State, on or before the 30 June every year.

The JSPCB was required to prepare the consolidated ARs and submit them to the Central Pollution Control Board (CPCB) and MoHUA, along with the status of implementation of the SWM Rules and the action taken against non-complying LBs, by the 31 July of each year. The consolidated AR, with the recommendations, if any, was to be reviewed by the Central Monitoring Committee (CMC), during its meetings.

Audit noticed that JSPCB had sought (April 2019) ARs from 46 ULBs (including the 14 test-checked ULBs), out of 50 ULBs, for FYs 2016-17 to 2018-19, for submission to the CPCB, after two years of notification of the Rules. Further, JSPCB had submitted (July 2019) consolidated ARs, for FYs 2016-17 and 2017-18, containing information of only 42 ULBs, to the CPCB. However, the ARs did not have details of: (i) the quantity of waste generated, collected and processed and (ii) facilities available with the ULBs. This was because the ULBs/the Department had not provided the required data to the JSPCB.

Thereafter, JSPCB had been submitting the consolidated ARs of 42 ULBs (including 13 of the test-checked ULBs, except Chhatarpur), to the CPCB, on a regular basis, with the required details, since FY 2018-19. The remaining eight ULBs[161] (out of 50 ULBs of the State) had not submitted their ARs to the JSPCB, for any of the financial years.

Thus, the consolidated ARs, comprising of details of the SWM activities of all 50 ULBs of the State, could not be made available to the CPCB, in complete form, for review, thereby defeating the purpose of submission of Annual Reports.

The Department accepted the facts and stated (July 2023) that the concerned ULBs had been directed (July 2023) to submit ARs of SWM activities each year.

11.1.2 District level monitoring

Rule 12 of the SWM Rules, 2016, envisages that the Deputy Commissioner (DC) shall review the performance of local bodies, at least once in a quarter, in regard to waste segregation, processing, treatment and disposal, and take corrective measures, in consultation with the Commissioner or the DMA/LBs or the Secretary of the Department.

As per paragraph 12.4 of the SBM Guidelines, 2014, a District Level Review and Monitoring Committee (DLRMC) was to be constituted, with a view to fulfilling the objective of ensuring satisfactory monitoring of projects, under the Chairpersonship of a Member of Parliament.

Further, in the light of a judgment of the Hon'ble NGT, the Department instructed (June 2019) constitution of another District level SWM committee[162], headed by the DC, for compliance of different SWM Rules, 2016. The meeting of the Committee was to be convened every month and the report of the meeting was to be sent to the JSPCB.

Audit observed that the DLRMC had not been constituted, in any district, in which the test-checked ULBs were located (as on 31 March 2022). District level SWM Committees were also not found to have been constituted, in any district, in which the test-checked ULBs were located, as of March 2022. However, the DC of East Singhbhum district, had constituted (August 2022) a Committee for monitoring of SWM activities, being carried out by the concerned ULBs. The DC, Koderma district, had also instructed

[161] *Bachra, Badki Saraiya, Barharwa, Chhatarpur, Dhanwar, Domchanch, Hariharganj and Sri Banshidhar Nagar.*

[162] *Comprising of the Municipal Commissioner/Executive Officer; Civil Surgeon; Divisional Forest Officer; Executive Engineer, Water Resources Department; District Agriculture Officer; Sub-Divisional Officer; and Regional Officer, JSPCB.*

(September 2022) the Koderma NP, to constitute a District-level SWM committee. However, no information, in regard to constitution of the committees and the meetings, if any, convened, was furnished to Audit.

Due to non-constitution of district-level committees, proper monitoring of SWM activities was found lacking in the 14 test-checked ULBs, which had led to delays in the completion of SWM projects, besides shortcomings in the collection, segregation and disposal of MSW as discussed in ***Chapters VI, VII and VIII***.

In the exit conference (July 2023), the Director, SUDA, stated that the District level Review and Monitoring Committee and District level SWM Committee, had already been established and notified by the Department. The Department further stated (July 2023) that directions had already been issued (June 2019) to all DCs, to constitute District level Joint Waste Management Committees, for smooth implementation and monitoring of SWM in the district.

The reply of the Department is not acceptable, as no such committee was found to have been constituted in the districts of the test-checked ULBs. The reply was also silent on the reasons behind non-constitution of these committees, in the districts in which the test-checked ULBs were located, despite the direction of the Department, which had been issued four years ago.

11.1.3 ULB level monitoring

The Department vide its resolutions directed (August 2014 and May 2018) all ULBs to constitute a 10-member[163] Sanitation Sub-Committee (SSC), in each ward, under the Chairmanship of the Ward Councillor. The Committee was required to: i) ensure a fixed time for cleaning and lifting of solid waste ii) intimate the ULB about the solid waste that had been dumped in public places iii) assist in collection of user charges and iv) decide the places for lifting of MSW, in their wards.

Audit observed that SSCs had not been constituted in the 13 test-checked ULBs, although ward councillors were available for chairmanship of these committees, during FYs 2017-18 to 2021-22. At one ULB (*i.e*., the Jugsalai MC), however, ward councillors were not available and an SSC could not be constituted therein.

[163] *The Ward Councillor as the Chairperson; two citizens of the ward, nominated in the General meeting; two representatives of businessmen category, nominated in a General meeting; two representatives of the SC/ST category; two representatives of women category and one nominated Staff of the ULB.*

Due to non-constitution of the said committee, the test-checked ULBs lacked the feedback of the citizens, through the SSCs, for carrying out the SWM activities.

The Department stated (July 2023) that: (i) SSCs had been constituted in all ULBs, except in eight newly formed ULBs (ii) necessary action would be taken for active participation of the SSCs in SWM activities and (iii) directions had also been issued (July 2023) to the new ULBs, for formation of SSCs.

The reply is not acceptable, as the test-checked ULBs had confirmed non-formation of SSCs therein.

11.1.4 Social audit of SWM

As per Section 123 of JMA, 2011, the State Government or the Municipality may provide for social audit of the day-to-day accounts of the municipality, in the manner prescribed, in the Social Audit Manual.

Further, to ensure transparency in administration and decision making, in each scheme, the State Government instructed (August 2014) the ULBs, to conduct social audit of the schemes, taken up by the ULBs, through their Ward/Wards committees, who were to submit their reports, in this regard, to the ULBs. Subsequently, the ULBs were to submit the compiled social audit reports, to the Department.

Audit observed that Ward/Wards Committees had not been constituted in 12 out of the 14 test-checked ULBs (*i.e.,* excepting the Medininagar Municipal Corporation and the Koderma NP) and, as such, social audit of SWM had not been conducted, during FYs 2017-18 to 2021-22, in these 12 ULBs. Although Ward/Wards Committees had been constituted in the other two ULBs, social audit had also not been conducted therein, during FYs 2017-18 to 2021-22.

Thus, social audit of SWM had not been ensured, by the 14 test-checked ULBs and the purpose of monitoring, tracking, analysing and evaluating government performance on SWM activities, through social audit, was defeated.

The Department accepted the facts and stated (July 2023) that the ULBs had been directed (July 2023) to conduct social audit of SWM, for monitoring, tracking, analysing and evaluating the performance of the Government.

11.1.5 Non-inclusion of third party evaluation

Paragraph 12.2 of the SBM Guidelines, envisages that third party evaluation is to be undertaken during the course of implementation of SWM activities, to affect mid-term corrections and align the Mission for achieving its objectives. Further, as per Section 4.5.3 of the MSWM Manual, the

construction of a sanitary landfill is a specialised activity that requires continuous coordination between the design engineer and the construction agency. Supervision of construction activity and third party evaluation of construction quality and adherence to design, is therefore, required.

However, Audit observed that no third party evaluation, for mid-term corrections, had been undertaken, during FYs 2017-18 to 2021-22, by the State Government, as well as by the test-checked ULBs, although SWM projects of five of the test-checked ULBs, had progressed, ranging between 19 and 85 *per cent* (as discussed in ***Paragraph 7.1***).

The Department stated (July 2023) that PMCs had been appointed for monitoring and evaluation of SWM projects and for mid-term corrections.

The reply is not acceptable, as PMCs had not been appointed in eight ULBs[164], out of the 14 test-checked ULBs.

11.1.6 Citizens Charter

As per Clause 7.2 of the Manual on MSWM, citizens should be provided an opportunity to report issues related to the provision of MSWM services. Further, a citizen's charter should be developed, to inform citizens about the type of services provided and a complaint redressal process should be implemented in the ULBs.

Audit noticed that the Department had notified (June 2016) the Citizen's Charter for 13 services, including two services[165] relating to SWM activities, with a vision to achieving 100 *per cent* performance, in regard to collection and scientific disposal of solid waste, dead animals and general cleanliness, by October 2019.

Audit noticed that, although removal of dead animals was a routine work of the ULBs, none of the test-checked ULBs had ensured 100 *per cent* collection of MSW and its scientific disposal (except for the Deoghar Municipal Corporation, in FY 2021-22), as of March 2022. Thus, the vision of the Department, in regard to 100 *per cent* collection and scientific disposal of solid waste, had not been achieved by the test-checked ULBs.

The Department stated (July 2023) that ULBs had already improved their collection efficiency and now the entire focus was on improving the processing efficiency. Infrastructure development, for processing and disposal, had already been taken up and, in most of the ULBs, it was on the verge of completion.

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[164] *Chakradharpur, Chatra, Chhatarpur, Deoghar, Dumka, Garhwa, Jugsalai and Medininagar*

[165] *Removal of dead animals (within one day) and cleanliness of general nature (within three working days).*

The reply is not acceptable, as none of the test-checked ULBs had ensured 100 *per cent* collection of MSW and its scientific disposal (except for the Deoghar Municipal Corporation, in FY 2021-22), as of March 2022. Further, the reply was not supported by the latest data, showing improvement in the collection efficiency as compared to the FY 2021-22.

11.1.7 Project Monitoring Consultancy

As per Article 5 of the concession agreement, the Department/ULBs were to appoint a Project Monitoring Consultant (PMC), for: (i) management of the bid process (ii) monitoring of SWM projects, during their construction and O&M phases (for five years) (iii) smooth implementation and operation of the projects (iv) random checks of collection and transportation works and (v) testing of MSW, at the processing and landfill sites.

The PMC was required to: (i) act on the behalf of ULB, regarding all contract with the Concessionaire (ii) provide the services of an expert, to check the quality and the workmanship, during establishment of the waste processing facilities and (iii) submit to the ULB, fortnightly progress reports, stating the daily progress, slippage in construction activities *vis-à-vis* the planned construction and photographic records of the progress of work.

Audit observed that:

- PMCs had been appointed (between May 2016 and January 2020) in seven ULBs[166]. However, the Deoghar Municipal Corporation had appointed (January 2018) a PMC, only for monitoring of the construction phase of its SWM projects.
- In four ULBs[167] PMCs had not been appointed, due to non-appointment of concessionaires. The remaining three ULBs (Chakradharpur, Chatra and Garhwa) had not appointed PMCs, although the Concessionaires had been appointed (between the period November 2017 and November 2018).

Thus, PMCs had not been appointed in three of the test-checked ULBs, for proper monitoring of SWM activities, resulting in slow progress of infrastructure work. Besides, the PMCs appointed in seven ULBs, had not ensured: (i) construction of waste processing facilities, with mandatory EC/CTE/CTO (ii) 100 *per cent* collection of the waste generated (iii) segregation and transportation of the collected waste and (iv) proper disposal of waste, as discussed in the earlier chapters of the report.

The Department accepted the facts and stated (July 2023) that the appointment of PMCs, for proper monitoring of SWM activities, in the concerned ULBs, was in progress.

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[166] *Deoghar, Giridih, Jamtara, Jhumritelaiya & Koderma, Pakur and Ranchi.*
[167] *Chhatarpur, Dumka, Medininagar and Jugsalai.*

The above instances indicated lack of basic monitoring by ULBs and district/State level authorities, for ensuring compliance with statutory requirements, which posed a serious threat to the environment, besides carrying the risk of health hazards.

Recommendation 22: State Government may ensure submission of annual reports of Solid Waste, by all 50 ULBs of the State. State Government may also ensure that District/ULB level Committees are constituted, as an effective institutional mechanism for monitoring the implementation of SWM plans.

Ranchi
The 20 May 2024

(ANUP FRANCIS DUNGDUNG)
Accountant General (Audit) Jharkhand

Countersigned

New Delhi
The 22 May 2024

(GIRISH CHANDRA MURMU)
Comptroller and Auditor General of India

Appendices

Appendix 1

(*Reference: Executive Summary*)

Objections raised in previous Annual Technical Inspection Reports on Local Bodies

Sl. No.	Para No.	Details of objections
ATIR on LBs for the year ended 31 March 2013		
1.	5.1.7.2	The Grants made available (2009-10) could not be utilised till September 2013 and the closing balance (excluding the amount of ₹ 2.25 crore earned as interest over the years) of the Ranchi Municipal Corporation, as on 30 September 2013, was ₹ 1.97 crore.
2.	5.1.7.3	Out of the total grants, amounting to ₹ 20.56 crore, received for implementation of the SWM project, a sum of ₹ 47.29 lakh was diverted towards payment of Consultancy Fees to the PMC-cum-TA. The order of the competent authority/circumstances under which the amount was diverted, were not intimated to audit.
3.	5.1.8.7	Only ₹ 5.46 crore could be collected by the Concessionaire against the total billable user charges, amounting to ₹ 18.52 crore, as per the data (indicating the amounts collected from different wards on a daily basis) made available to Audit, by the Concessionaire. It was further noticed that a sum of ₹ 5.44 crore was remitted to the Escrow account of Ranchi Municipal Corporation against the amount collected, which left an overall shortfall of ₹ 2.21 lakh.
4.	5.1.8.10	Eighty *per cent* payment, amounting to ₹ 4.19 crore, for the period from July 2012 to December 2012, was made to the Concessionaire, without verification of the quantities, by the PMC-cum-TA. Payment was made on the orders of the Chief Executive Officer (CEO), Ranchi Municipal Corporation on the basis of the recommendations of the Medical Officer for Health (MOH), Ranchi Municipal Corporation as PMC-cum-TA was reluctant to perform its duties. The orders of the CEO were not in consonance with the provisions of the agreement and the payment made could not be justified in Audit.
		Irregular payment, amounting to ₹ 3.82 crore, was made, without recommendation/verification of the quantities transported, by the Project Engineer.
5.	5.1.8.11	As per clause 7.2 of the Concession Agreement, Tipping fees was payable to the concessionaire, subject to discharge of its obligations mentioned in the agreement. Further, as per provisions contained in Schedule 2 of the Agreement, regarding payment of Tipping Fee, the PMC-cum-TA was required to certify the quantity of waste transported to the sites-Transfer stations and, then, subsequently, to Composting, Land filling, Brick making plant *etc*. Thus, it was clear that the Tipping Fee was to be paid for carrying out the complete process of collection, transportation, treatment and disposal of MSW. Further, the PMC-cum-TA was also of the opinion that the Tipping Fee, quoted by the Concessionaire, was towards the complete scope of work and not merely for collection and transportation and, as the Concessionaire was undertaking only C&T and did not initiate other activities related to processing and disposal, it was not entitled for claiming the Tipping Fee at the quoted rates. Accordingly, only 50 *per cent* of the amount claimed was being paid initially, which was raised to 80 *per cent,* upon the request of the Concessionaire. However, ultimately all the withheld amounts were released and full payment was started from the month of April 2013 onwards. Thus, even though only the collection and transportation of waste was being performed and the processing & disposal of the waste transported had not yet been started, the entire amount claimed as Tipping Fee was being paid.

6.	5.1.8.11	Further, the basis of releasing withheld amounts/ making payments in full (*i.e.*, improvement in collection and transportation operations), was a farce, as the Concessionaire was intimated, time and again, by the Ranchi Municipal Corporation about the unsatisfactory collection of waste/cleaning of drains in different areas and had to be directed to improve upon its performance.
ATIR on LBs for the year ended 31 March 2016		
1.	4.1.6.5	Service standards (SLBs), after 2013-14, were not notified, either by the state government or by the test-checked ULBs.
2.	4.1.7.1	Poor allocation of funds for SWM.
3.	4.1.11.1	Dhanbad Municipal Corporation diverted ₹ 2.60 crore, from the grant released under JNNURM, for implementation of SWM, on payment of tipping/professional fee. Ranchi Municipal Corporation failed to recover ₹ 2.63 crore, paid to the concessionaire, for installation of a treatment and disposal plant at the landfill sites, as the concessionaire did not construct it. Dhanbad Municipal Corporation paid Tipping fee of ₹ 66.84 lakh, to the Concessionaire, without verifying weighbridge data. Sanitary vehicles, purchased by the firm, for Dhanbad Municipal Corporation, at a cost of ₹ 4.75 crore, remained unutilised, due to failure to transfer the vehicles to the Dhanbad Municipal Corporation.
4.	4.1.11.4	In seven out of 10 sampled ULBs, the vehicles, carrying MSW were never covered, during transportation for disposal.
5.	4.1.12	In eight out of 10 sampled ULBs (except Dhanbad and Jamshedpur), shortages of staff in the sanitation wing affected the supervision in cleanliness of cities.

(***Source: Annual Technical Inspection Reports***)

Appendix 1.1

(*Reference: Paragraph 1.3, Page 2)*

Regulatory framework governing the management of different types of waste

Sl. No.	Type of waste	Regulatory framework
1.	Municipal solid waste	• Solid Waste Management Manual, 2016 • Solid Waste Management Rules, 2016 • Jharkhand State Urban Sanitation Policy, 2018
2.	Bio-medical waste	• Bio-medical Waste Management Rules, 2016
3.	E-waste	• E-waste (Management) Rules, 2016
4.	Hazardous waste	• Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016
5.	Construction and Demolition waste	• Construction and Demolition Waste Management Rules, 2016 • Jharkhand Construction and Demolition Waste Management Policy, 2019
6.	Plastic Waste	• Plastic Waste Management Rules, 2016

Appendix 2.1

(*Reference: Paragraph 2.3, Page 10*)

ULBs selected for the Performance Audit (2017-22)

Sl. No.	Region	District	Sample of ULBs selected			
			Municipal Corporation	MC	NP	NAC
	Central	Bokaro				
		Dhanbad				
1.		East Singhbhum		**Jugsalai**		
2.		Giridih	**Giridih**			
		Hazaribag				
		Khunti				
3.		Koderma		**Jhumritelaiya**	**Koderma**	
		Ramgarh				
4.		Ranchi	**Ranchi**			
		Saraikela-Kharsawan				
5.		West Singhbhum		**Chakradharpur**		
6.	Western	Chatra		**Chatra**		
7.		Garhwa		**Garhwa**		
		Gumla				
		Latehar				
		Lohardaga				
8.		Palamu	**Medininagar**		**Chhatarpur**	
		Simdega				
9.	Eastern	Deoghar	**Deoghar**			
10.		Dumka		**Dumka**		
		Godda				
11.		Jamtara			**Jamtara**	
12.		Pakur		**Pakur**		
		Sahebganj				

Appendix 3.1

(*Reference: Paragraph 3.1, Page 13*)

Roles and responsibilities of different stakeholders in SWM

Sl. No.	Level	Authority	Roles and responsibilities in SWM
1.	**Central Government**	Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Housing and Urban Affairs (MoHUA) and Central Pollution Control Board (CPCB)	Laws and Rules; Policies, Guidelines, Manuals, and Technical Assistance; Financial Support; Monitoring of implementation of laws and rules.
2.	**State Government**	Urban Development & Housing Department and Jharkhand State Pollution Control Board (JSPCB)	State Policy and SWM Strategy; Guidelines, Manuals, and Technical Assistance; Financial Support; Reporting to GoI, Capacity Building of local bodies; Monitoring of implementation of laws and rules by local authorities; Consent to set up treatment and disposal activities
3.	**District**	Deputy Commissioner	Review of performance of ULBs on waste management; Facilitating identification and allotment of suitable land for solid waste processing and disposal facilities.
4.	**Urban Local Bodies**	Municipal Commissioner/ Executive Officer	Providing MSWM services; Preparation of SWM plans; Framing bye-laws; Levy and collection of fees; Financing the SWM system; Creating public awareness; Involvement of the informal sector in SWM.
5.	**Informal Sectors**	Waste recyclers, NGOs, CBOs and private partners	Resource recovery and recycling at different stages; Providing support to the local recycling industry; Involvement of the community; Creating awareness; Collection and transportation of waste; Technology providers.

(Source: MSWM Manual, 2016)

Appendix 3.2

(Reference: Paragraph 3.6, Page 17 &18)

Status of preparation of DPRs for SWM, for ULBs of the State (as of May 2022)

Sl. No. of Project	ULB	Status of DPR	Date of sanction by SHPC/SLTC	Whether sanctioned by GOI	Project cost (₹ in crore)	CAPEX Value (₹ in crore)
1.	Bundu	Prepared	04.11.16	Sanctioned	62.67	6.39
2.	Chaibasa	Prepared	12.12.17	Sanctioned	103.05	10.93
3.	Chakulia	Prepared	17.05.16	Sanctioned	38.10	5.06
4.	Chatra	Prepared	12.12.17	Sanctioned	95.06	8.27
5.	Chirkunda	Prepared	04.11.16	Sanctioned	72.94	8.17
6.	Deoghar	Prepared	04.11.16	Sanctioned	593.4	37.21
7.	Garhwa	Prepared	12.12.17	Sanctioned	105.25	10.24
8.	Giridih	Prepared	17.05.16	Sanctioned	170.88	14.95
9.	Godda	Prepared	04.11.16	Sanctioned	97.77	10.55
10.	Jhumritelaiya	Prepared	12.12.17	Sanctioned	252.43	16.59
	Koderma					
11.	Khunti	Prepared	04.11.16	Sanctioned	96.67	9.94
12.	Latehar	Prepared	17.05.16	Sanctioned	58.56	6.78
13.	Mihijam	Prepared	04.11.16	Sanctioned	72.17	7.89
14.	Pakur	Prepared	17.05.16	Sanctioned	95.18	10.64
15.	Saraikela-Kharsawan	Prepared	17.05.16	Sanctioned	41.98	6.46
16.	Chakradhapur	Prepared	20.02.18	Sanctioned	113.53	11.7
17.	Madhupur	Prepared	20.02.18	Sanctioned	128.19	10.26
18.	Simdega	Prepared	20.02.18	Sanctioned	103.67	9.35
19.	Sahebganj	Prepared	25.01.19	Sanctioned	185.57	18.92
	Rajmahal					
20.	Jamtara	Prepared	12.12.17	Sanctioned	76.19	8.32
21.	Dhanbad	Prepared	17.05.16	Sanctioned	38.10	76.80
22.	Ranchi	Prepared	17.05.16	Sanctioned	269.67	64.00
23.	Lohardaga	Prepared	20.02.18	Sanctioned	212.34	16.7
24.	Chas	Prepared	20.02.18	Sanctioned	311.3	21.27
25.	Hazaribag	Prepared	12.12.17	Sanctioned	321.86	20.69
26.	Adityapur	Prepared	20.02.18	Sanctioned	1,355.05	78.64
	Jamshedpur					
	Mango					
	Kapali					
	Jugsalai					
27.	Ramgarh	Prepared	12.04.22 (SLTC)	Forwarded to MoHUA	------	------
28.	Phusro	Prepared	22.03.21 (SHPC) 12.04.22 (SLTC)	Forwarded to MoHUA	176.03	13.45
29.	Dumka	Prepared	12.04.22 (SLTC)	Forwarded to MoHUA	------	------
30.	Gumla	Prepared	12.04.22 (SLTC)	Forwarded to MoHUA	------	------
31.	Hussainabad	Prepared	Pending with the Department	------	------	------
32.	Medininagar	Prepared	Pending for Administrative approval of the Department	-----	------	------

Sl. No. of Project	ULB	Status of DPR	Date of sanction by SHPC/SLTC	Whether sanctioned by GOI	Project cost (₹ in crore)	CAPEX Value (₹ in crore)
33.	Basukinath	Prepared	Pending for Technical sanction of the Department	-------	-------	-------
Letter of acceptance issued by JUIDCO for DPR Consultant						
34.	Manjhiaon					
	Bishrampur					
	Bansidhar Nagar					
35.	Barharwa					
36.	Dhanwar					
	BadkiSaraiya					
Under tendering						
37.	Mahagama					
Consultant to be appointed by JUIDCO for DPR						
38.	Bachra					
39.	Domchanch					
40.	Chhatarpur					
41.	Hariharganj					

(Source: Information furnished by SUDA)

Appendix 3.3

(*Reference: Paragraph 3.12, Page 26*)

SLB performance indicators and benchmarks pertaining to SWM

Sl. No.	Performance indicator	Unit as percentage of	Benchmark (*per cent*)
1.	Household level coverage of SWM services	Households and establishments covered by daily doorstep collection system	*100*
2.	Efficiency of collection of Municipal Solid Waste	Total waste collected, against the waste generated within the project area	*100*
3.	Extent of segregation of Municipal Solid Waste	Households and establishments that segregate their waste	*100*
4.	Extent of Municipal Solid Waste recovered	Quantum of waste collected, which was either recycled or processed	*80*
5.	Extent of scientific disposal of Municipal Solid Waste	Waste disposed in a sanitary landfill, against the total quantum of waste disposed of in landfills and dumpsites	*100*
6.	Extent of cost recovery in SWM services	Recovery of all operating expenses related to MSWM services that the ULBs were able to meet from the operating revenues of sources related exclusively to MSWM	*100*
7.	Efficiency in redressal of customer Complaints	Total number of MSWM related complaints resolved, against the total number of MSWM complaints received within 24 hours	*80*
8.	Efficiency in collection of SWM user charges	Current year's revenue collected, against the total operating revenue for the corresponding period	*90*

(Source: Handbook of SLB, MoUD, GoI)

Appendix 3.4

(*Reference: Paragraph 3.12.1, Page 27*)

Comparison between National SLBs and State SLBs, for SWM activities, in the test-checked ULBs (FYs 2017-22)

Sl. No.	ULB	In *per cent*											
		Household level coverage of SWM						Efficiency of collection of MSW					
		National	State					National	State				
			17-18	18-19	19-20	20-21	21-22		17-18	18-19	19-20	20-21	21-22
1.	Chakradharpur	*100*	*60*	*100*	*100*	*100*	*90*	*100*	*90*	*100*	*100*	*100*	*100*
2.	Chatra		*90*	*100*	*100*	*100*	*100*		*90*	*100*	*100*	*100*	*100*
3.	Chhatarpur			*25*	*25*	*30*	*30*			*50*	*50*	*55*	*100*
4.	Deoghar		*100*	*100*	*100*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
5.	Dumka		*50*	*35*	*50*	*60*	*80*		*90*	*100*	*100*	*100*	*100*
6.	Garhwa		*25*	*100*	*100*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
7.	Giridih		*50*	*100*	*100*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
8.	Jamtara		*10*	*90*	*90*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
9.	Jhumritelaiya		*20*	*70*	*100*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
10.	Jugsalai		*60*	*25*	*100*	*70*	*100*		*95*	*100*	*100*	*100*	*100*
11.	Koderma		*30*	*35*	*100*	*70*	*87*		*100*	*100*	*100*	*100*	*100*
12.	Medininagar		*50*	*55*	*50*	*50*	*50*		*75*	*100*	*100*	*100*	*100*
13.	Pakur		*40*	*65*	*100*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
14.	Ranchi		*60*	*75*	*80*	*75*	*100*		*100*	*100*	*100*	*100*	*100*
		Extent of segregation of MSW						Extent of MSW recovered					
1.	Chakradharpur	*100*	*10*	*20*	*5*	*10*	*50*	*80*	*10*	*10*	*0*	*0*	*20*
2.	Chatra		*15*	*15*	*5*	*10*	*70*		*10*	*10*	*10*	*10*	*10*
3.	Chhatarpur			*10*	*10*	*15*	*17*			*0*	*0*	*0*	*10*
4.	Deoghar		*50*	*75*	*80*	*80*	*100*		*30*	*20*	*20*	*99*	*100*
5.	Dumka		*10*	*25*	*15*	*40*	*60*		*10*	*0*	*15*	*40*	*52*
6.	Garhwa		*10*	*10*	*30*	*50*	*80*		*10*	*0*	*70*	*70*	*70*
7.	Giridih		*20*	*10*	*70*	*60*	*60*		*10*	*0*	*20*	*10*	*15*
8.	Jamtara		*0*	*10*	*0*	*10*	*50*		*0*	*0*	*0*	*10*	*48*
9.	Jhumritelaiya		*0*	*10*	*5*	*5*	*70*		*0*	*0*	*0*	*0*	*40*
10.	Jugsalai		*0*	*0*	*5*	*25*	*100*		*0*	*0*	*0*	*0*	*100*
11.	Koderma		*10*	*20*	*50*	*50*	*81*		*5*	*0*	*10*	*10*	*10*
12.	Medininagar		*10*	*10*	*10*	*10*	*10*		*5*	*0*	*0*	*0*	*NA*
13.	Pakur		*0*	*5*	*25*	*32*	*60*		*0*	*0*	*25*	*30*	*50*
14.	Ranchi		*5*	*10*	*40*	*45*	*55*		*5*	*0*	*30*	*70*	*70*

Sl. No.	ULB	In *per cent*											
		Extent of scientific disposal of MSW						Extent of cost recovery in SWM services					
		National	State					National	State				
			17-18	18-19	19-20	20-21	21-22		17-18	18-19	19-20	20-21	21-22
1.	Chakradharpur	*100*	*0*	*0*	*0*	*0*	*05*	*100*	*20*	*25*	*15*	*20*	*20*
2.	Chatra		*0*	*0*	*0*	*0*	*NA*		*30*	*30*	*15*	*15*	*10*
3.	Chhatarpur			*0*	*0*	*0*	*20*			*10*	*10*	*15*	*20*
4.	Deoghar		*50*	*80*	*0*	*10*	*10*		*60*	*60*	*20*	*5*	*05*
5.	Dumka		*0*	*0*	*0*	*20*	*0*		*15*	*15*	*15*	*25*	*26*
6.	Garhwa		*0*	*0*	*70*	*0*	*20*		*25*	*25*	*20*	*20*	*20*
7.	Giridih		*0*	*0*	*0*	*0*	*02*		*15*	*10*	*20*	*20*	*25*
8.	Jamtara		*0*	*0*	*0*	*10*	*10*		*10*	*10*	*10*	*20*	*20*
9.	Jhumritelaiya		*0*	*0*	*0*	*0*	*10*		*20*	*15*	*15*	*15*	*20*
10.	Jugsalai		*0*	*0*	*0*	*0*	*100*		*40*	*30*	*45*	*43*	*50*
11.	Koderma		*0*	*0*	*0*	*0*	*0*		*50*	*60*	*85*	*35*	*31*
12.	Medininagar		*5*	*0*	*0*	*0*	*NA*		*5*	*5*	*5*	*5*	*05*
13.	Pakur		*0*	*0*	*0*	*0*	*02*		*40*	*20*	*20*	*25*	*25*
14.	Ranchi		*0*	*0*	*30*	*0*	*05*		*25*	*40*	*30*	*20*	*45*

Sl. No.	ULB	In *per cent*											
		Efficiency in redressal of customer complaints						Efficiency in collection of SWM charges					
		National	State					National	State				
			17-18	18-19	19-20	20-21	21-22		17-18	18-19	19-20	20-21	21-22
1.	Chakradharpur	*80*	*70*	*90*	*95*	*100*	*100*	*90*	*75*	*80*	*70*	*80*	*85*
2.	Chatra		*100*	*80*	*90*	*94*	*95*		*20*	*35*	*10*	*10*	*10*
3.	Chhatarpur			*50*	*50*	*55*	*55*			*10*	*20*	*25*	*26*
4.	Deoghar		*100*	*100*	*100*	*100*	*100*		*100*	*100*	*100*	*100*	*100*
5.	Dumka		*70*	*75*	*90*	*100*	*100*		*40*	*75*	*75*	*80*	*97*
6.	Garhwa		*100*	*100*	*100*	*100*	*100*		*25*	*25*	*30*	*30*	*30*
7.	Giridih		*100*	*90*	*95*	*100*	*100*		*35*	*20*	*80*	*85*	*20*
8.	Jamtara		*100*	*100*	*100*	*100*	*100*		*10*	*10*	*0*	*10*	*10*
9.	Jhumritelaiya		*100*	*100*	*100*	*100*	*100*		*10*	*100*	*100*	*100*	*80*
10.	Jugsalai		*90*	*95*	*85*	*95*	*100*		*40*	*100*	*60*	*60*	*60*
11.	Koderma		*90*	*100*	*100*	*100*	*100*		*80*	*75*	*70*	*62*	*62*
12.	Medininagar		*100*	*100*	*100*	*100*	*100*		*3*	*0*	*0*	*0*	*NA*
13.	Pakur		*100*	*100*	*95*	*100*	*100*		*60*	*0*	*70*	*65*	*70*
14.	Ranchi		*100*	*95*	*100*	*100*	*100*		*95*	*95*	*97*	*80*	*90*

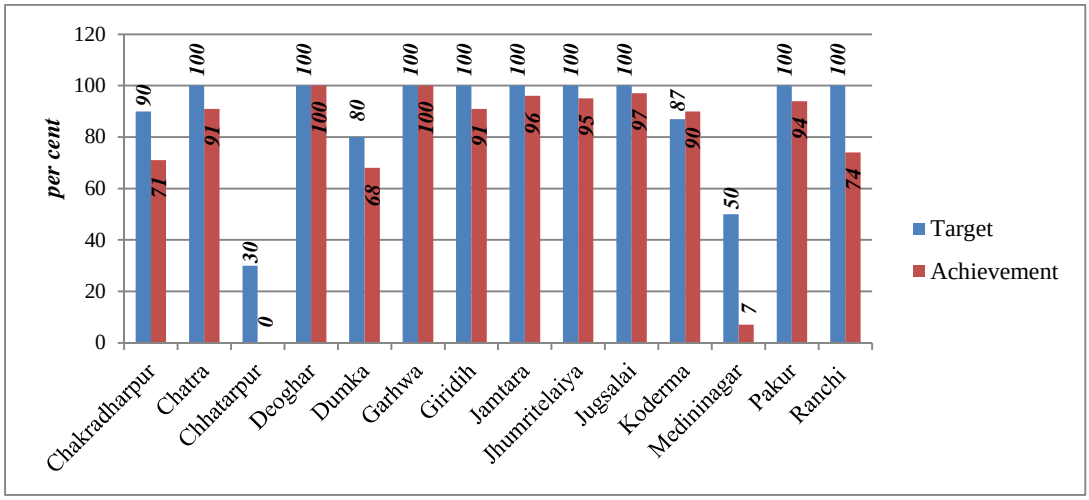
(Source : 'National'- Handbook of SLB, MoUD, GoI and 'State'- notification issued by the Department, GoJ)

Appendix 3.5

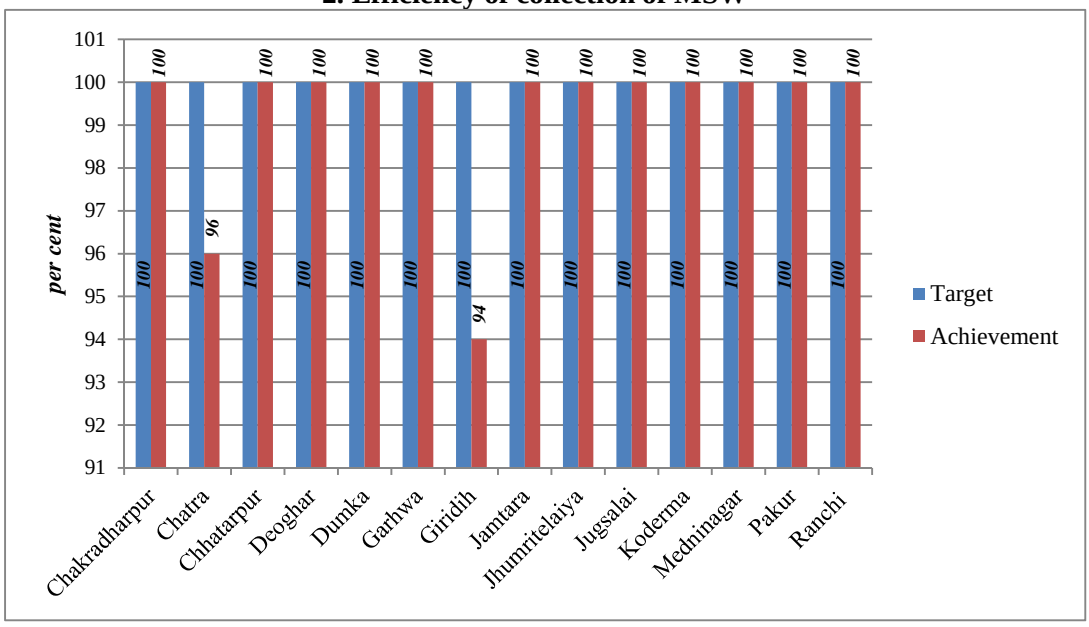
(*Reference: Paragraph 3.12.2, Page 27)*

Achievements *vis-à-vis* targets and benchmarks, in regard to SWM performance indicators, of the 14 test-checked ULBs, during FY 2021-22

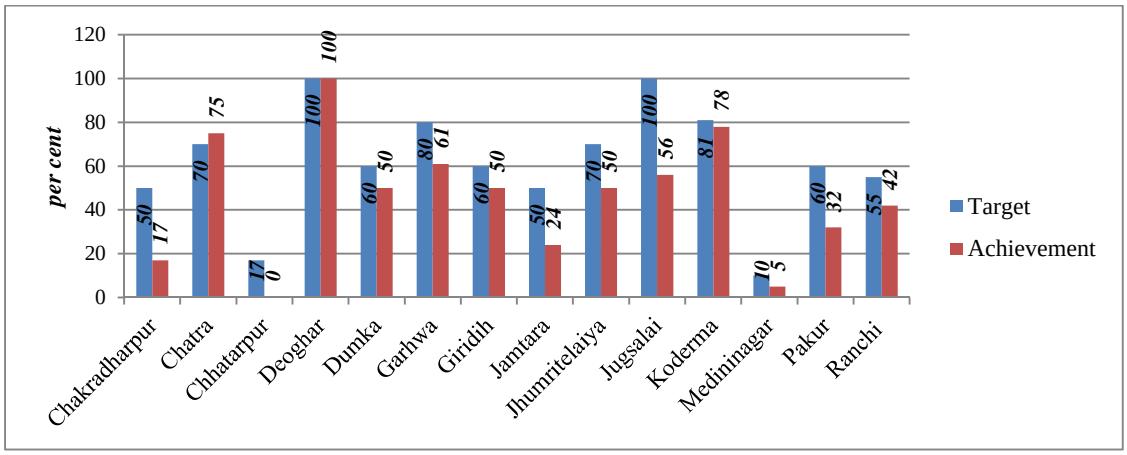
1. Household level coverage of MSW



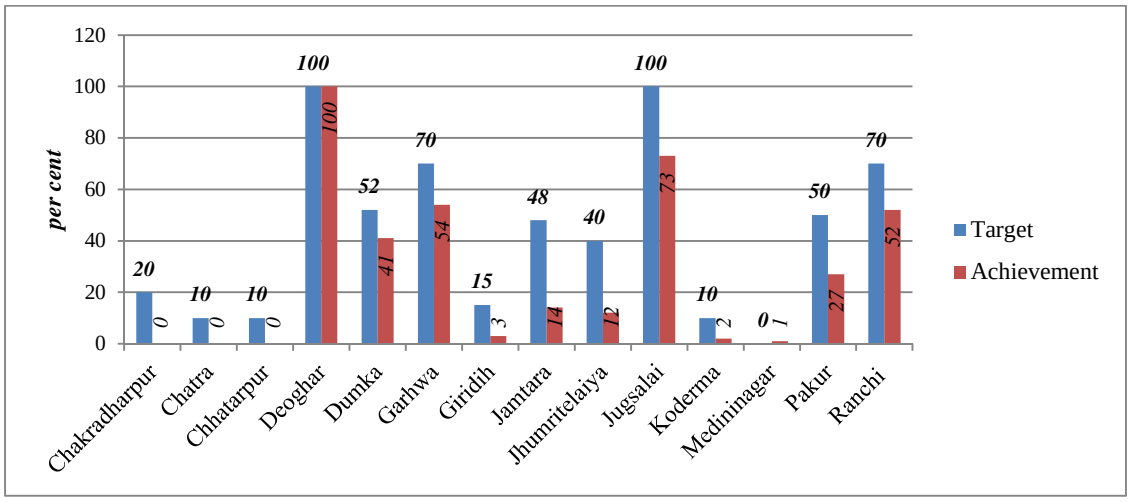
2. Efficiency of collection of MSW



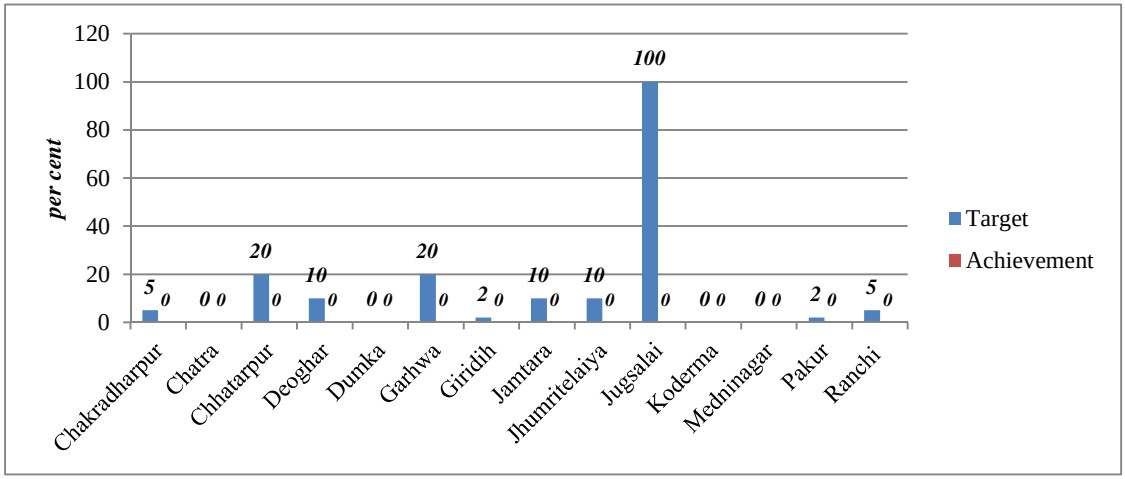
3. Extent of segregation of MSW



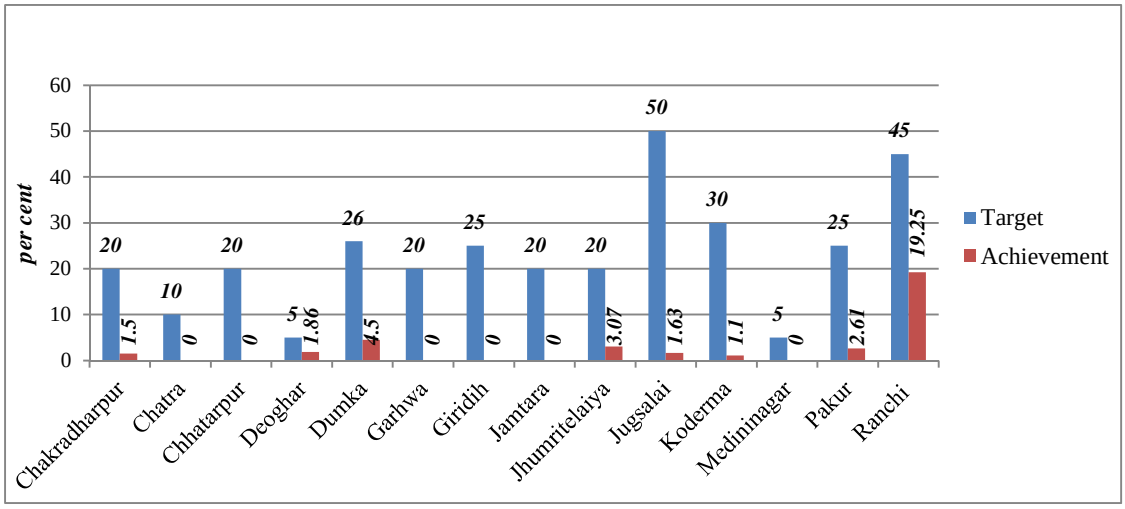
4. Extent of MSW recovered



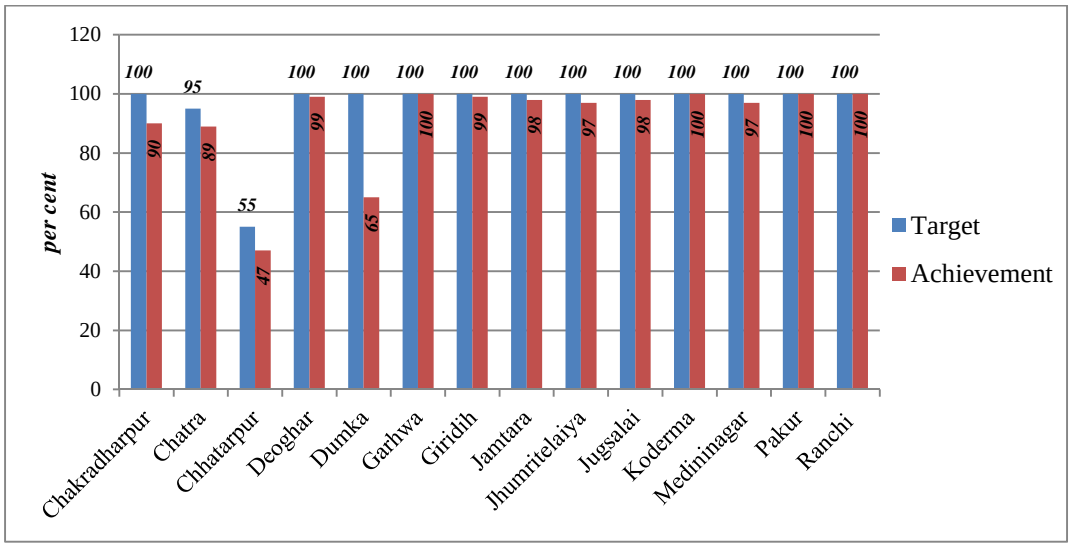
5. Extent of scientific disposal of MSW



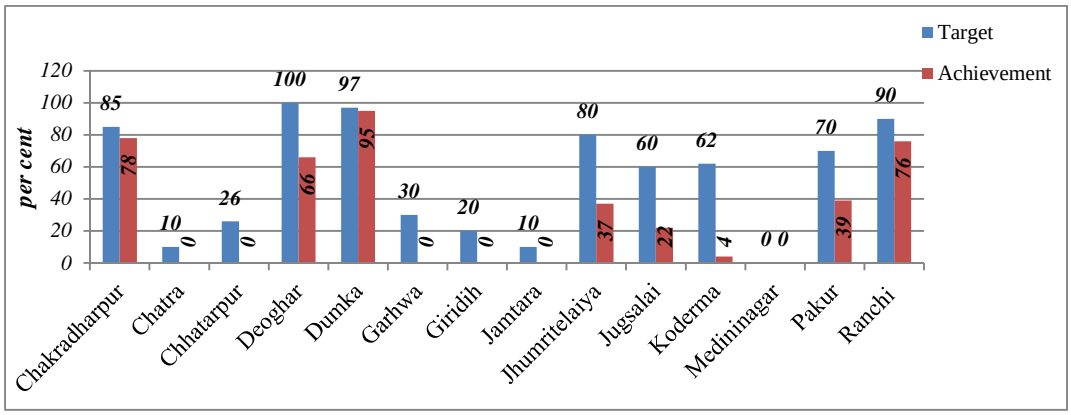
6. Extent of cost recovery in SWM services



7. Efficiency in the redressal of customer complaints



8. Efficiency in the collection of SWM charges



(Source: data provided by the Department, GoJ)

Appendix 4.1

(Reference: Paragraph 4.9.1, Page 34)

Less realisation of minimum SWM user charges, in the 10 test-checked ULBs, during FYs 2017-22

(Amount in ₹)

Sl No	ULB	No of RPs	No of NRPs	No of RPs covered	No of NRPs covered	Minimum user charge to be realised from RPs	Minimum user charge to be realised from NRPs	Total Minimum user charge to be realised	User charge realised from RPs/NRPs	Minimum less realisation of user charge
1.	Chakradharpur MC	35,623	6,349	33,136	3,629	59,64,480.00	21,77,400	81,41,880.00	10,51,000	70,90,880.00
2.	Chatra MC	50,022	2,783	24,490	855	44,08,200.00	5,13,000	49,21,200.00	11,350	49,09,850.00
3.	Deoghar Municipal Corporation	2,37,272	59,976	1,89,683	40,297	4,55,23,920.00	4,83,56,400	9,38,80,320.00	1,29,77,860	8,09,02,460.00
4.	Giridih Municipal Corporation	1,27,422	11,178	1,20,621	10,560	2,89,49,040.00	1,26,72,000	4,16,21,040.00	1,20,56,000	2,95,65,040.00
5.	Jhumritelaiya MC	95,838	12,398	87,159	11,838	1,56,88,620.00	71,02,800	2,27,91,420.00	67,26,485	1,60,64,935.00
6.	Jugsalai MC	43,791	8,932	35,898	7,599	64,61,640.00	45,59,400	1,10,21,040.00	39,49,000	70,72,040.00
7.	Koderma NP	22,100	632	20,800	558	24,96,000.00	1,67,400	26,63,400.00	2,81,905	23,81,495.00
8.	Medininagar Municipal Corporation	1,22,732	27,048	49,136	24,318	1,17,92,640.00	2,91,81,600	4,09,74,240.00	5,05,000	4,04,69,240.00
9.	Pakur MC	47,731	4,595	47,731	4,413	85,91,580.00	26,47,800	1,12,39,380.00	12,81,000	99,58,380.00
10.	Ranchi Municipal Corporation	10,31,951	1,31,895	9,95,698	1,29,148	23,89,67,520.00	15,49,77,600	39,39,45,120.00	22,39,58,000	16,99,87,120.00
Total		**18,14,482**	**2,65,786**	**16,04,352**	**2,33,215**	**36,88,43,640.00**	**26,23,55,400.00**	**63,11,99,040**	**26,27,97,600**	**36,84,01,440.00**

(Source: Minimum SWM charge prescribed in SWM Service Charge Rules, 2016 and data provided by the test-checked ULBs)

Appendix 5.1

(*Reference: Paragraph 5.2, Page 37)*

Modes of communication used for IEC activities, in the test-checked ULBs, during FYs 2017-22

Sl. No.	ULB	IEC Activities								
		Audio	Video	Mass Communication	Wall Paintings	Schools	Hoardings	Street Play/ Other	Pamphlets	Constitution of SHGs, Slum level Federations
Municipal Corporations										
1.	Deoghar	Yes	No	Yes	Yes	Yes	Yes	No	Yes	NA
2.	Giridih	Yes	Yes	No	Yes	Yes	Yes	No	Yes	NA
3.	Medininagar	Yes	No	Yes	Yes	Yes	Yes	No	Yes	NA
4.	Ranchi	Yes	Yes	No	No	No	Yes	No	No	NA
Municipal Councils										
5.	Chakradharpur	Yes	No	No	Yes	Yes	No	No	No	NA
6.	Chatra	Yes	No	No	Yes	No	Yes	No	No	Yes
7.	Dumka	Yes	No	Yes	Yes	Yes	Yes	NA	Yes	NA
8.	Jhumritelaiya	Yes	No	Yes	Yes	Yes	Yes	No	Yes	NA
9.	Garhwa	NA	NA	NA	Yes	Yes	Yes	NA	NA	NA
10.	Jugsalai	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	NA
11.	Pakur	Yes	No	No	Yes	No	No	No	Yes	No
Nagar Panchayats										
12.	Chhatarpur	Yes	No	No	No	No	No	No	Yes	NA
13.	Koderma	Yes	No	Yes	Yes	Yes	Yes	NA	No	NA
14.	Jamtara	NA	NA	NA	Yes	Yes	Yes	NA	NA	NA

(*Source: Information furnished by the test-checked ULBs)*

Appendix 7.1

(Reference: Paragraph 7.1, Page 71)

Status of SWM Projects of ULBs, sanctioned during FYs 2017-22

Sl. No.	No. of Projects	No. of ULBs	Name of ULBs	Remarks	Status of projects
1.	02	02	Deoghar and Chakulia	Concessionaire appointed	Work completed
Total	**02**	**02**			
2.	09	11	Giridih, Godda, Pakur, Mihijam, Bundu, Khunti, Chirkunda, Sahebganj & Rajmahal and Jhumritelaiya & Koderma	Concessionaire appointed	In progress (achievement ranged between 14 *per cent* and 91 *per cent*)
3.	01	01	Madhupur		Work started but zero *per cent* progress.
4.	01	01	Chatra		In progress.
5.	01	01	Ranchi		Work in progress, under CSR
Total	**12**	**14**			
6.	04	04	Dhanbad, Jamtara, Chaibasa and Chakradharpur	Concessionaire appointed	Work not started due to land issue.
7.	02	02	Saraikela and Latehar		On hold due to land issue (achievement ranged between 5 *per cent* and 29 *per cent*)
8.	01	01	Garhwa		Work stopped due to non-compliance with statutory compliances
9.	01	01	Chas		Work not started, due to local hindrances.
10.	01	01	Phusro		Fund not released
Total	**09**	**09**			
G Total	**23**	**25**			
11.	02	06	Adityapur, Jamshedpur, Mango, Jugsalai & Kapali and Simdega	Under tendering	Under tendering
12.	02	02	Hazaribag and Lohardaga		Funds not released
Total	**04**	**08**			
G Total	**27**	**33**			

(Source: Data provided by SUDA)

Appendix 7.2

(*Reference: Paragraph 7.1, Page 73*)

Status of SWM Projects of test-checked ULBs as on 31 March 2022

Sl. No.	Name of ULBs	Name of Concessionaire	Date of agreement	Due Date of completion	Delay in completion of SWM plant as of March 2022	Remarks
1.	Chakradharpur	M/s Chakradharpur MSWM Pvt Ltd	01 June 2020	August 2021	-----	Work not started, due to land issue.
2.	Chatra	M/s Chatra MSWM Pvt Ltd	01 February 2019	April 2020	24 Months	In progress
3.	Chhatarpur	**Consultant yet to be appointed by JUIDCO for DPR**				
4.	Deoghar	M/s Deoghar MSWM Pvt Ltd	16 November 2017	February 2019	37 Months	Completed in December 2021.
5.	Dumka	**DPR of project is pending with MoHUA**				
6.	Garhwa	Garhwa Waste Management Pvt Ltd	9 November 2018	February 2020	30 Months	Work stopped due to non-compliance with statutory environmental compliances.
7.	Giridih	M/s Aakanksha Enterprises	17 March 2017	June 2018	45 Months	In progress
8.	Jamtara	M/s Aakanksha Jamtara Waste Management	May 2018	July 2019	32 Months	Work not started, due to land issue.
9.	Jhumritelaiya	M/s Jhumritelaiya MSWM Pvt Ltd	11 December 2017	May 2019	34 Months	In progress
10.	Jugsalai	**Selection of Concessionaire is under tendering process**				
11.	Koderma	M/s Koderma MSWM Pvt Ltd	11 December 2017	May 2019	34 Months	In progress
12.	Medininagar	**Pending for Administrative approval of the Department**				
13.	Pakur	M/s Aakanksha Enterprises	June 2017	August 2018	43 Months	Delayed
14.	Ranchi	M/s Ranchi MSWM Pvt Ltd)	31 October 2015	January 2017	62 Months	Terminated in June 2019
		M/S Centre for Development Communication	15 January 2021		------	Terminated in April 2022

(Source: Information furnished by the test-checked ULBs)

Glossary	
AR	Annual Report
ATIR	Annual Technical Inspection Report
BG	Bank Guarantee
BWG	Bulk Waste Generator
CBO	Community-Based Organisations
C&D	Construction and Demolition
CMC	Central Monitoring Committee
C & T	Collection & Transportation
CTE	Consent to Establish
CTO	Consent to Operate
CPCB	Central Pollution Control Board
COD	Commercial Operation Date
CSR	Corporate Social Responsibility
DC	Deputy Commissioner
D2D	Door to Door
DLAO	District Land Acquisition Officer
DLRMC	District Level Review & Monitoring Committee
DMA	Directorate of Municipal Administration
DPRs	Detailed Project Reports
E-waste	Electronic waste
EC	Environmental Clearance
EIA	Environment Impact Assessment
FC	Finance Commission
GAIL	Gas Authority of India Limited
GoI	Government of India
GIS	Geographical Information System
GPS	Global Positioning System
GPRS	General Packet Radio Services
IEC	Information, Education and Communication
JPV	Joint Physical Verification
JMAM	Jharkhand Municipal Accounts Manual
JMA, 2011	Jharkhand Municipal Act, 2011
JSPCB	Jharkhand State Pollution Control Board
JUIDCO	Jharkhand Urban Infrastructure Development Company
LB	Local Body
LW	Legacy waste
MA	Mobilisation Advance
MC	Municipal Council
MoEFCC	Ministry of Environment, Forest and Climate Change
MoHUA	Ministry of Housing & Urban Affairs
MIS	Management Information System
MSW	Municipal Solid Waste
MSWM	Municipal Solid Waste Management
MT	Metric Ton
NGO	Non-Government Organisation
NGT	National Green Tribunal
NP	Nagar Panchayat

O&M	Operation and Maintenance
PIP	Person-in-position
PCPA	Post Closure Performance Account
PMC	Project Monitoring Consultant
PG	Performance Guarantee
RDF	Refuse-derived Fuel
3R	Reduce, Reuse and Recycle
5R	Reduce, Reuse, Recycle, Refurbish & Recovery
RFID	Radio Frequency Identification
SBM	Swachh Bharat Mission
SEIAA	State Environment Impact Assessment Authority
SFC	State Finance Commission
SHG	Self Help Group
SHPC	State High Powered Committee
SLTC	State Level Technical Committee
SLMC	State Level Monitoring Committee
SSC	Sanitation Sub-Committee
SPCB	State Pollution Control Board
SUDA	State Urban Development Agency
SWM Rules	Solid Waste Management Rules
SLB	Service Level Benchmark
SS	Sanctioned Strength
SWM	Solid Waste Management
TPD	Ton per day
UD&HD	Urban Development & Housing Department
ULB	Urban Local Body

Definitions

Bio-degradable waste - Any organic material that can be degraded by micro-organisms into simpler stable compounds.

Bio-methanation - A process which entails enzymatic decomposition of the organic matter by microbial action to produce methane rich biogas.

Buffer zone - Zone of no development to be maintained around solid waste processing and disposal facility, exceeding 5 TPD of installed capacity. This will be maintained within total and area allotted for the solid waste processing and disposal facility.

Bulk waste generator - means and includes buildings occupied by the Central government departments or undertakings, State government departments or undertakings, local bodies, public sector undertakings or private companies, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship, stadia and sports complexes having an average waste generation rate exceeding 100kg per day.

Compactor vehicle - Collection vehicle using high-power mechanical or hydraulic equipment to reduce the volume of solid waste.

Composting - A controlled process, involving microbial decomposition of organic matter.

Construction and demolition waste (**C&D**) - The waste comprising of building materials, debris and rubble resulting from construction, re-modelling, repair and demolition of a civil structure. The C&D waste are utilised for making bricks, pavement blocks, construction materials such as aggregates *etc.* C&D waste generally constitutes about 10-20 *per cent* of total urban solid waste. The report of the Supreme Court's expert committee in 1999 and the SWM Rules, 2016 recommended that the ULBs shall facilitate the separate collection and transportation of C&D waste.

Disposal - The final and safe disposal of post-processed residual solid waste and inert street sweepings and silt from surface drains on land, as specified in Schedule I, to prevent contamination of ground water, surface water, ambient air and attraction of animals or birds.

Domestic hazardous waste (DHW) - Discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, *etc*., generated at the household level.

Door to door collection - Collection of solid waste from the doorstep of households, shops, commercial establishments, offices, institutional or any other non-residential premises. It includes collection of such waste from entry gates or designated locations on the ground floors in housing societies, multistoried buildings or apartments, large residential, commercial or institutional complexes or premises.

Dump sites - Land utilised by local body for disposal of solid waste without following the principles of sanitary land filling.

Materials Recovery Facility (MRF) - a facility where non-compostable solid waste can be temporarily stored by the local body or any other entity or any person or agency authorised by any of them to facilitate segregation, sorting and recovery of recyclables from various components of waste by authorised informal

sector of waste pickers, informal recyclers or any other work force engaged by the local body or entity for the purpose before the waste is delivered or taken up for its processing or disposal.

Plastic waste - Any plastic product such as carry bags, pouches or multi layered packaging discarded after use or after their intended use is over.

Primary collection - Collecting, lifting and removal of segregated solid waste from source of its generation including households, shops, offices and any other non-residential premises or from any collection points or any other location specified by the local body.

Processing - Any scientific process by which segregated solid waste is handled for the purpose of reuse, recycling or transformation into new products.

Refuse Derived Fuel - Fuel derived from combustible waste fraction of solid waste like plastic, wood, pulp or organic waste, other than chlorinated materials, in the form of pellets or fluff produced by drying, shredding, dehydrating and compacting of solid waste.

Secondary collection - Picking up waste from community bins, waste storage depots or transfer stations and transporting it to waste processing sites or final disposal site.

Secondary storage - Temporary containment of solid waste after collection at secondary waste storage depots or MRFs or bins for onward transportation of the waste to the processing or disposal facility.

Segregation - Segregation means sorting and separate storage of various components of solid waste namely biodegradable wastes including agriculture and dairy waste, non-biodegradable wastes including recyclable waste, nonrecyclable combustible waste, sanitary waste and non-recyclable inert waste, domestic hazardous wastes, and construction and demolition wastes.

Solid waste - Solid waste means and includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste, other non-residential waste, street sweeping, silt of drains, horticultural/agricultural and dairy waste and treated bio-medical waste, but does not include industrial waste, untreated bio-medical waste, e-waste, battery waste and radio-active waste generated in the area under the local authorities and other entities mentioned in Rule 2.

Tipping fee - A fee or support price determined by the local authorities or any state agency authorised by the State government to be paid to the concessionaire or operator of waste processing facility or for disposal of residual solid waste at the landfill.

Transfer station - A facility created to receive solid waste from collection areas and transport in bulk in covered vehicles or containers to waste processing and, or, disposal facilities.

Transportation - Conveyance of solid waste, either treated, partly treated or untreated from a location to another location in an environmentally sound manner through specially designed and covered transport system to prevent the foul odour, littering, and unsightly conditions.

Treatment - The method, technique or process designed to modify physical, chemical or biological characteristics or composition of any waste so as to reduce its volume and potential to cause harm. (Rule 3(53) of SWM Rules, 2016).

User fee - A fee imposed by the local body and any entity mentioned in rule 2 on the waste generator to cover full or part cost of providing solid waste collection, transportation, processing and disposal services.

Vermi-composting - A process of conversion of bio-degradable waste into compost using earthworms.

Waste picker - A person or groups of persons informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood.