Chapter-II
Performance Audit

Municipal Administration and Urban Development Department

Performance Audit on 'Solid Waste Management'

2.1 Introduction

2.1.1 Definition and Characteristics of Solid Waste

As per the Solid Waste Management Rules, 2016 (SWM Rules), 'solid waste' includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste.

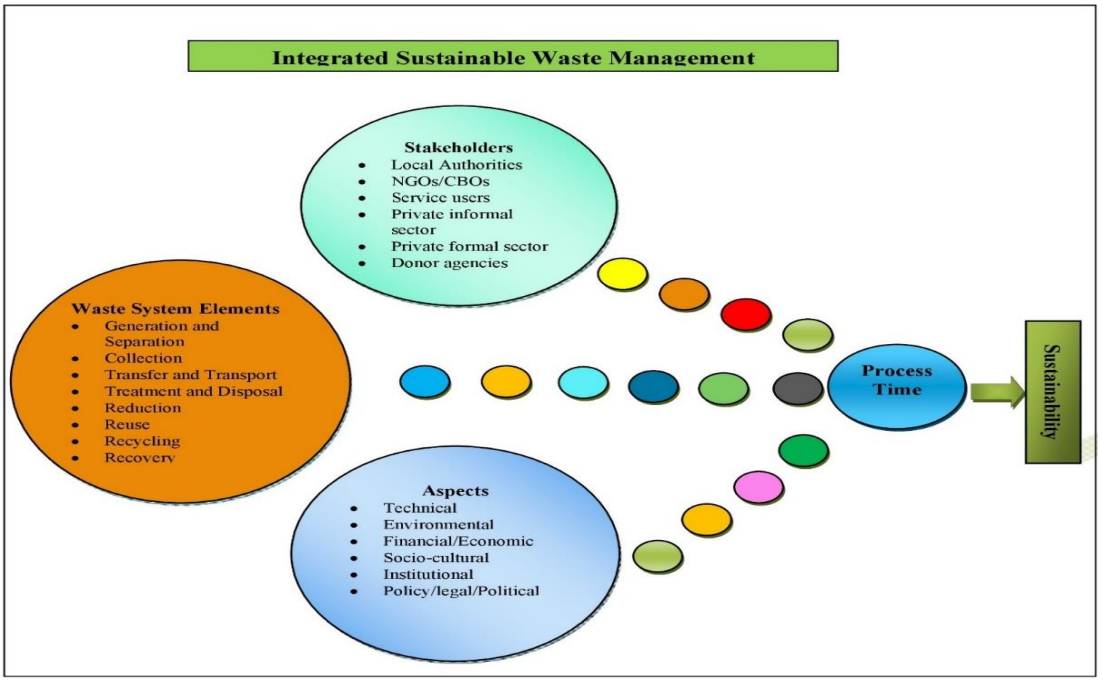
The composition of solid waste depends on a large number of factors like food habits, tradition, lifestyle, climate and income. The composition of solid waste is determined on a wet weight basis at the source of generation and collection points and it consists mainly of a large organic fraction and other recyclable materials having calorific value.

The most important task of waste management is to protect the environment. Poor management of solid waste not only causes land and water pollution but also generates vector and water-borne diseases like cholera, dysentery, jaundice, typhoid and diarrhoea. Therefore, SWM is one of the major environmental areas that needs to be addressed effectively.

2.1.2 Process of Solid Waste Management

The process of integrated sustainable waste management is depicted in ***Chart-2.1***.

Chart-2.1: Process of integrated sustainable waste management



Source: Integrated system waste management document from Urban Waste Expertise Programme 1995-2001

As seen from ***Chart 2.1***, SWM covers reduction, reuse, recycling and recovery. Waste reduction is the process that incorporates ways to prevent materials from ending up as waste before they reach the recycling stage. Reuse is the practice of using material over and again in its current form. Recycling and recovery can be achieved by employing stakeholders, using proper technology for waste processing and economical use of financial resources for proper segregation, collection, transportation, treatment and disposal of solid waste in a target-oriented manner.

2.1.3 Regulatory framework governing management of solid waste

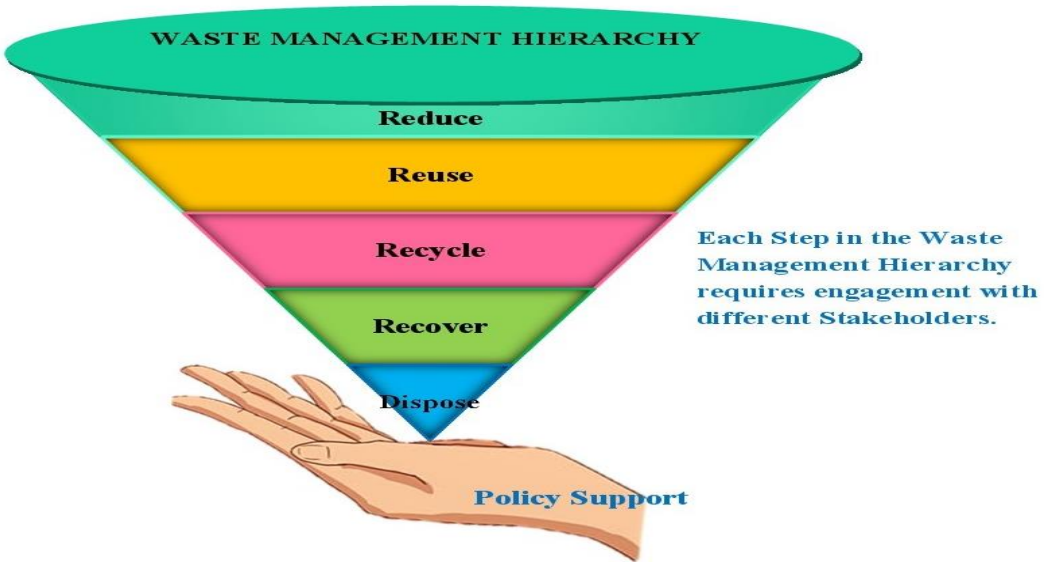
The SWM Rules which were framed during 2016 under the Environment (Protection) Act, 1986, provide a legal framework for disposal and management of solid waste and entrust responsibilities at State level, Urban Local Bodies (ULBs) level and citizens level. Guidelines for preparation of a comprehensive plan for prevention, control or abatement of pollution by using scientific SWM have been issued by Government of India (GoI) from time to time.

These Rules also place certain responsibilities on the generators of waste. Waste generators are responsible for segregating and storing waste in three separate streams *viz*., bio-degradable or wet waste, non-biodegradable or dry waste and domestic hazardous wastes, to be handed over to waste collectors.

2.1.4 Solid Waste Management hierarchy

The waste management hierarchy is shown in ***Chart-2.2*** *as* explained here under.

Chart-2.2: Waste Management Hierarchy



The concept of sustainable solid waste management is crucial to holistic sustainable development, and its essence is encapsulated in the 3 Rs of using natural resources - Reduce, Reuse, and Recycle, thereby minimising waste. These three Rs are also referred to as the 'hierarchy of waste management', implying a preferred order of waste management practices to be adopted, rather than the largely prevalent disposal of all solid wastes in landfills.

Reduce is placed at the top of the hierarchy to show that the best way to deal with waste is to prevent its production, where this is possible to produce less of it. In practical terms, waste reduction conserves resources and decreases efforts in collection and treatment, such as use of reusable glasses and cups, reusable grocery bags, avoiding single use food containers, purchasing in bulks to reduce packaging, *etc*.

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

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

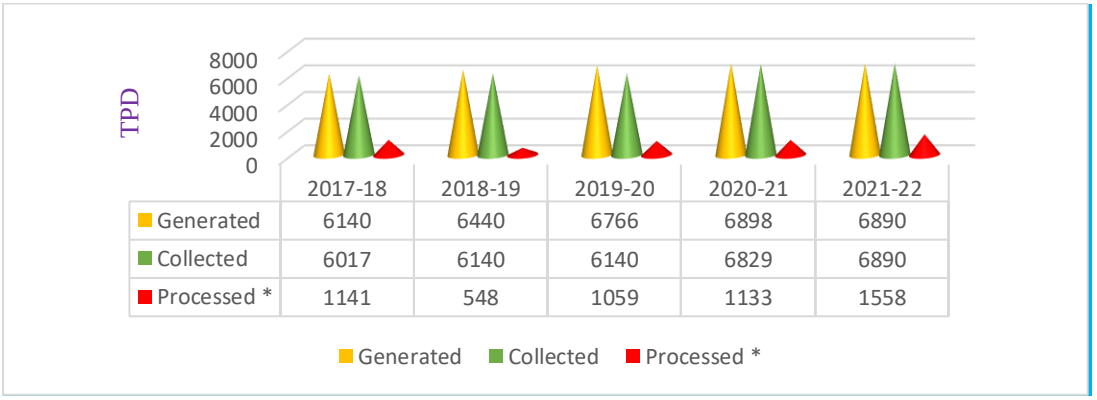
2.1.5 Municipal Solid Waste Management in Andhra Pradesh

SWM is a part of public health and sanitation since it poses a threat to the environment and human life if it is not handled or disposed of properly. In urban areas, ULBs have overall responsibility for SWM.

The total solid waste generation from all ULBs in the State is about 6,890 Tons Per Day (TPD) as of March 2022 as per the departmental records. About 85.89 lakh Metric Tons (MTs) of legacy waste has accumulated in the existing dumping yards. The overall average waste segregation at source in all ULBs is 98.17 *per cent* and overall collection is about 100 *per cent.*

The details of Municipal Solid Waste (MSW) generated, collected and processed by all ULBs in the State during the period 2017-18 to 2021-22 are given in ***Chart-2.3***.

Chart-2.3: Details of MSW generated, collected and processed by all ULBs in the State



Source: Data furnished by Andhra Pradesh Pollution Control Board
** Waste to Compost Plants data only*

For the improvement in the treatment facility, establishment of various treatment plants in Andhra Pradesh as of March 2022 is given in **Table-2.1**:

Table-2.1: Various waste treatment plants in Andhra Pradesh

Particulars	No. of Existing plants	Processing capacity
Waste to Compost plants	28	1,280TPD
Bio-methanation plants	4	175TPD
Waste to Energy plants (WtE)	2	1,800TPD

Source: Data furnished by Commissioner & Director of Municipal Administration

2.1.6 Swachh Bharat Mission-Urban

Swachh Bharat Mission (SBM) is a centrally sponsored scheme launched on 2 October 2014 with the objective to improve the level of cleanliness in both urban and rural areas through waste management activities and achieving Swachh Bharat in all 4,041 towns in India by 2019.

The expected outcome of Swachh Bharat Mission-Urban (SBM-U) was safe management of solid and liquid waste followed by treatment of waste to re-use/ recycle and safe disposal which could lead to reduction of pathogens responsible for transmission of faecal-oral diseases and vector borne diseases. The recycled and reused waste generates immense value for the economy as the waste could be converted into energy through different processes like composting, bio-methanation, bio-gas plants, *etc*. SWM component under SBM-U also refers to a systematic process of waste segregation at various stages *viz*., at source, primary collection, storage, secondary segregation, processing, treatment and final disposal of solid waste.

2.1.7 Administrative control and monitoring of Solid Waste Management

With growing urbanisation and changing lifestyle, generation of waste and its appropriate disposal has become a challenge for the State. The 74th Constitutional Amendment Act, 1992 made provisions for the establishment of ULBs as the third tier of governance with an objective to empower the ULBs to perform functions and implement schemes in relation to 18 subjects specified in the Twelfth Schedule, which *inter alia* included urban planning, regulation of land use, public health, sanitation, conservancy and SWM. Thus, scientific processing and disposal of waste is an obligatory duty of the ULBs.

Role of various authorities in planning, execution and monitoring of municipal SWM is given in **Table-2.2**.

Table-2.2 Role of various authorities in managing Municipal Solid Waste

Name of the Department/ Organisation	Role in implementation of SWM
Secretary, Municipal Administration	Policy framing, monitoring & evaluation
Commissioner and Director of Municipal Administration (CDMA)	The CDMA functions as an interface between the State Government and ULBs. In accordance with the powers conferred under the Andhra Pradesh Municipal Corporation Act (APMC Act) and Andhra Pradesh Municipalities Act (APM Act), the CDMA administers, facilitates, co-ordinates and monitors the ULBs.
State Pollution Control Board (SPCB)	Monitoring of ULBs in implementation of SWM and issue of authorisation to ULBs for operating waste processing facilities including compost yard, Waste to Energy plants and sanitary landfills.

Name of the Department/ Organisation	Role in implementation of SWM
Swachh Andhra Corporation (SAC)	SAC is involved in taking up scientific processing and disposal of municipal solid waste (SWM), Waste to Energy plants under Public Private Partnership (PPP).
ULBs - Municipal Corporations/ Municipalities/ Nagar Panchayats	Implementation of SWM Rules

2.1.8 Organisational set up

The Municipal Administration and Urban Development (MA&UD) Department, headed by the Principal Secretary to Government of Andhra Pradesh (GoAP), oversees the governance of all ULBs. The CDMA functions as an interface between the State Government and ULBs. In accordance with the powers conferred under the APMC Act[60] and APM Act, the CDMA administers, facilitates, co-ordinates and monitors the ULBs. Municipal Commissioner of each ULB is the executive head and is assisted by the Deputy Municipal Commissioner and Assistant Commissioners for the management of the MSW. As per provisions of SWM Rules 2016, the Principal Secretary, MA&UD through Commissioner and Director of Municipal Administration is responsible for preparation of Policy and strategy of SWM in urban area for the State.

Andhra Pradesh Pollution Control Board (APPCB) is entrusted with the implementation of various Rules under Environment (Protection) Act, 1986, in the State. The APPCB is the principal agency for monitoring implementation of SWM in ULBs and issue of authorisation for operating waste processing facilities including compost yard, Waste to Energy plants and sanitary landfills.

2.2 Audit framework

2.2.1 Audit Objectives

This Performance Audit was conducted to assess whether:

- 'Strategy and Planning' of SWM in ULBs is commensurate with the wastes generated and concurrent with the prevailing legal framework,
- Municipal tasks associated with SWM including collection, segregation, storage, transportation, disposal and social inclusion of informal waste workers were effective, efficient and economical,
- Planning, construction, commissioning, operation and maintenance (O&M) of SWM projects in ULBs were effective, efficient and financially sustainable and
- Monitoring and Evaluation (M&E) of SWM system including adequacy of awareness creation, citizen engagement for effecting behavioural change, complaint redressal mechanism for citizens, assessment of environmental impacts and implementation of the 'internal control and monitoring mechanism was adequate and effective'.

[60] Greater Hyderabad Municipal Corporation (GHMC) Act was adopted on 23/02/2015 with certain modifications for the State of Andhra Pradesh under APMC Act

2.2.2 Scope of Audit

The Performance Audit on 'Implementation of SWM in ULBs was carried out during July 2022 to December 2022. The period of audit coverage was from 2017-18 to 2021- 22. It involved examination of records relating to SWM in the Offices of Special Chief Secretary, MA&UD Department, CDMA, SAC, APPCB and in 17 selected ULBs. The list of selected ULBs is given in ***Appendix-2.1***.

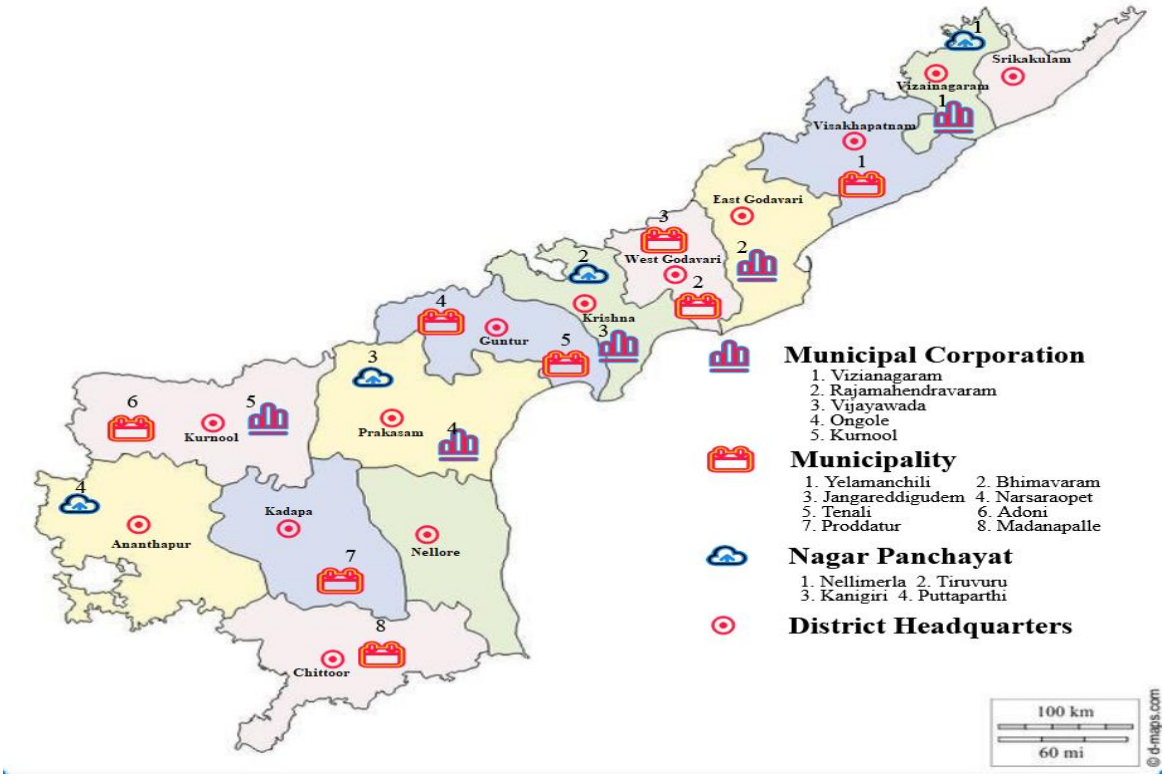
The ULBs are selected on the basis of simple random sampling (Region-wise) method *viz.*, Municipal Corporation, Municipality and Nagar Panchayats and sample is drawn in such a manner that equal representation to each region is also ensured. Five Municipal Corporations (one Corporation from each region), eight Municipalities (10 *per cent* Municipal Councils) and four Nagar Panchayats (five *per cent* Nagar Parishads subject to one Nagar Panchayat from each region) from each region are selected in such a manner that the coverage of population of sampled units is not less than 25 *per cent* of entire urban population as per Census 2011. The categories of ULBs in Andhra Pradesh are given in **Table-2.3**.

Table-2.3: Categories of ULBs in Andhra Pradesh

Type of ULB	Nos.	Sampled ULBs
Municipal Corporation	17	5
Municipalities*	77	8
Nagar Panchayats	29	4
Total	**123**	**17**

**Selection grade-06, Special grade-07, First grade-15, Second grade-30, Third grade-19*

The ULBs selected for Audit have been depicted in the map below:



2.2.3 Audit Criteria

The following Manuals, Rules and Guidelines were referred in conduct of audit and preparation of this Report:

- Manual of Municipal SWM, 2016 issued by GoI in April 2016 and the Solid Waste (Management and Handling) Rules, 2016,
- Construction and Demolition (C&D) Waste Management Rules, 2016,
- Performance parameters set out in Service Level Benchmarking (SLB) Guidelines issued by GoI,
- Instructions, Guidelines, Policies issued by Central Pollution Control Board (CPCB), SPCB, GoI/ State Government on SWM from time to time,
- SBM Guidelines issued by GoI,
- Directions/ Guidelines issued by National Green Tribunal (NGT).

2.2.4 Audit methodology

An Entry Conference was held with representatives of Government, CDMA and SAC on 24 June 2022, in which the Audit objectives, Audit criteria, scope and methodology were explained. The audit methodology involved analysis of documents, responses to audit enquiries, joint physical inspection of sites along with the officials of ULBs, and collection of photographic evidence. An Exit Conference of the Performance Audit was conducted with the Commissioner and Director of Municipal Administration and other officials of the Department on 21 July 2023, wherein the observations in the report were discussed in detail. Departmental replies wherever received are suitably included in the Report. Further, the recommendations given by audit were accepted by the Department.

2.2.5 Acknowledgement

Audit acknowledges the cooperation and assistance extended by the State Government, CDMA, SAC, APPCB and selected ULBs in conducting the Performance Audit.

Audit Findings

2.3 Strategy and Planning

State Government formulated the State Policy in August 2018 with a delay of one year. Only five out of 17 test-checked ULBs had framed bye-laws (December 2022) incorporating the provisions of SWM Rules. Out of 17 test-checked ULBs, only five ULBs obtained authorisation from the APPCB for processing of waste. Quantification and composition of waste generated was not realistically assessed to plan and design Municipal Solid Waste Management system. Instead, general trend of waste generation per capita was followed by ULBs. DPRs were prepared without adhering to the prescribed methodology . State share of ₹ 42.53 crore for SWM activities was not released to the ULBs as of November 2022.

2.3.1 Entities involved in Solid Waste Management

Administration and management of solid waste in India is broadly divided at three levels- Centre, State and ULBs. Other stakeholders that play a crucial role are households, businesses, industries, informal sectors like Non-Governmental Organisations (NGOs), Community-Based Organisations (CBOs), Self-Help Groups (SHGs), *etc*. Involvement of all these stakeholders is necessary at various stages of SWM. The roles and major responsibilities of stakeholders involved in the process of SWM are listed out in ***Appendix-2.2***.

2.3.2 Formulation of State Policy

Rule 11 of SWM Rules 2016 stipulated that Secretary-in-charge, Urban Development Department shall prepare a State Policy and SWM strategy for the State in consultation with stakeholders including representatives of waste pickers, self-help and similar groups working in the field of waste management consistent with these rules, National Policy on SWM and National Urban Sanitation Policy of the Ministry of Urban Development, in a period not later than one year from the date of notification of these rules *i.e.,* 08 April 2016.

However, the State Government formulated the State Policy in August 2018 with a delay of one year. Thus, there was a delay of one year in notifying the State Policy, indicating laxity on the issue of solid waste management in the State and risk of unsystematic solid waste management. Further, there was no demarcation of Policy and separate SWM strategy in the State.

The Government accepted (August 2023) the observation and promised future compliance.

2.3.2.1 Absence of SWM Plan at ULB level

The ULBs shall prepare SWM plan[61] in line with the SWM Rules, 2016 and State SWM Policy within a period of six months from the date of notification of State Policy and submit a copy to respective departments of State Government or agency authorised by the State Government. Further, as per para 1.4.5.1 of MSWM Manual, 2016, estimating future waste generation quantities and composition is critical for developing MSWM plan. Planning horizons for MSW processing, treatment or disposal projects typically extend to 20-30 years; depending on the nature of the facility.

However, none of the test-checked ULBs have prepared the SWM plan in line with SWM Rules, which deprived ULBs the opportunity of adopting a systematic approach to SWM. In the absence of these plans, the planning and selection of infrastructure projects in ULBs was, to a large extent, driven by inadequate availability of funds and without need-based analysis.

Government stated (August 2023) that sanitation plans prepared by some ULBs contained SWM Plans. However, the relevant records were not produced to ensure that sanitation plans included SWM plans.

2.3.2.2 Bye-laws

Rule 15 (e) of SWM Rules 2016 stipulated that ULBs shall frame bye-laws incorporating the provisions of these rules within one year from the date of notification of these rules (*i.e*., by April 2017) and ensuring timely implementation. Audit noticed that only five[62] out of 17 test-checked ULBs had framed bye-laws (December 2022) incorporating the provisions of these rules.

Non-framing of bye-laws would lead to no direction relating to disposal of waste and management of waste, leading to the accumulation of waste in public spaces, creating unsanitary conditions and aesthetic problems. Waste management could also become a haphazard and disorganised process, leading to inefficiencies and waste of resources.

Government stated (August 2023) that directions were issued by the Department to ULBs for framing the bye-laws.

The reply is not tenable as the remaining 12 test-checked ULBs had made Council Resolutions only without detailed bye-laws.

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[61] Arrangements for door to door collection of segregated solid waste from all households; Facilitate formation of SHGs, provide identity cards and there after encourage integration in SWM including door to door collection of waste; Setting up of MRF or secondary storage facilities; Inventories parks and gardens and to study the feasibility for treating horticulture waste separately; Study the requirement for treating segregated bio-degradable with the processing facility like compost plant *etc*., prepare street sweeping plan of daily, or on alternate days or twice a week depending on the density of the population, commercial activity and local situation.

[62] Kanigiri, Madanapalle, Nellimarla, Ongole and Vizianagaram

2.3.2.3 Authorisation from Pollution Control Board

The ULBs shall take necessary action for obtaining authorisation under the provisions of SWM Rules 2016, for setting up waste processing, treatment, or disposal facility, if the volume of the waste exceeds five MTs per day including sanitary landfills from the APPCB.

However, audit noticed that out of 17 test-checked ULBs, only five[63] ULBs obtained authorisation from the APPCB for processing of waste.

Government stated (August 2023) that SAC had awarded waste processing projects to private agencies who had to obtain necessary permissions and clearance from competent authorities for establishment of waste processing facilities in ULBs.

Thus, the Government accepted the observation and promised future compliance.

2.3.3 Quantification and composition of waste

As per clause 1.4.3.3 of MSWM Manual, 2016, each ULB should assess the quantity and composition of waste generated to plan and design MSWM systems. The quantity and composition of MSW generated in the ULB determines collection, processing and disposal options that could be adopted. They are dependent on the population, demographic details, principal activities in the city or town, income level, and lifestyle of the community.

However, no test-checked[64] ULB assessed the quantity and composition of waste generated to plan and design MSWM systems during the period 2017-18 to 2021-22. Instead, the ULBs quantified the waste generated on the general trend of waste generation per capita[65], which was not in accordance with the MSW Manual. Handbook on SLB[66] opined that per capita based assessments are of low reliability.

Government replied (August 2023) that the quantity of waste generated was assessed based on per capita waste generation by considering projected population including floating population of the ULBs. During preparation of DPRs, the composition of solid waste was arrived through quartering method as per CPHEEO[67] Manual on SWM. Further Government added that the processing plants in different ULBs were established considering the quantity and composition of SWM in the DPRs of ULBs. Clustering of ULBs for certain Projects like Waste to Energy, bio-CNG was also carried based on quantification of solid waste generated in those ULBs.

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63 Adoni, Madanapalle, Puttaparthi, Tiruvuru and Yellamanchili

64 Kurnool Municipal Corporation and Vijayawada Municipal Corporation although replied that assessment had been done however documentary evidence was not produced to audit.

65 More than 10 lakh population-per capita waste generation is 550 grams; 1 to 10 lakh population-per capita waste generation is 450 grams and less than one lakh population-per capita waste generation is 350 grams.

66 The Handbook on Service Level Benchmarks issued by Ministry of Urban Development Government of India gave the highest level of priority for waste generation estimates based on quarterly surveys/samples of statistically significant and representative number of households and establishments and gave lowest level of reliability on waste generation estimates based on empirical standards of per capita waste generation based on the size of the city.

67 Central Public Health & Environmental Engineering Organisation

Reply is not tenable as the test-checked ULBs had estimated waste generation based on general trend of per capita of population, waste sampling and frequency of sampling. The estimate of waste generation on the basis of its assessment on per capita basis may lead to overestimation or underestimation of the actual amount of waste generated, resulting in inappropriate planning and inadequate allocation of resources for waste management.

Quantification and composition of waste generated was not realistically assessed to plan and design Municipal Solid Waste Management system. Instead, general trend of waste generation per capita was followed by ULBs.

2.3.4 Detailed project reports for Solid Waste Management

GoI launched its flagship scheme of SBM-U in October 2014 and SWM was one of its six components. ULBs are required to prepare Detailed Project Reports (DPRs) for SWM of the city in consultation with the State Government. The DPRs are prepared for waste characterisation, estimation of waste generated by different class of generators, waste minimisation and waste recycling, construction of Garbage Transfer Stations (GTSs), waste processing facilities, incineration, treatment and disposal; and Sanitary landfill sites *etc*.

2.3.4.1 Non- implementation of DPRs for Solid Waste Management

SBM Guidelines stipulate that the State Government may handhold ULBs in quickly preparing DPRs for SWM by shortlisting/ identifying private or Government agencies. Smaller cities can form clusters to become viable entities to attract private investment. SAC entrusted the work of preparation of DPRs for 110 ULBs to five[68] agencies through Andhra Pradesh Urban Finance and Infrastructure Development Corporation. The State Level High Power Committee (SHPC) constituted (May 2015) under SBM approved the DPRs prepared by the agencies for 40 ULBs under phase-I in August 2016 with an estimated project cost of ₹ 1,087.98 crore towards implementation of SWM. The DPRs prepared for the remaining 70 ULBs were approved in November 2016 with an estimated project cost of ₹ 818.83 crore under Phase-II.

We observed that SAC had not initiated action for implementation of DPRs for the last six years nor provided required funds to meet the cost of projects. The test-checked ULBs stated that they were unaware of preparation of DPRs. Thus, it is evident that the concerned ULBs were not involved in preparation of DPRs and approved DPRs were not sent by the SAC to the ULBs for implementation.

Government replied (August 2023) that project cost for SWM in the State was estimated based on the DPRs prepared and same were submitted to GoI with the approval of SHPC for obtaining sanction of funds under SWM component of SBM-U. Regarding awareness of DPRs by ULBs, the agencies engaged had prepared DPRs by conducting field visits in consultation with ULBs and the prepared DPRs were uploaded on SAC

[68] M/s Feedback lnfra, M/s Darashaw & PBS Consultancy, Tata Consulting Engineers Ltd, IPE Global and IL&FS

website and made available to public access and also communicated to ULBs for taking necessary action.

As per the minutes of SHPC, against the total project cost of ₹ 1,906.81 crores for 110 ULBs, the SHPC proposed to request GoI for total viability gap funding under SBM for ₹ 329.20 crores and sources for meeting the remaining fund requirement of ₹ 1,577.61 crores were not forthcoming from the records provided.

However, we observed that the DPRs were not available on the SAC website. The supporting documents communicating the details of approved DPRs to ULBs were not produced. Hence, the reply is not verifiable.

Thus, it is evident that efforts made to implement DPRs for SWM were not result-oriented.

2.3.4.2 Non-adherence to SWM Manual in preparation of DPRs

SWM Manual[69] 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 are to be collected continuously for a period of seven days at multiple representative locations within the jurisdiction of the ULB, in each of three main seasons *viz.*, summer, winter and rainy seasons. Waste should be aggregated over the seven-day period, weighed, and averaged. These quantities could then be extrapolated to the entire ULB, and accordingly per capita generation assessed.

Further, for the purpose of short-term planning, samples should include households of low, mid, and high-income levels; commercial establishments; institutional generators; hospitals and health care establishments; small and medium-sized enterprises; hotels; function halls; vegetable markets; sports complexes or facilities; places of worship (temples, mosques, *etc*.); and other significant representative groups. However, none of the DPRs included generation of solid waste from public buildings such as places of public worship, industrial buildings *etc.*, in generation of waste in urban limits. This indicated faulty preparation of DPRs. Thus, DPRs were prepared without adhering to the prescribed methodology.

Government replied (August 2023) that the quantity of waste generated in each ULB was assessed based on per capita waste generation in the respective ULB and also by considering projected population including floating population of the ULB. We observed that out of 17 test-checked ULBs, floating population was considered in only four[70] ULBs.

Thus, preparation of DPRs without the involvement of ULBs for their needs, non-intimation of prepared DPRs to ULBs and non-adherence to SWM Manual while

[69] Section 1.4.3.3.1, SWM Manual, 2016
[70] Narasaraopet, Tenali, Tiruvuru and Vijayawada

preparing DPRs indicate lack of focus and prioritisation for implementation of projects for SWM.

2.3.5 Non-utilisation of SBM funds

The SAC received an amount of ₹ 419.38 crore[71] under SBM 1.0 from Government towards utilisation of SWM activities during the period 2015-21. Out of this, the SAC spent an amount of ₹ 341.95 crore while ₹ 54.97 crore were unutilised as of March 2022.

Further, under SBM 2.0, GoI released an amount of ₹ 63.86 crore for SWM projects in 2021-22 to GoAP and the amount was released to SAC with a delay of up to 155 days in violation of GoI Guidelines of stipulated period of 40 days. Further, the State share of ₹ 42.53 crore was not released as of November 2022.

Government replied (August 2023) that the balance amount which was shown as ₹ 54.97 crore were utilised for SWM activities. However, the relevant documents were not produced to ascertain the utilisation of Funds.

2.3.6 Recommendations

Recommendation 1: Government should ensure that all the ULBs prepare/ are provided DPRs for comprehensive planning for waste management.

Recommendation 2: Government should direct the Department to assess the quantification and composition of waste generated in ULBs to plan and design SWM Plans according to their local needs.

[71] GoI share: ₹ 308.54 crore and GoAP share: ₹ 110.84 crore

2.4 Segregation, Collection, Transportation and Processing of Waste

As against 100 *per cent* segregation of source claimed by the Department, Audit observed only 75 *per cent* segregation of waste was carried out in test-checked ULBs. Segregation of domestic hazardous waste was not carried out in test-checked ULBs except in Rajamahendravaram and Vijayawada Municipal Corporations. In test-checked ULBs, after collecting segregated waste at source, the waste was getting mixed up during transportation and dumped at sites as a mixed waste. As a result, the objective of source segregation was defeated. Two test-checked ULBs Jangareddygudem and Bhimavaram were dumping waste in nearby water bodies in violation of SWM Rules. Personal Protection Equipment were not provided to all the work force involved in handling of Solid Waste. Instances of open burning of waste were observed in Ongole Municipal Corporation and Tenali Municipality. SAC did not conduct need-based assessment study to establish regional common sanitary landfill sites for all ULBs in the State as of November 2022 even after expiry of four years from the date of declaration of State Policy. Though the Central Government released its share of the funds towards legacy waste remediation works, the State Government did not release its share of the funds. As a result, 85.89 lakh tons of legacy waste remediation works did not start.

2.4.1 Segregation of Solid Waste

The SWM Rules, 2016 defined segregation of sorting and separate storage of various components of solid waste namely bio-degradable wastes[72], non-biodegradable wastes[73], domestic hazardous wastes and C&D wastes. Segregating waste at source ensures that waste is less contaminated and can be collected and transported for further processing.

2.4.1.1 Segregation of waste at source/ household level

As per para 2.2.1 of SWM Manual, the waste generators should segregate and store the waste generated by them in three separate streams namely, bio-degradable, non- biodegradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorised waste collectors or waste pickers as per the directions or notification issued by the local authorities from time to time. Segregation refers to the process of separation of MSW into four groups *i.e.*, organic, inorganic, recyclables and hazardous wastes. It is a critical requirement since it enables recycling, reuse, treatment and scientific disposal of different components of waste.

Proper segregation of waste would lead to better options and opportunities for its scientific disposal. Department stated that the waste segregation was 100 *per cent*.

[72] Including agriculture and dairy waste
[73] Including recyclable waste, non-recyclable combustible waste, sanitary waste

However, in test-checked ULBs, we observed that the segregation of waste at source varied from 66 *per cent* to 82 *per cent* for the period 2017-18 to 2021-22 as detailed in **Table-2.4**.

Table-2.4: Details of waste generated and segregated in test-checked ULBs

(in TPD)

Year	Waste generated	Waste segregated	Percentage of segregation
2017-18	1,500	994	66
2018-19	1,533	1,134	74
2019-20	1,589	1,178	74
2020-21	1,574	1,192	76
2021-22	1,662	1,367	82
Total	**7,858**	**5,865**	**75**

Source: Information furnished by test-checked ULBs

Government replied (August 2023) that necessary instructions were issued to ULBs and Regional Level Meetings were also conducted with Municipal Commissioners to bring awareness on Waste Management Rules. Government further stated (August 2023) that Information Education and Communication (IEC) activities were conducted intensively in December 2022, 1.2 crores bins were distributed, and the source segregation reached above 98 *per cent*.

2.4.1.2 Lack of community participation in waste segregation

As per para 2.2.2 of SWM Manual 2016, it is recommended that ULB staff should hold regular meetings with representatives of Resident Welfare Associations (RWAs), CBOs, NGOs, SHGs, market associations and other stakeholders until the community fully adopts the practice of segregation of wastes. However, it was observed that test-checked ULBs had not involved community such as SHGs in collection and segregation of waste.

Eleven out of 17 test-checked ULBs stated that meetings to create awareness about segregation of waste at source were conducted with local RWAs and NGOs during the period 2017-18 to 2021-22. However, no documentary evidence *i.e.*, minutes and agenda, *etc.*, were provided to Audit. The failure to conduct meetings resulted in lack of community participation in waste segregation by the ULBs.

Government replied (August 2023) that in weekly action plan of December 2022 after completion of audit, 4158 meetings were conducted with SHGs, RWAs, Merchant Associations, Chamber of Commerce *etc.*, & around 1,73,000 stakeholders participated in the awareness meetings. Government accepted the audit observation and stated that ULBs will be instructed to maintain record on conduct of meetings with Residential Welfare Associations, NGOs, SHGs & other stakeholders *etc*.

2.4.1.3 Non-segregation of domestic hazardous waste

As per para 7.1 of SWM Manual, 2016 and NGT direction No. 17, domestic hazardous waste[74] requires special handling and disposal because of its harmful physical and

[74] Fluorescent tubes, bulbs, batteries, electronic items, syringes, expired medicines, and such allied items

chemical characteristics, or biological properties. Hence, there is a greater need for proper segregation of such waste.

Audit observed that segregation of domestic hazardous waste was not carried out in test-checked ULBs except in Rajamahendravaram and Vijayawada Municipal Corporations. This implies that people were not sensitised about the effect of non-segregation of domestic hazardous waste. Instead, only contaminated mixed waste was being collected and transported to dump sites, which would have an effect on Public Health and Environment in the long run.

Government replied (August 2023) that separate chambered auto tippers in 76 ULBs were deployed for collection of segregated dry, wet and domestic hazardous waste. Government accepted the Audit observation and promised future compliance.

2.4.1.4 Non-segregation of sanitary waste

As per para 2.2.1 of SWM Manual, 2016, sanitary waste generated by households was to be wrapped in old newspaper/ pouches and handed over to the waste collectors separately.

Audit observed that no test-checked ULB emphasised segregation and disposal of sanitary waste as required as per manual except in Rajamahendravaram Municipal Corporation.

Government accepted (August 2023) the observation and promised future compliance.

2.4.1.5 Automated segregation machine kept idle

The Rajamahendravaram Municipal Corporation (RMC) procured and installed (March 2021) mechanical power operated Automated Segregation of Mixed Municipal Waste Machine at dump yard, Luthergiri with an expenditure of ₹ 30.15 lakh. However, during Joint Physical Verification (JPV), audit noticed (August 2022) that the machine was not being utilised for intended purpose. Rajamahendravaram Municipal Corporation replied (September 2022) that, since Operation & Maintenance (O & M) agency had not attended the maintenance work, the machine was kept idle for last three months. Thus, the expenditure of ₹ 30.15 lakh on procurement of Automated Segregation Machine remained unfruitful.

Image 2.1: Machine lying idle at Luthergiri dump yard, in Rajamahendravaram Municipal Corporation

Government replied (August 2023) that repairs were taken up and the unit was now in working condition. Further, Rajamahendravaram Municipal Corporation replied that to segregate mixed waste, conveyor was put to use as and when there is requirement and labour availability.

The reply is not tenable as the segregation is an everyday activity therefore steps are required to be taken on regular basis so that the machine could be utilised efficiently for intended purpose.

2.4.2 Collection of Solid Waste

As per para 2.3 of SWM manual, collection of segregated waste is the second step of SWM process. The collection of solid waste is the responsibility of ULBs. Waste collection system is necessary to ensure that waste stored at source is collected without spillages regularly and it cannot be disposed of on the streets, drains, water bodies, *etc*. Inefficient waste collection spoils aesthetics of urban areas due to musty smells and surroundings, thus would impact public health.

2.4.2.1 Collection of Solid Waste from households

CDMA stated (November 2022) that all ULBs had collected 100 *per cent* solid waste. The details of waste generated and collected during the period 2017-18 to 2021-22 obtained from test-checked ULBs are indicated in **Table-2.5**.

Table-2.5: Waste generated and collected during the period 2017-18 to 2021-22 in test-checked ULBs

(in TPD)

Year	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Waste Generated	1,500	1,533	1,589	1,574	1,662	**7,858**
Waste Collected	1,450	1,496	1,561	1,550	1,645	**7,702**

Source: Data provided by the test -checked ULBs

Since, the waste collected out of the waste generated in test-checked ULBs is 98.01 *per cent*, the statement of CDMA regarding waste collected 100 *per cent* is not acceptable.

Government accepted (August 2023) the observation and promised future compliance.

2.4.2.2 Segregation of Waste at source through Bins

Para 2.2.1.2.1 of MSW Manual, 2016, requires dry waste, wet waste and domestic hazardous waste to be stored in separate garbage bins, of appropriate capacity and colour at the household level. The colour of the garbage bins should be in accordance with the SWM Rules, 2016; wet waste is to be placed in a covered green bin and dry waste in a covered white bin.

ULBs procured 1,20,73,519 bins at a cost of ₹ 80.17 crore (December 2022) in order to encourage segregation of waste at source. Department stated that all the procured bins distributed (100 *per cent*) to 43,62,318 households in the State.

We observed that test-checked ULBs had distributed 27,45,318 bins against the requirement of 30,82,218 bins to 10,27,406 households. Thus, the claim of Department

that distribution of bins was done 100 *per cent* is contradicting the audit observation in test-checked ULBs as it showed 89 *per cent* only. The details of supply of three colour bins distributed to households in test-checked ULBs are given in ***Appendix-2.3***.

Further, Madanapalle Municipality had procured 28,875 bins against the requirement of 1,06,242 bins for 35,414 households and these bins were not distributed to households. Madanapalle Municipality stated that, as the bins procured for distribution were not sufficient for all households, they were waiting for the supply of remaining bins also to distribute to all the households.

Government replied (August 2023) that distribution of three-color bins in the Madanapalle Municipality was completed. However, the relevant records were not produced to ensure distribution.

2.4.2.3 Mixing of segregated waste

As per para 2.2.1.1 & 2.3.2 of SWM Manual, segregation of solid waste needs to be linked to primary collection of waste from the doorstep and given high priority by the ULBs. Inefficient waste collection service has an impact on public health and aesthetics of town and cities. Segregated collection of wet and dry waste enhances the potential of cost-effective treatment of such waste and of deriving optimum advantage from the recyclable material fed into the system.

During Joint Physical Verification (August-November 2022) in test-checked ULBs, we observed that after collecting segregated waste at source, the waste was getting mixed up during transportation and dumped at sites as a mixed waste since, due care to keep wastes segregated, was not taken during transportation and processing facilities were not available at dump sites. Due to dumping of mixed waste, the objective of source segregation was defeated. The reason could be assigned to non-planning to create the necessary infrastructures required for waste processing and recycling, and non-availability of facilities to handle the waste properly. Images of mixed waste at dump sites in test-checked ULBs are shown below:

Image 2.2: Mixed waste at Vijayawada Garbage Transfer Station

Image 2.3: Mixed waste at Bhimavaram dump site

Image 2.4: Mixed waste at Narasaraopet dump site

In Jangareddygudem and Bhimavaram, we observed that waste was being transported to dump site duly mixing the segregated waste as shown below:

Image 2.5: Transportation of mixed waste in Jangareddygudem Municipality

Image 2.6: Transportation of mixed waste in Bhimavaram Municipality

Government accepted the observation (August 2023) and stated that for door-to-door collection of segregated solid waste, 3253 separate chambered auto tippers were deployed in 76 ULBs, and in remaining 47 ULBs solid waste collection being done through pushcarts equipped with separate bins & bags. Government also ensured that monitoring of solid waste processing will be further strengthened and no mixed waste is being disposed at dump sites.

2.4.3 Dumping of waste in/ nearby water bodies

Schedule I of SWM Rules, 2016 stipulates that the landfill site/ dumping yard shall be 100 meters away from the river, 200 meters from a pond, 200 meters from highways, habitations, public parks and water supply wells and 20 km. away from Airports or Airbase.

It is imperative that all ULBs should adhere to the buffer zone mandate outlined in the SWM Rules as above to avoid environmental threat and jeopardising the health and well-being of the public. To mitigate these risks, ULBs must prioritise establishing a no-development buffer zone surrounding their solid waste processing and disposal facility, thereby preventing any adverse impacts on the environment and the health of the community.

We observed in three test-checked ULBs[75], that waste was being dumped in/ nearby water bodies in violation of rules as detailed below:

(i) Jangareddygudem Municipality was dumping the waste in/ nearby to Biseru Vaagu (stream) due to non-allocation of land for the last six years for dumping of waste generated. It was further, observed that the Jangareddygudem Municipality had not pursued with the Revenue Department for allotment of land. Image 2.7 depicts dump site near to Biseru Vaagu.

Image 2.7: Dump site near by Biseru Vaagu in Jangareddygudem Municipality

(ii) Bhimavaram Municipality was directly dumping solid waste (75TPD) into Yanamaduru Canal/ drain and at canal bund due to non-availability of dumping site as exhibited in image 2.8.

Image 2.8: Waste dumped in Yanamaduru canal, Bhimavaram Municipality

Further, based on a complaint[76] regarding pollution of Yanamaduru drain in Bhimavaram Municipality, the Chairman, APPCB had entrusted assessment of water quality to the Joint Chief Environmental Scientist. In the report (March 2016) it was stated that Yanamaduru drain water was used for lift irrigation of paddy fields and to drain flood water from the cultivated fields (paddy, aquaculture fields). Yanamaduru drain/ channel is at a distance of 61.2 km. length up to confluence of Upputeru. In order to save this water body, the APPCB recommended Bhimavaram Municipality to remove the existing MSW dump and also to avoid further dumping into the stretches of the drain.

[75] Bhimavaram, Jangareddygudem and Rajamahendravaram
[76] Mr. Arsari, Secretary Consumer Welfare Protection Society

We observed in JPV that ignoring the recommendations of APPCB, the Bhimavaram Municipality continued to dump the solid waste into this water body.

(iii) Rajamahendravaram Municipal Corporation was dumping waste at Luthergiri/ quarry site, which is located near habitations. We observed that the dumping site belongs to R&B Department and no permission was obtained to utilise this as a dumping yard.

Government accepted the observation (August 2023) and promised future compliance.

2.4.4 Dumping of waste nearby Airports/ Airbase

Schedule I of SWM Rules, 2016 stipulates that the landfill site shall be 20 km. away from Airports or Airbase. However, landfill site may be set up within a distance of 10 km. and 20 km. away from Airport/ Airbase after obtaining no objection certificate (NOC) from the Civil Aviation Authority (CAA)/ Air Force, as the case may be.

However, we observed that the dump sites at Rajamahendravaram Municipal Corporation and Puttaparthi Nagar Panchayat were located at 11.9 km[77] and 10 km. respectively from Rajamahendravaram Airport and Sri Satya Sai Airport. Further it was observed that NOC was not obtained from the CAA for relaxing the requirement.

Government accepted the observation (August 2023) and promised compliance.

2.4.5 Non-utilisation of land for SWM activities by Kurnool Municipal Corporation

Government permitted[78] (7 January 2011) Kurnool Municipal Corporation (KMC), to take advance possession of land of an extent Ac 56 located at Gargeyapuram[79] and Noothanapalli[80] for utilising as compost yard pending regular alienation proposals. While giving advance possession, the Government directed the Corporation to establish the dump yard adopting modern and eco-friendly technology for disposal of waste.

On 22 January 2011 again, Government accorded permission[81] for advance possession of land to an extent Ac 30.14 cents at Tadakanpalli[82] and Dupadu[83] villages for establishment of compost yard pending regular alienation proposals. The Corporation paid an amount of ₹ 1.04 crore to the Revenue Department towards compensation in this regard.

In this connection, the audit observed that the Corporation had submitted two different proposals for the same purpose and took advance possession of lands in different villages to an extent of Ac 86.14 cents without assessing the actual requirement of land.

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77 As per Google map
78 Vide memo No.52963/AsnV(2)/2010-1, dated 07 January 2011
79 Survey No.751/1-Ac 38.00
80 Survey No.180/2-Ac 18.00
81 Vide Memo No.42576/AsnV(2)/2010-1, dated 20 January 2011
82 Survey No.86/2-Ac 18.08 cents
83 Survey No.139/2-Ac 12.06 cents

The Corporation has not made efforts to get the alienation regularised since January 2011. Out of the total land (Ac 86.14 cents) taken into possession, the Corporation is utilising only Ac 38.00 cents as dumping yard instead of compost yard. We observed that efforts have not been made to utilise the land for establishing the yard by adopting modern and eco-friendly technology for waste disposal.

Government accepted the observation (August 2023) and replied that the remaining land acquired was not utilised as compost yard due to development of residential areas around the site and legacy waste treatment was in progress at the site. Government promised future compliance.

2.4.6 Personal Protection Equipment

MSWM Manual, 2016 prohibits manual handling of waste. If manual handling is unavoidable due to constraints, it should be carried out under proper precaution with due care for safety of workers. As per clause 15(zd) of SWM Rules, 2016, local bodies shall ensure that the operator of a facility *i.e.*, ULB itself provides personal protection equipment (PPE) including uniform, fluorescent jacket, hand gloves, raincoats, appropriate footwear and masks to all workers handling solid waste and the same are used by work force.

It is imperative that the local authorities and facility operators enforce strict guidelines to ensure that workers handling solid waste wear their PPE kits at all times.

We observed during Joint Physical Verification (July 2022-December 2022) in six[84] test-checked ULBs that the work force involved in manual handling of waste were not wearing protective equipment particularly gloves and boots though they were provided with such equipment by the ULBs. Hence, there was a severe risk to their health and safety. Workers found working without wearing PPE can be seen in images 2.9 to 2.14 in test-checked ULBs:

Image 2.9: Waste collection without wearing PPE at Jangareddygudem Municipality

Image 2.10: Waste collection without wearing PPE at Rajamahendravaram Municipal Corporation

[84] Jangareddygudem, Narasaraopet, Rajamahendravaram, Vijayawada, Vizianagaram and Yellamanchili

Image 2.11: Waste collection without wearing PPE at Narasaraopet Municipal Corporation

Image 2.12: Waste collection without wearing PPE at Vijayawada Municipal Corporation

Image 2.13: Waste collection without wearing PPE at Vizianagaram Municipal Corporation

Image 2.14: Waste collection without wearing PPE at Yellamanchili Municipality

Further, we observed in the test-checked ULBs that during the year 2021-22,

- Tiruvuru Nagar Panchayat did not provide PPE kits to all the work force (No's 70) engaged in SWM.
- Raincoats were not provided to the workforce in eight test-checked ULBs[85].
- Bhimavaram Municipality has provided PPE kits to 110 workers (29 *per cent*) only against 384 workers engaged in SWM.
- Kurnool Municipal Corporation provided uniform to only 297 workers (31 *per cent*) out of 962 workers engaged in SWM.
- Ongole Municipal Corporation (OMC) provided PPE kits (except fluorescent jacket) to only 86 workers (11 *per cent*) against 767 workers.
- Vizianagaram Municipal Corporation did not provide hand gloves and masks to all 682 workers.
- Nellimarla Nagar Panchayat did not provide fluorescent jackets and raincoat to all 41 workers. Further, footwear and masks were provided to only ten workers out of 41 workers engaged for collection of solid waste.

The status of PPE kits provided to the workers for the year 2021-22 is given in ***Appendix-2.4***.

[85] Adoni, Kanigiri, Proddatur, Puttaparthi, Madanapalle, Nellimarla, Vizianagaram and Yellamanchili

Non-provision or non-use of PPE by workers handling solid waste would have adverse effects on their health. Appropriate measures need to be taken to ensure that workers handling solid waste are provided with the necessary PPE kits and also ensure their use by the workforce.

Thus, personal protection equipment was not provided to work force involved in handling of Solid Waste.

Government accepted the observation (August 2023) and promised compliance.

2.4.7 Transportation of Solid Waste

The collected waste from households, waste bins and waste from collection points is transported to the processing and disposal sites using vehicles such as tractor-trailers, auto tippers, open autos, lorries, trucks, and modern hydraulic vehicles. Collection and transportation activities consume approximately 80-95 *per cent* of the total budget of SWM.

2.4.7.1 Use of covered vehicles with separate chambers for transportation of different Solid Waste

Section 2.3.2 of MSWM Manual, 2016 stipulates that vehicles used for transportation of waste should be covered so that waste is not visible to public and that they should have the facility for preventing spillage of waste. For this purpose, MSW vehicles need to be covered and provided with two separate containers/ chambers or a single container with an effective partition.

Audit observed in test-checked ULBs that out of 335 own waste transportation vehicles, only 124 had body cover and 57 were with separate chambers *i.e.,* 63 *per cent* vehicles were running without body cover and 83 *per cent* vehicles without separate chambers as shown in image 2.15.

Image 2.15: Transportation of waste without body cover in Jangareddygudem municipality

Lack of body cover and separate compartments for wastes increase the risk of cross-contamination and can compromise the safety and health of the workers involved in waste management. Thus, the concerned authorities did not equip the transportation vehicles with cover and separate compartments for different types of wastes to ensure proper segregation and safe transportation.

Government accepted the observation (August 2023) and promised compliance.

2.4.7.2 Monitoring of transportation vehicles

MSWM Manual, 2016 stipulates that communication technologies such as Global Positioning System (GPS) are to be integrated as part of monitoring of SWM system. This also helps in improving the collection and transportation efficiency of the vehicles.

However, in test-checked ULBs, out of 380 own vehicles, only 237 had GPS system and 143 vehicles were not equipped with GPS facility, which deprived real-time monitoring of vehicles.

Government accepted the observation (August 2023) and promised compliance.

2.4.8 Material Recovery Facilities

As per Rule 15(h) of SWM Rules, 2016 and para 2.3.1 of Manual on MSWM, the ULBs need to set up Material Recovery Facilities (MRFs) or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorised waste pickers and waste collectors to separate recyclables from the waste and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, *etc*.

However, in the State, out of 123 ULBs, MRFs were established with a processing capacity of 800 TPD in 79 ULBs. In test-checked ULBs, Physical Verification revealed that six ULBs[86] did not establish MRFs and six ULBs[87] were not utilising the existing MRFs as shown in images 2.16 to 2.18.

Image 2.16: Non-utilisation of MRF at Ongole

Image 2.17: Non-utilisation of MRF at Vijayawada

Image 2.18: Non-utilisation of MRF at Adoni

Government accepted the observation (August 2023) and stated that instructions would be issued to the ULBs to strengthen the established MRFs.

[86] Bhimavaram, Jangareddygudem, Kurnool, Nellimarla, Tiruvuru and Yellamanchili
[87] Adoni, Kanigiri, Narasaraopet, Ongole, Vijayawada and Vizianagaram

2.4.9 Deliberate open burning of waste in open land and dump sites

Smoke from open burning contains pollutants such as dioxins, furans, arsenic, lead, carbon monoxide, nitrogen oxide, mercury, hydrochloric acid that cause soil pollution, environmental pollution *etc*., and lead to serious health problems such as cancer, liver problems, impairment of immune system, endocrine system, reproductive functions, nervous systems *etc*.

NGT directed (December 2016) that there shall be complete prohibition on open burning of waste on lands, including at landfill sites. For each such incident, violators, including project proponent, concessionaire, any person or body responsible for such burning, shall be liable to pay environmental compensation of ₹ 5,000 in case of simple burning and ₹ 25,000 in case of bulk waste burning.

In this connection, the following observations were made:

i) Test-checked ULBs in contravention to above order, levied a penalty ranging from ₹ 100 to ₹ 1,000 as per their respective bye-laws.

ii) We observed from the Departmental records and during JPV (August 2022), that open burning of waste at dump sites/ open lands in 14 test-checked ULBs[88] was a continuing phenomenon. It indicated that the ULBs did not take suitable measures to stop the open burning of waste in compliance with NGT directions. During the field visit of dump sites of test-checked ULBs instances of fumes emerging from dump sites were observed as shown in images 2.19 and 2.20.

Image 2.19: Open burning of waste at Ongole Municipal Corporation

Image 2.20: Open burning of waste at Tenali dump site

Government accepted the observation (August 2023) and stated that awareness activities would be conducted to the PH workers and general public in all ULBs to curb the practice of open burning of solid waste.

2.4.10 Sanitary landfill

Sanitary landfills are sites where waste is covered and allowed to decompose. It is isolated from the environment for safe waste disposal. Waste that completely degraded biologically, chemically and physically is considered safe.

i) Rule15(w) of SWM Rules 2016 stipulates that local authority shall undertake on their own or through any other agency construction, O&M of sanitary landfill and

[88] Adoni, Bhimavaram, Jangareddygudem, Kanigiri, Madanapalle, Narasaraopet, Nellimarla, Ongole, Proddatur, Puttaparthi, Rajamahendravaram, Tenali, Vizianagaram and Yellamanchili

associated infrastructure for disposal of residual wastes in a manner prescribed under these rules. Rule15 (zh) requires that local authority shall stop landfilling or dumping of mixed waste soon after the timeline as specified in Rule 22 (up to 07 April 2019) for setting up and operationalisation of sanitary landfill is over. Further Schedule I of SWM Rules 2016 provided Specifications for sanitary landfills which requires to be followed.

As per the data furnished by APPCB, as on March 2022 out of 123 ULBs only four[89] ULBs has landfill sites in the State *i.e.*, 97 *per cent* of ULBs don't have landfill sites.

Although landfill site was constructed in Ongole Municipal Corporation, it was found during JPV (September 2022) that landfill site was not operational and dump site was used for disposal of waste. In other test-checked ULBs there was no landfill sites.

ii) AP SWM Policy requires the CDMA/ SAC to complete the need-based assessment study for establishing common regional sanitary landfill for a group of ULBs falling within a distance of 50 km. (or more) from the regional facility on a cost sharing basis and ensure professional management of such sanitary landfills.

We observed that the SAC has not conducted need-based assessment study to establish regional common sanitary landfill sites for all ULBs in the State as of November 2022 even after expiry of four years from the date of declaration of State Policy. In reply (November 2022), the SAC stated that a study was being proposed to be conducted for identification of suitable locations for regional sanitary landfills.

Government accepted the observation (August 2023) and promised compliance.

Thus, implementation of SWM Rules, 2016 by all the test-checked ULBs is inadequate. Despite the passage of over six years since the notification of SWM Rules, 2016, 119 ULBs out of 123 ULBs in the State did not have a sanitary landfill. It is crucial that all ULBs comply with the SWM Rules, 2016 and take concrete steps towards improving their solid waste management infrastructure to ensure a clean and healthy environment for their residents.

2.4.11 Garbage Transfer Stations

Government planned[90] (August 2021) to construct systematically designed Garbage Transfer Stations (GTS) for a cluster of 8 to 10 wards, as mid-way transfer points at the primary level. As part of Clean Andhra Pradesh captioned as Jagananna Swachha Sankalpam (JSS) to create safe and better sanitation facilities a total of 219 GTS at a cost of ₹ 220 crore would be required in 123 ULBs for which 15th FC funds would be utilised. It was also proposed to procure 6,000 compactor bins with a value of ₹ 19.65 crore with 15th FC funds. After procurement, these bins would be required to be placed at GTS for secondary storage of waste.

[89] Chirala, Ongole, Tirupathi and Visakhapatnam
[90] G.O. Ms. No. 90, dated 19 August 2021

Administrative sanction was accorded for 138 GTSs in 84 ULBs at an estimated cost of ₹ 157.77 crore. We observed that construction of 121 GTSs (November 2022) was at various levels *i.e.*, Earth level-32, Basement Plinth Beam level-39, Columns/ Lintel level-29, Roof level-15, Finishing level-6 and balance to be grounded-17. The status of construction of GTSs in some test-checked ULBs is shown below:

Image 2.21: Status of GTS in Bhimavaram Municipality

Image 2.22: Status of GTS in Tenali Municipality

Image 2.23: Status of GTS construction in Janagareddygudem Municipality

Image 2.24: Status of GTS construction in Ongole Municipal Corporation

Government replied (August 2023) that owing to certain technical reasons, protest from public *etc*., the construction of these 17 GTS was not yet commenced. Government further stated that measures would be taken to ensure commencement of construction of the GTSs.

2.4.12 Processing of Solid Waste

As per Section 4.1 of MSWM Manual, 2016 (Volume I) and NGT direction No.6, selection and adoption of MSW processing technologies should be based on defined selection criteria and subject to a detailed study which ascertains the appropriateness of the technology to the prevailing conditions of the respective ULBs. Treatment and processing of segregated waste streams reduces operational costs and increases the efficiency of the process.

The Department stated that the waste generated in ULBs was segregated and treated separately using different technologies for wet and dry waste in Andhra Pradesh. Wet waste processing was being done through Aerobic composting (Windrow and Vermi methods) and Anaerobic composting (bio-methanation) and on-site composting. Dry waste processing involves MRFs for sorting of recyclable portion of dry waste and the balance combustible dry waste is transported to Waste to Energy plants.

Audit noticed that:

(i) As of November 2022, wet waste processing plants were established at 33 locations to cover 41 ULBs. Another 53 processing facilities were awarded; however, work was not grounded for processing of waste from 67 ULBs. Planning for establishing processing facilities for remaining 15 ULBs is still under process.

Thus, we observed that 82 ULBs were not having wet waste processing plants.

Further, 36 Waste to Compost processing projects covering 39 ULBs were awarded in 2017-18, only 22 projects were operational while 14 projects were yet to be grounded due to non-availability of land. Out of six bio-CNG processing plants awarded during 2016-18 to cover ten ULBs, only four projects covering eight ULBs were operational while two projects[91] were yet to be grounded as of November 2022. Out of 37 Integrated Solid Waste Management (ISWM) projects awarded in February 2022 covering 51 ULBs, all projects are yet to be grounded as of November 2022. We observed that without identification or availability of land, the work orders were issued in respect of nine ULBs. To cover the remaining proposed 15 ULBs, no action was taken as of November 2022.

Due to lack of adequate treatment/ processing facilities, segregated waste collected from source was being dumped at dump sites as a mixed waste.

Government accepted the observation (August 2023) and promised compliance.

(ii) In two test-checked ULBs[92], wet waste processing plants established in 2018-19 were not operational with full capacity as detailed in **Table-2.6**.

Table-2.6: Status of wet waste processing plants in two ULBs

Name of the ULB	Owner of the processing plant	Capacity of the plant	Year of establishment	Avg. wet waste generation by the ULB during 2019-20 to 2021-22	Avg. waste Processed during the 2019-20 to 2021-22
Adoni	Mahindra WtE Solutions Ltd. (Bio gas)	30 TPD	2018-19	29.67 TPD	5.64 TPD
Madanapalle	Mahindra WtE Solutions Ltd.	20 TPD	2018-19	34.33 TPD	6.06 TPD

Source: Information furnished by Adoni and Madanapalle Municipalities

Thus, the processing plants were not operational up to the installed capacity.

Government replied (August 2023) that designed capacities of waste processing plants would always be higher considering the projected waste generation for next 20 years and hence currently, the Plants are not being operational at their full capacities. However, instructions were issued to all the Municipal Commissioners concerned to

[91] Gudivada and Ongole
[92] Adoni and Madanapalle

transport the Wet Waste to the Waste to Compost/ bio-CNG Plants as per the quantities mentioned in the Agreement.

The reply is not tenable as both ULBs were generating wet waste more than the agreed quantity and the plants were not receiving the wet waste at agreed quantity.

(iii) Two WtE plants at Guntur and Visakhapatnam were operational to treat dry waste from 72 ULBs (Guntur-45 ULBs, Visakhapatnam-27 ULBs) and one project is under planning to treat dry waste from 20 ULBs of East & West Godavari clusters. Thus, dry waste processing was not available to 51 ULBs.

Government replied (August 2023) that of the remaining 51 ULBs with no dry waste processing facilities, eight ULBs were tied up with WtE Plant Guntur and 43 ULBs were tied up with nearby five cement plants for transportation of dry combustible waste. The quantities of dry waste transported to WtE Plants and cement plant were monitored through AP CM MS[93] Mobile App. However, data related to quantity of waste transported by these ULBs to their mapped plants were not provided to ascertain transportation as claimed.

(iv) The status of waste collected and processed in the test-checked ULBs during the period 2017-18 to 2021-2022 is given in **Table-2.7**.

Table-2.7: Status of solid waste processed in test-checked ULBs

(In TPD)

Year	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Solid Waste collected	1450	1496	1561	1550	1645	7701
Processed	645	693	729	667	792	3526
Percentage	44	46	47	43	48	46

Source: Information furnished by test-checked ULBs

Thus, solid waste processed out of collected in the test-checked ULBs ranged from 43 *per cent* to 48 *per cent* and the balance waste was being dumped in the dump site/ yard. Three ULBs (Bhimavaram, Jangareddygudem and Nellimarla) did not process the collected waste during the audit period *i.e.*, 2017-22 and the shortfall was 100 *per cent.*

The low rate of processing in the test-checked ULBs was due to inadequate solid waste infrastructure facilities.

During JPV (August 2022), it was observed that the Mechanical Compost equipment (image 2.25) procured[94] and installed at vehicle shed, Rajamahendravaram was non-operational/ idle. Rajamahendravaram Municipal Corporation replied (September 2022) that due to non-attending of maintenance work by Operation & Maintenance (O&M) agency the machine was kept idle from last six months.

[93] Andhra Pradesh Consistent Monitoring of Municipal Services
[94] the details of cost of the equipment procurement are not made available to audit

Image 2.25: Mechanical compost equipment kept idle at Rajamahendravaram Municipal Corporation

Government replied (August 2023) that during the inspection the mixed waste was not segregated and collected separately in the collection chambers. Later, repairs were taken up and the unit was now in working condition. However, records supporting the functioning of Mechanical Compost equipment were not provided to ascertain.

2.4.12.1 Waste to Energy plant lying idle

The MSWM Manual, 2016 prescribed for utilisation of waste processing technology and processing facilities such as types of MRFs, Waste to Energy processing in the integrated SWM, incineration, challenges of operating gasification plants, leachate management and quantification of waste towards implementation of SWM in ULBs.

Two plants (WtE) at Guntur and Visakhapatnam became operational from October 2021 and February 2022 respectively in PPP mode under SBM initiative though 12 were planned.

In Rajamahendravaram Municipal Corporation (RMC), the Government accorded (October 2005) permission for setting up of ISWM facilities and to set up a WtE plant with 6.6 MW of power generation by allotting the garbage generated in five ULBs. The Corporation resolved (April 2006) to lift the garbage from compost yard. The Government issued orders (March 2009) duly enhancing the power capacity of the plant to 13MW and coverage in 17 ULBs. The Corporation had entered into agreement/ MoU on 16th March 2012 with M/s. Yuvraj Power Project(P) Limited for a period of 25 years. The agency identified (December 2009) a land for establishing power plant and the Power Company had also entered into agreement[95] with Non-Conventional Energy Development Corporation of AP (NEDCAP) for development of a green and an environmental friendly project.

During JPV (August 2022) we observed that the power plant established at Vemagiri, Rajamahendravaram was lying idle without commissioning as shown in image 2.26.

[95] As stated by the power company in its letter dated April 2011

Image 2.26: Non-commissioning of power plant at Vemagiri, Rajamahendravaram Municipal Corporation

The Rajamahendravaram Municipal Corporation (August 2022) stated that after concluding the agreement, the Corporation did not supply waste to the plant as the firm had not started the processing procedure and the agreement was not in force and the agency left the machinery idle at the location (Vemagiri) without any usage.

Government attributed (August 2023) the closure of the plant to internal issues in the management of the agency.

Thus, due to non-commissioning of the plant, the waste generated in 17 ULBs was not being processed and was being dumped at dump sites.

2.4.12.2 Non-functioning of Construction & Demolition waste treatment plant

According to the Construction and Demolition Waste Rules, 2016, construction and demolition waste means the waste comprising of building materials, debris and rubble resulting from construction, remodelling, repair and demolition of any civil structure.

C&D waste includes bricks, tiles, stone, soil, rubble, plaster, drywall or gypsum board, wood, plumbing fixtures, non-hazardous insulating material, plastics, wallpaper, glass, metal (e.g., steel, aluminium), asphalt, *etc.*

At the time of formulation of SWM State Policy, SAC had floated Request for Proposal (RFP) for establishment of Construction & Demolition Waste Treatment Projects at three places *i.e*., at Visakhapatnam, Vijayawada & Tirupati and they were expected to be commissioned by August 2017. Subsequently, the three projects were completed and commissioned[96] for operation. The SAC stated all the three projects are running as of November 2022.

However, during JPV (November 2022) in Vijayawada Municipal Corporation, we observed that the C&D plant which was commissioned in November 2018 was not-operational and in dilapidated condition as shown in image 2.27.

[96] Greater Visakhapatnam w.e.f. 22/4/2018 with a capacity of 80 tpd; Vijayawada w.e.f. 23 November 2018 with a capacity of 70 tpd and Tirupati w.e.f. 31 July 2021with a capacity of 50 tpd

Image 2.27: Non-functioning & Dilapidated C&D plant at Vijayawada

Record relating to cost of construction and operation of plant was not produced to audit.

Government accepted (August 2023) the observation and stated that action would be taken to bring the plant into operation duly pursuing with the ULB.

2.4.13 Legacy Waste Management

SWM Rules 2016 require that for effective management of MSW and to manage old dumps of MSW, urban authorities shall investigate and analyse all old open dump sites and existing operational dump sites for their potential for bio-mining and Bioremediation and wherever feasible shall take necessary actions to bio-mine or bioremediate the sites.

Ministry of Urban Affairs, GoI stated (October 2020)[97] that as 75th year of Independence will be celebrated in 2022, it is proposed to remediate all the legacy waste at dump sites in the cities with population more than one lakh before 15 August 2022.

In connection with this, the State Level Technical Committee[98] (SLTC) approved (December 2021) the total quantity of legacy waste present (64.52 lakh tons) in the existing dump sites of ULBs with population of above one lakh[99] and further directed to take up the bioremediation of existing dump sites as per the SBM Advisory. The total cost for taking up the process of dump site bioremediation in 32 ULBs was estimated at ₹ 354.91 crore[100]. As four ULBs[101] initiated dump site bioremediation during SBM 1.0, GoI considered the release of funds for 28 ULBs only.

The State High Power Committee (SHPC) approved (February 2022) bioremediation of legacy waste in ULBs below one lakh[102] population, which was estimated at 21.37 lakh tons. The total cost for taking up the process of dump site bioremediation in these ULBs was estimated at ₹ 117.55 crore.

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97 Vide DO letter No.15/16/2020-SBM-1, dated 27 October 2020
98 Constituted vide G.O. Rt. No. 703, dated 17 December 2021
99 Called AMRUT ULBs
100 as per SBM 2.0 Guidelines, the cost of clearing of per ton of legacy waste is ₹ 550
101 Kakinada, Tirupati, Vijayawada and Visakhapatnam
102 Called Non-AMRUT ULBs

Audit observed that:

(i) GoI sanctioned an amount of ₹ 235.32 crore towards total project cost for remediation of legacy waste in 28 ULBs (above one lakh population). Against the GoI share of ₹ 77.60 crore (33 *per cent*), the GoI had released its 1st instalment (40 *per cent*) ₹ 31.07 crore in February 2022. As per conditions of GoI, State share should be released not later than 40 days of release of the Central share. However, GoAP did not release its share as of November 2022.

(ii) GoI sanctioned ₹ 117.55 crore towards total project cost for bioremediation of legacy waste in ULBs less than one lakh population. Against the GoI share of ₹ 58.77 crore (50 *per cent*), the GoI had released its 1st instalment (40 *per cent*) ₹ 23.51 crore in March 2022. As per conditions of GoI, State share should be released not later than 40 days of release of the Central share. However, GoAP did not release its share as of November 2022. Though GoI share was released in February/ March 2022, the process of awarding remediation works was not commenced.

(iii) In Kurnool Municipal Corporation (KMC), as per the direction of National Green Tribunal, Chairperson State level Committee instructed (October 2019) to take measures for processing of legacy waste of 1,50,000 tons existed at abandoned Joharapuram compost yard, which is not presently in use as ground water of surrounding areas is polluted due to existing legacy waste. The dumping of waste into Joharapuram was stopped in 2010 due to strong protest by the residents of Joharapuram and the dumping site was shifted to Gargeyapuram village. The council resolved (November 2019)[103] to invite Expression of Interest (EoI) for processing of bio-mining. After inviting Request for Proposal, the Kurnool Municipal Corporation selected the bidder M/s. Sagar Motors, Latur, Maharashtra in February 2020. The Corporation issued Letter of Intent (LoI) to the agency in May 2020 at ₹ 530 per MT for scientific process through bio mining. The Council also approved the entrustment of bio-mining to the agency in March 2020[104]. The Kurnool Municipal Corporation requested the CDMA in May 2020 for release of ₹ 7.95 crore to meet the cost of bio-mining.

Subsequently, the Government constituted various committees for remediation of existing MSW dump sites through bio-mining process in all ULBs in March 2021[105]. In compliance to the Government instructions, the Kurnool Corporation requested (March 2021, November 2021) the SAC, Vijayawada to permit the Corporation to proceed with the earlier tender process completed so as to commence the bio-mining process. In reply to the letter, the SAC conveyed (November 2021) to cancel the tender process as per the instructions of Special Chief Secretary to Government, MA&UD Department. Accordingly, Kurnool

[103] vide CR No. 284, dated 15 November 2019
[104] vide CR No. 308, dated 04 March 2020
[105] vide G.O. Rt. No. 103, dated 12 March 2021

Municipal Corporation communicated the cancellation orders to the selected company (M/s. Sagar Motors, Maharashtra) in November 2021.

We observed that due to cancellation of tender and non-initiation of further action by Kurnool Municipal Corporation, the legacy waste still existed at abandoned Joharapuram compost yard, and the major grievance of the residents in the surrounding areas about polluted ground water remained un-addressed. The directions and compliance of NGT and PCB were also not met.

Thus, due to non-release of State share in spite of release of Central share, the projects to treat remediation of legacy waste (85.89 lakh tons) were not taken up and completed.

Government accepted (August 2023) the observation and stated that legacy waste treatment commenced in all the ULBs of the State and was in progress. Government also ensured that action would be taken for the release of the State share on a timely basis.

2.4.14 Assessment of risk to environment and human health from each solid waste processing facility

Para 5.1 of SWM manual prescribes Environmental Impact Assessment (EIA) for establishment of MSWM processing, treatment and disposal facilities. EIA is designed to identify and predict the impact of an action or a project on the environment, human health and well-being. It can include risk assessment as a component, along with economic and land use assessment.

However, we observed that no EIA was conducted to assess the risk to environment and human health from solid waste in the State. Thus, the environmental impact of the MSW projects was not rolled out in the State.

Non preparation of EIA reports in the State indicates that ULBs has not made any effort for assessing the risks from MSW to human health and environment in their jurisdiction, prior to the commencement of the MSWM activities.

Government stated (August 2023) that contracts were issued by SAC to private agencies for establishment of waste processing treatment and disposal facilities and SAC would pursue the project developers for conducting of EIA.

2.4.15 Service level Benchmarks

Ministry of Urban Development (MoUD), GoI, launched (2008) the Service Level Benchmarks (SLB) initiative covering water supply, wastewater, SWM and storm water drainage. The Handbook on SLB prescribed by MoUD also emphasised the need to ensure reliability of measurement and specifies four levels of reliability for each indicator. The 13th and 14th Finance Commissions have also endorsed the principle of benchmarking and included SLB as one of the conditions for the allocation of performance based grants to ULBs. MoUD defined a common minimum framework for monitoring and reporting the following eight performance indicators that pertain to SWM.

On achievement of SLBs, the CDMA stated that the Department had achieved the SLBs as indicated in **Table-2.8**.

Table-2.8: Status on achievement of SLB in the State

Sl. No.	Indicators	Benchmark (%)	Status as of March 2022 (%)
1	Household level coverage of SWM Services	100	100
2	Efficiency of collection of MSW	100	100
3	Extent of segregation of MSW	100	98.17
4	Extent of MSW recovered/ recycled	80	70
5	Extent of scientific disposal of MSW	100	100
6	Extent of cost recovery in SWM services	100	65
7	Efficiency in redressal of customer complaints	80	80
8	Efficiency in collection of user charges	90	55

Source: Information furnished by CDMA

Audit did not verify the achievement of the indicators as no supporting records were provided.

Further, the observations made during JPV in test-checked ULBs and as discussed in Paragraphs 2.4.1, 2.4.8, 2.4.9, 2.4.11 and 2.4.12 confirm the fact that the achievement of performance indicators as shown above was far from factual position.

Government replied (August 2023) that the percentage of achievement by the ULBs was calculated based on the methodology provided by Ministry of Urban Development, GoI.

Government reply is not acceptable as CDMA reckoned ULB-wise number of household practicing source segregation divided by overall household in the ULB which would not show the accurate picture of extent of segregation. Further, extent of scientific disposal should be calculated by dividing the quantity of waste disposed in scientific landfills to the total waste dumped in all the landfills (including dump sites). Since, in the State of Andhra Pradesh as per APPCB data there are only four landfill sites, the claim of 100 *per cent* scientific disposal is not acceptable.

2.4.16 Recommendations

Recommendation 3: Government should ensure that all landfill sites are made operational with valid authorisations and environmental clearances. Periodic checks should be enforced for scientific and proper disposal of the unprocessed waste.

Recommendation 4: Government should speedily complete pending infrastructure for waste treatment/ processing and operationalise all idle facilities.

2.5 Monitoring and Evaluation

Test-checked ULBs did not develop any system to monitor all components of Municipal Solid Waste Management (MSWM) operations and periodical evaluation for quality assurance. Test-checked ULBs had not disclosed the required information in their websites. Only seven out of 123 ULBs achieved star certification. No ULB in the State achieved seven-star rating certification with regard to garbage free cities. SAC did not maintain any inventory of manufacturers or brand owners of disposable products. As per SWM Rules 2016, local authorities should levy and collect user fees from waste generators to cover the cost of collection and transportation. User charges were not being levied and collected uniformly in test-checked ULBs.

2.5.1 Public Disclosure

As per Andhra Pradesh SWM Policy, all the ULBs shall display the bye-laws incorporating the SWM Rules, 2016, actual user fee and penalties collected, Form III-Annual Report submitted by the operator of the facility to the ULB, Form IV-Annual report on SWM submitted by the local body to the CDMA, Form V-Annual Report on Plastic Waste Management (PWM) submitted by the ULB to CDMA and Annual awards on the website without fail.

However, test-checked ULBs had not maintained the websites and not disclosed the required information except Vijayawada Municipal Corporation.

Government accepted (August 2023) the observation stated that ULBs would be further directed to ensure the details would be made available on the websites of all ULBs.

2.5.2 Monitoring of Municipal Solid Waste

As per Clause 6.1 of MSWM Manual, institutionalising appropriate quality assurance systems is essential to ensure a continuous and efficient MSWM system. The performance of all components of MSWM system, from collection to processing and disposal, should be ensured on a daily basis. Provision of citizen-centric services should also be monitored through a routine feedback mechanism. A comprehensive monitoring and evaluation system should be adopted for proper implementation of MSWM Plan and for assessing progress towards meeting the targets of the plan. Further, as per Rule 16 (a) of SWM Rules, State PCB has to review implementation of these rules at least twice a year in close coordination with concerned Directorate of Municipal Administration or Secretary-in-charge of State Urban Development Department.

We observed that -

- Test-checked ULBs did not develop any system to monitor all components of MSWM operations and periodical evaluation for quality assurance.
- Test-checked ULBs did not adopt any mechanism to receive periodic feedback from the stakeholders, programme managers and evaluators on the programme's efficiency and effectiveness as per SWM Rules 2016.

- Pollution Control Board did not monitor the performance of waste processing and disposal facilities once in six months in test-checked ULBs.

Government accepted (August 2023) the observation stated that AP CM MS App was developed by CDMA recently and logins were provided to all the concerned officials which would be used to monitor the SWM and review meetings were conducted by Government and CDMA with the private agencies/ developers of solid waste processing facilities and Managements of Waste to Energy plants, cement plants to monitor solid waste processing and for providing suitable instructions & necessary guidance.

2.5.2.1 State Level Advisory Board

Clause 23 of the SWM Rules, 2016 specify that every Department in-charge of local bodies of the concerned State Government or Union territory administration shall constitute a State Level Advisory Body within six months from the date of notification (*i.e.*, 08 April 2016) of SWM Rules, 2016. The State Level Advisory Body was required to meet at least once in every six months to review the matters related to implementation of these rules, State Policy on solid waste management and give advice to State Government for taking measures that are necessary for expeditious and appropriate implementation of these rules. Audit noticed that MA&UD Department, GoAP had constituted the State Level Advisory Body in September 2017.

It was further noticed that the State Level Advisory Board (SLAB) had held only one meeting (13 November 2018) from the date of constitution to 31 March 2022 to review the matters related to implementation of the SWM Rules, 2016 as against the total nine meetings required to be conducted as per the provisions of the SWM Rules, 2016.

Thus, holding of inadequate meeting shows the inadequate monitoring and review of the matters related to implementation of SWM Rules, 2016 along with the violation the provisions contained in the SWM Rules.

Government stated that (August 2023) regular video conferences were being conducted by higher authorities of MA&UD Department to monitor implementation of SWM Rules and Bi-annual meetings of State Level Advisory Board would be conducted hereinafter.

2.5.2.2 Implementation of SWM by District Collectors

As per Policy, the District Collector shall review the performance of the local bodies at least once a quarter on the implementation of SWM Rules and take corrective measure in consultation with CDMA.

The CDMA also instructed the District Collectors in October 2020 to take up the important activities *viz*., Monitoring Online Waste Management System (OWMS), appointment of nodal officers in the ULBs and teams in bigger ULBs, segregation of waste at source (wet & dry) and door to door collection of segregated waste, management of wet waste *i.e.,* Waste to Compost, Waste to Energy, bulk waste

generators-onsite processing of wet waste, home composting and bio-mining of legacy waste in compliance with SWM Rules and directions of Hon'ble NGT.

However, it was observed that the CDMA did not pursue the compliance of the District Collectors continuously[106] and reports of compliance were not received from District Collectors as seen from the records.

This indicated that there was lack of monitoring at district level to review the implementation of Policy.

Government stated that (August 2023) there were no copies of Minutes of Meetings from the District Collectors. However, the CDMA ensured the involvement of the District Collectors in attaining required progress in SWM and related activities *viz*., alienation of Government land to ULBs *etc*.

2.5.2.3 Star-Rating of Garbage-Free Cities

Ministry of Housing and Urban Affairs (MoHUA) developed a set of 'Protocol for Star Rating of Garbage-Free Cities'. As per the star-rating initiative, developed by SBM – U rating cities on a 7-star-rating system is based on multiple cleanliness indicators for SWM: Door to door collection, segregation at source, scientific waste processing, scientific landfilling and C&D waste management, waste reduction, visible beautification in the city, *etc*. The star rating conditions are designed in such a way to enable cities to gradually evolve into a model (7-star) city, with progressive improvements in their overall cleanliness. For achieving this vision, a key objective under SBM-2.0 is to make every ULB at least 3-star Garbage free as per the Star-Rating Protocol. Further, SBM-2.0 and 15th Finance Commission (FC) require to achieve at least 1-star certification for release of funds.

However, no ULB in the State has achieved the 7-star rating certification (July 2022). Only one[107] ULB achieved the 5-star certification, three[108] ULBs have achieved 3-star certification and only three[109] ULBs have achieved 1-star certification. It is evident that, out of 123 ULBs, only seven ULBs (six *per cent*) were found to have star-ratings.

Only seven out of 123 ULBs achieved star certification. No ULB in the State achieved seven-star rating with regard to garbage free cities**.**

Government accepted the observation (August 2023) and promised the future compliance.

2.5.2.4 Swachh Survekshan

Swachh Survekshan (SS) was introduced by MoHUA in 2016 as a competitive framework to encourage cities to improve the status of urban sanitation while encouraging large scale citizen participation. 'MSWM' is considered as one of the initiatives under SS. Set of indicators under MSW for sweeping, collection,

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106 CDMA addressed letters to District Collectors in September 2019 and October 2020
107 Vijayawada Municipal Corporation
108 Kadapa, Tirupathi and Visakhapatnam
109 Palamaneru, Punganur and Tadepalli

transportation, processing and disposal of waste is defined. SS awards are given by MoHUA after taking up independent verification and validation from citizens through a third-party agency. The GoI announced the SS awards for the year 2020-2021 in November 2021.

The following five ULBs received SS awards under different categories as detailed in **Table-2.9**.

Table-2.9: Details of ULBs received SS awards

Sl. No.	Name of the ULB	Population category	Award received
1	Vijayawada	Above one lakh	India's cleanest city – No.3
2	Greater Visakhapatnam	10-40 lakh	Best city in Citizen feedback
3	Tirupati	1 - 3 lakh	Best small city in citizen feedback
4	Punganur	50,000 - 1 lakh	Best city in citizen feedback
5	Pithapuram	50,000 -1 lakh	Best city in innovation & best practices.

Source: Information furnished by SAC

Thus, from the above table it can be seen that only five out of 123 ULBs were able to secure SS awards.

Government stated (August 2023) that efforts of Project Management Unit of SAC would be strengthened to improve the performance of ULBs.

2.5.3 Strengthening the capacities of ULBs

As per Rule 15 (l), the ULBs need to provide training on SWM to waste-pickers and waste-collectors.

Audit observed that out of 17 test-checked ULBs, five ULBs[110] stated that trainings were provided to waste pickers, however, relevant data on training programmes was not furnished. Twelve ULBs did not provide training to the waste pickers. However, all the test-checked ULBs are providing awareness programmes to the citizens of the ULBs.

Government accepted the observation (August 2023) and promised future compliance.

2.5.4 Waste management of disposable products

AP SWM Policy requires inventorising the manufacturers or brand owners of disposable products, in a phased manner, such as tin, glass, plastic packing and sanitary napkins and diapers. The identified manufacturers and brand owners are to be encouraged to take up Corporate Social Responsibility (CSR) programs in waste management and support the ULBs. The progress report shall be placed before SLAB periodically.

[110] Adoni, Kurnool, Rajamahendravaram, Vijayawada and Vizianagaram

Audit observed that as of November 2022, the SAC did not maintain any inventory of manufacturers or brand owners of disposable products. In the absence of such inventory, it would not be possible to have an effective control over the manufacturers, and brand owners of disposable products in making them responsible to meet their CSR obligations and thereby mitigating the waste and its scientific disposal in the State.

Government accepted the observation (August 2023) and stated that APPCB would be requested to take suitable action in this regard. It was further stated that ULBs would be directed to identify the producers, importers *etc*., in coordination with APPCB.

2.5.5 Information, Education & Communication activities

Behavioural change is vital for effective SWM. Information, Education and Communication (IEC) is a multi-level tool for promoting and sustaining risk-reducing behaviour change in individuals and communities. The IEC campaign should target households, shops, and commercial and institutional premises as well as other stakeholders such as municipal officials, elected representatives, schools, NGOs, the informal sector, media *etc*., to ensure their participation in managing city waste by discharging their role effectively.

Clause 15 (zg) of SWM Rules 2016 and Section 1.4.5.13 of SWM Manual, 2016 underscores IEC activities and requires the State Government and ULBs to create public awareness and educate waste generators to achieve the overall objectives of MSWM.

CDMA instructed (December 2022)[111] all ULBs to implement the weekly action plan for implementation of IEC activities at ward level.

Test-checked ULBs replied that they had conducted IEC activities, encouraging waste generators through various modes such as audio, video, pamphlets, *etc*. Coverage of IEC activities as stated by the test-checked ULBs is given in ***Appendix-2.5 and Appendix-2.6***.

However, the supporting documents were not produced to audit to ascertain the conduct of IEC activities.

The Government replied (August 2023) that intensive IEC activities for awareness generation for SWM, PWM *etc*., were conducted in December 2022 after completion of audit of test-checked ULBs.

2.5.6 Funding for SWM

The State SWM Policy defines the role and responsibility of Directorate of Municipal Administration. As per role and responsibility, the CDMA would (i) provide funding to ULBs to take up health and sanitation related work (ii) provide O&M funds to ULBs to maintain collection vehicles and treatment infrastructure.

[111] Vide Roc. No. 12057/6/2022/L Sec., dated 06 December 2022

However, audit observed that CDMA was not providing funds to ULBs towards O&M. We observed that the expenditure towards O&M for collection vehicles was met from General Fund of respective ULBs.

Government stated that (August 2023) funds were released to all the ULBs from the State Budget by the CDMA for improvement of SWM sites between 2016-17 and 2022-23. The reply is not tenable as in test-checked ULBs, audit noticed that no funds were received from Government towards Operation & Maintenance to maintain collection vehicles and treatment infrastructure.

2.5.6.1 Levy and collection of user charges

As per clause 15 (f) of SWM Rules, 2016 (effective from 08 April 2016), the local authorities shall prescribe from time to time user fee as deemed appropriate and collect the fee from the waste generators on its own or through authorised agency. Para 1.4.5.6.4 of SWM Manual, 2016 also stated that it is important to initiate the process of recovering at least 100 *per cent* of the cost of collection and transportation (O&M costs only) through levy of user fees within three years; subsequently the user fees may be gradually raised to cover the gap in recovery of processing cost and O&M cost.

The test-checked ULBs resolved to levy and collect user fee from waste generators in May-July 2021 with a delay of five years. The details of user fee collected in ten ULBs are given in ***Appendix-2.7***.

Audit observed that 11[112] test-checked ULBs levied user charges with a delay of five to six years and four ULBs[113] were collecting from pilot wards (some selected wards) only. Two[114] ULBs did not commence collecting user charges. We observed that due to short fall in collection or non-collection of user charges the O&M costs were being met from general funds of respective ULBs.

The ULBs are already working with scarce resources. Hence, non-levy of user charges will further impact development and maintenance of various other schemes.

User charges were not being levied and collected uniformly.

Government stated that (August 2023) all the ULBs in the State had issued bye-laws for collection of user fee ranging from ₹ 1 to ₹ 5 per household per day. However, user fees collection was implemented in only 40 ULBs in phase-I.

2.5.7 Recommendation

Recommendation 5: ULBs should levy and collect user charges as per SWM Rules, 2016.

[112] Adoni, Bhimavaram, Kurnool, Madanapalle, Narasaraopet, Ongole, Proddatur, Rajamahendravaram, Tenali, Vijayawada and Vizianagaram
[113] Kanigiri, Nellimarla, Tiruvuru and Yellamanchili
[114] Jangareddygudem and Puttaparthi