Chapter – VIII

Monitoring and Evaluation of Waste Management System

8.1 Institutional mechanism for monitoring waste management

8.1.1 Lack of monitoring of SWM by State Level Advisory body

Section 1.4.5.4 of MSWM Manual 2016 envisaged that for planning, an efficient and advanced MSWM system, it is essential to have an efficient institutional structure besides having adequate infrastructure and equipment. Accordingly, GoO constituted (April 2017) State level Advisory Bodies (SLAB) for improving SWM practices and execution of SWM projects. Clause 23(2) of SWM 2016 envisages that SLAB shall meet at least once in six months to review all matters related to implementation of SWM Rules, 2016 and implementation of State policy and strategy on SWM, and give advice to State Government regarding necessary measures for expeditious and appropriate implementation of these rules. It was, however, observed that SLAB had only four[57] meetings against 8 times during 2017-21. No meeting was held by the Urban Development Department to review measures[58] taken by SLAB for improving SWM practices and execution of SWM projects during 2017-20 indicating poor monitoring by State level bodies.

Audit observed inadequacy in monitoring by State Level Advisory Committee (SLAC) as given in Table below:

Table: 8.1: showing monitoring of SLAC for Special Waste

Special Waste	Criteria	Audit findings
Plastic waste	As per Clause 16 of PWM Rules 2016, the State Level Advisory Committee (SLAC) shall meet at least once in six months and may invite experts, if it considers necessary.	Audit observed that SLAC had met only three[59] times during 2015-21 which indicates deficiency in monitoring enforcement of the Plastic Waste rules.
BMW	As per clause 11 of BMW Rule 2016, every State Government shall constitute a State Level Advisory Committee (SLAC)[60] to oversee implementation of rules in the State and to advice any improvements. The SLAC constituted shall meet at least once in six months and review all matters related to implementation of the provisions of BMW Rules in the State.	Audit observed that GoO had constituted SLAC in June 2015 for monitoring implementation of BMW Rule in the State. It was, however, observed that SLAC had met only four[61] times against required 12 times during 2015-21 indicating poor support to effective implementation of BMW plans.

(Source: Compiled by Audit)

[57] 1st meeting on 16.02.2018, 2nd meeting on 31.10.2018, 3rd meeting on 29.06.2019 and 4th on 27.11.2020

[58] (i) Provision of site for SWM mater plan (ii) Action plan on SWM (iii) Project Management consultancy for establishing of decentralised compost plant (iv) Publication of SWM By-laws *etc*.

[59] 1st SLAB on 25.09.2017, 2nd SLAB on 29.06.2019 and 3rd SLAB on 24.11.2020

[60] The SLAC shall include representatives from Departments of Health, Forest and Environment, Urban Development, Animal Husbandry and Veterinary Sciences, SPCB, ULBs, representatives from Indian Medical Association, CBWTF and non-governmental organisation

[61] SLAC meetings held on 14.02.2017, 11.03.2019, 07.09.2019 and 05.11.2020

The Government stated (May 2022) that periodic review was done for monitoring SWM in the State. The model adopted by Odisha was appreciated by the MoHUA. However, number of meetings of SLAC for special waste remained deficient, indicating lack of adherence to the Rules.

8.1.2 Deficiencies in monitoring at district and ULB level

As per Clause 12 of SWM Rule, 2016, at district level, District Collector should review the performance of ULBs on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the DMA. Audit observed that though District Collectors have conducted meetings on SWM, action taken on the report of previous meetings was not followed up.

As per Section 6.1 of MSW Manual 2016, ward level committees should be constituted for ensuring and monitoring SWM services including segregation, collection, transportation, street sweeping, drain cleaning, and prohibition of littering. However, in test-checked ULBs, ward level committees were not constituted indicating deficiencies in monitoring of SWM activities. The Committee-wise details are in **Appendix-XI**.

The Government stated (May 2022) that the district level review committees under SBM (Urban) was constituted for monitoring of the scheme in which SWM was one of the components. The reply was not acceptable though District Collectors have conducted meetings on SWM, action taken report of previous meetings was not followed up indicating poor monitoring at district level. Moreover, Government reply is silent on constitution of ward level committees for SWM.

8.1.3 Monitoring by SPCB

As per Clause 16(1) of SWM 2016, SPCB should enforce the rules in the State through ULBs and review implementation of these rules at least twice in a year in close coordination with concerned Directorate or Municipal Administration or Secretary in charge of State Urban Development Department.

Audit observed that no such meeting was held by the SPCB during 2015-20 to review implementation of SWM Rules resulting in violation of these rules by ULBs.

8.1.3.1 Facilities without authorisation and environmental clearance

Clause 4(2) of MSW Rules 2000 provide that the municipal authority or an operator of a processing or disposal facility shall make an application for grant of authorisation for setting up waste processing and disposal facility including landfills from the SPCB. GoI notification (September 2006) and Manual for CMSWMF stipulates for obtaining environment clearance from SPCB before establishment of processing facilities.

Audit observed that out of 114 ULBs, the percentage of authorisations obtained from SPCB by ULBs for disposal facility was up to 25 *per cent* during the period 2015-20. Out of above valid authorisation, 15 ULBs have not renewed them from March 2020, 14 ULBs have not renewed them from March 2019 and BMC did not renew it from March 2018. Further, none of the ULBs had applied for environmental clearance for construction of MCC/MRF

projects and landfills as stipulated in. The reasons for non-obtaining authorisations and renewals from SPCB by the ULBs were not on record.

The Government stated (May 2022) that there was no requirement for environmental clearance for processing facilities below 5 TPD as per instruction issued by the SPCB. The reply was not acceptable as the processing facilities created by the 67 ULBs are of 5 TPD capacity each and no documentary evidence was furnished that 5 TPD capacity processing facilities do not require environmental clearance. Moreover, reply was silent on non-obtaining and non-renewal of authorisation of disposal facilities.

8.1.3.2 Monitoring of pollution levels

Audit observed laxity in monitoring of pollution levels by SPCB as detailed in Table below:

Table 8.2: Showing the deficiencies in monitoring of pollution levels by SPCB

Nature of Pollution	Criteria	Audit findings
Ambient air quality	As per Schedule III Rule 29 of SWM Rule 2000, the ambient air quality monitoring shall be carried out by the concerned authority as per the following schedule, namely:- • Six times in a year for cities having population of more than fifty lakhs; • Four times in a year for cities having population between ten and fifty lakhs; • Two times in a year for town or cities having population between one and ten lakhs	Audit observed that SPCB did not adhere to the prescribed frequency to check ambient air quality monitoring on the boundary of processing plant/ landfill sites of ULBs causing air pollution. SPCB monitored (2019-20) ambient air quality at different 38 locations under 17 ULBs. In all cases, the annual average concentration of Respirable Suspended Particulate Matter (RSPM or PM_{10}[62]) remained above the prescribed limit of 60 ug/m^3 whereas annual average value of $PM_{2.5}$[63] remained within the limit of 40ug/m3 at 14 locations, indicating possibility of causing health hazards to habitations. Besides, ULBs did not install gas control system at landfill sites to minimise odour generation, prevent off-site migration of gases as of March 2021.
Water quality	As per Clause E of Schedule I of SWM Rule 2016, before establishing any landfill/ dumpsites, baseline data of water quality in the area shall be collected and kept on record for future reference. The ground water quality	Audit observed that ULBs did not assess water quality in the periphery of landfill area in violation of above provision in SWM Rule and possibility of ground water contamination

[62] PM_{10} is known as respirable particulate matter. Particulate matter is a complex mixture of soot, smoke, metals, nitrates, sulphates, dust water and rubber etc. PM_{10} particles are small enough to get into throat and lungs. High levels of PM_{10} can cause cough, running nose and eye sour

[63] $PM_{2.5}$ is an air pollutant that is a concern for people's health when levels in air are high. $PM_{2.5}$ are tiny particles in the air that reduce visibility and cause the air to appear hazy when levels are elevated. Fine particles ($PM_{2.5}$) pose the greatest health risk. These fine particles can get deep into lungs and some may even get into the bloodstream. Exposure to these particles can affect a person's lungs and heart

Nature of Pollution	Criteria	Audit findings
	within 50 metres of the periphery of landfill site shall be periodically monitored covering different seasons in a year, that is, summer, monsoon and post monsoon period to ensure that the ground water is not contaminated. Usage of ground water in and around landfill sites for any purpose (including drinking and irrigation) shall be considered only after ensuring its quality.	around landfill area, therefore, could not be ruled out.

(Source: Compiled by Audit)

8.1.4 Management Information System

As per Clause 1.3 and 6.1.1 of SWM Manual 2016, a management information system (MIS) should be set up to record and monitor all information or data on MSWM and is the best way to ensure achievement of target through a computerised MIS.

Audit observed that no such MIS was developed by the ULBs. In the absence of MIS, online monitoring of SWM activities by the ULBs was not possible.

The Government stated (May 2022) that *Ama sahar* mobile application had been developed at State level for online data/information which were being used by the ULBs. The fact, however, remained that *Ama sahar* mobile application was introducted only in August 2020 which could not provide complete information on waste management. It was mainly a citizen centric application dealing with complaint redressal for waste management services.

8.1.4.1 Wasteful expenditure on SWM monitoring software

Bhubaneswar Municipal Corporation (BMC) prepared (February 2015) a request for proposal (RFP) for web-based monitoring system for SWM as part of e-Governance initiative and requested (November 2014) to Odisha Computer Application Centre (OCAC) being technical directorate to GoO for comments. Accordingly, OCAC submitted (February 2015) the RFP for development, implementation & support of web-based monitoring system for SWM with four modules[64].

The project work was awarded (March 2016) to M/s CMS Pvt Ltd for ₹56.93 lakh for completion within one year. But in the meantime, the Smart City Programme was introduced (March 2016) in Bhubaneswar and SWM became part of the Smart City programme. As the project was not in consonance with the SWM system of the Smart City programme, it had to be shelved. However, the Commissioner, BMC issued (March 2016) letter of acceptance for execution of the project to M/s CMS Pvt Ltd for ₹56.93 lakh and entered into an agreement on 22 June 2016. The agency was paid (January 2017) ₹13.89

[64] (i) Construction Waste Management (Registration, Construction (Waste) Permit, Complaint & Grievance Management, Waste Management Facilities, and Billing & Collection (ii) Bio-Medical Waste Management -Registration (Hospitals, Medical Institutes, Clinics & Patho-lab); Bio-Medical (Waste) Permit; Complaint & Grievance Management; Transit Management; BWM facilities and Billing & Collection (iii) Animal Waste Management (Request for service, Reports unclaimed, Burial Site Management) and (iv) Monitoring Tool (Transparency Portal, Web GIS, GPS Tracking and Mobile Application)

lakh for partial development of applications. Finally, BMC decided to terminate (April 2018) the above project. This resulted in wasteful expenditure of ₹13.89 lakh on SWM monitoring software.

The Government stated (May 2022) that after formation of Bhubaneswar Smart City, many IT based interventions were under the scope of master system integrator of the Smart City. As the selected agency had completed certain milestones as envisaged in the agreement, BMC was liable to make payment. The fact, however, remained that in November 2015, Deputy Commissioner, Sanitation of BMC had suggested for cancellation of RFP of this project as it was not in consonance with the SWM system of Smart City programme. However, despite Deputy Commissioner's suggestion, Commissioner, BMC entered into an agreement which resulted in wasteful expenditure.

8.1.5 Monitoring of reporting on Waste Management

Audit observed failure in monitoring control mechanisms on reporting under Waste Management as detailed in Table below:

Table 8.3: Showing non-submission of annual reports in Waste Management

Criteria	Audit observation	Response
Clause 24(2) of SWM Rule 2016 stipulates that ULBs shall submit Annual Reports (AR) in Form-IV to SPCB or Pollution Committee and Secretary-in-Charge of the Department by 30 June of every year. SPCB, in turn, shall prepare and submit its AR to CPCB with regard to the implementation of the SWM Rules by 31st July every year	Audit observed that out of 111 ULBs, only three ULBs submitted annual reports during 2016-17 and 19 ULBs (out of 114) submitted annual reports during 2017-18 to SPCB. It indicates that the SPCB did not closely monitor SWM activities done by the ULBs.	EO Jeypore ULB stated (March 2021) that due to shortage of staff, all records could not be maintained and annual reports could not be submitted. EOs of Rayagada, Bhadrak, Sambalpur, Puri and Cuttack ULBs stated to have noted audit comments.
As per clause 13(1) and (4) of BMW Rule 2016, every HCEs or operator of CBMWTF should submit an ARs to prescribed authority in Form IV on or before the 30th June of each year. The ARs shall also be available online on website of HCEs, as well as on SPCB and CPCB.	During review of ARs from 2015-20 for BMW, it was observed that non-submission of ARs by HCEs or operator of CBMWTF ranged between 0.61 and 3.27 *per cent*. SPCB, however, issued show cause notices to 125 (out of 3,509) HCEs for non-submission of ARs and non-compliance of BMW Rules during 2020-21.	
As per clause 9(4) of EWM Rule, 2016, bulk consumers of electrical and electronic equipment shall file annual returns in Form-3 to the concerned SPCB on or before the 30th day of June following the financial year to which that return relates.	Audit observed that none of the test-checked ULBs filed annual returns from 2016-17 to 2019-20 to SPCB. Thus, ULBs did not take measures to put in place requisite mechanisms which resulted in deficient/improper management of E waste.	EOs Rayagada, Jeypore, Cuttack, Bhadrak, Sambalpur, Chhatrapur ULBs stated (March 2021) that monitoring of EWM Rule, 2016 would be implemented henceforth.

(Source: Compiled by Audit)

8.1.6 Environment and health impact assessment

Section 22 of SWM Manual 2000 envisages that improper handling of solid wastes create potential risks to environment and health. More serious impact is transfer of pollution to water, ground water and air. Air pollution is caused from by burning of wastes, either in open air, or in plants that lack effective treatment facilities from gaseous effluents.

Audit observed that no such environment and health impact assessment was made by the ULBs as of March 2021 since wastes were burnt at landfill sites in all ULBs and deterioration of health conditions of inhabitants living near landfill sites was also reported during survey as discussed in earlier paragraphs.

Government stated (May 2022) that steps were taken for bio-remediation in the existing dump sites. The fact, however, remained that ULBs failed in proper handling of solid waste and also could not conduct environment and health impact assessment.

8.1.7 Manpower/ staff constraints for SWM

Section 1.4.5.4 of SWM Manual 2016 stipulates that ULBs should have an SWM cell or SWM department having staff with technical and managerial skills specific to SWM like public health officer, sanitary officer, junior engineer, sanitary sub inspector, environmental engineer for SWM and sanitation activities.

Audit observed that an SWM cell was created (October 2020) after lapse of more than four years from the date of notification of SWM Rule 2016. However, there was shortage of manpower at all cadres *viz.,* Environment Engineer (25 *per cent*), health inspector (20 *per cent*) and sweeper (29.52 *per cent* in eight ULBs).

The EOs of Rayagada, Sambalpur, Chhatrapur, Bhadrak ULBs stated (March 2021) that action would be taken to get required staff in sanitation cell. The EO Jeypore ULB stated (March 2021) that shortage of staff would be intimated to government for filling up the posts. The staff position for SWM-cum-sanitation activities in the test-checked ULBs are given in **Appendix–XII.**