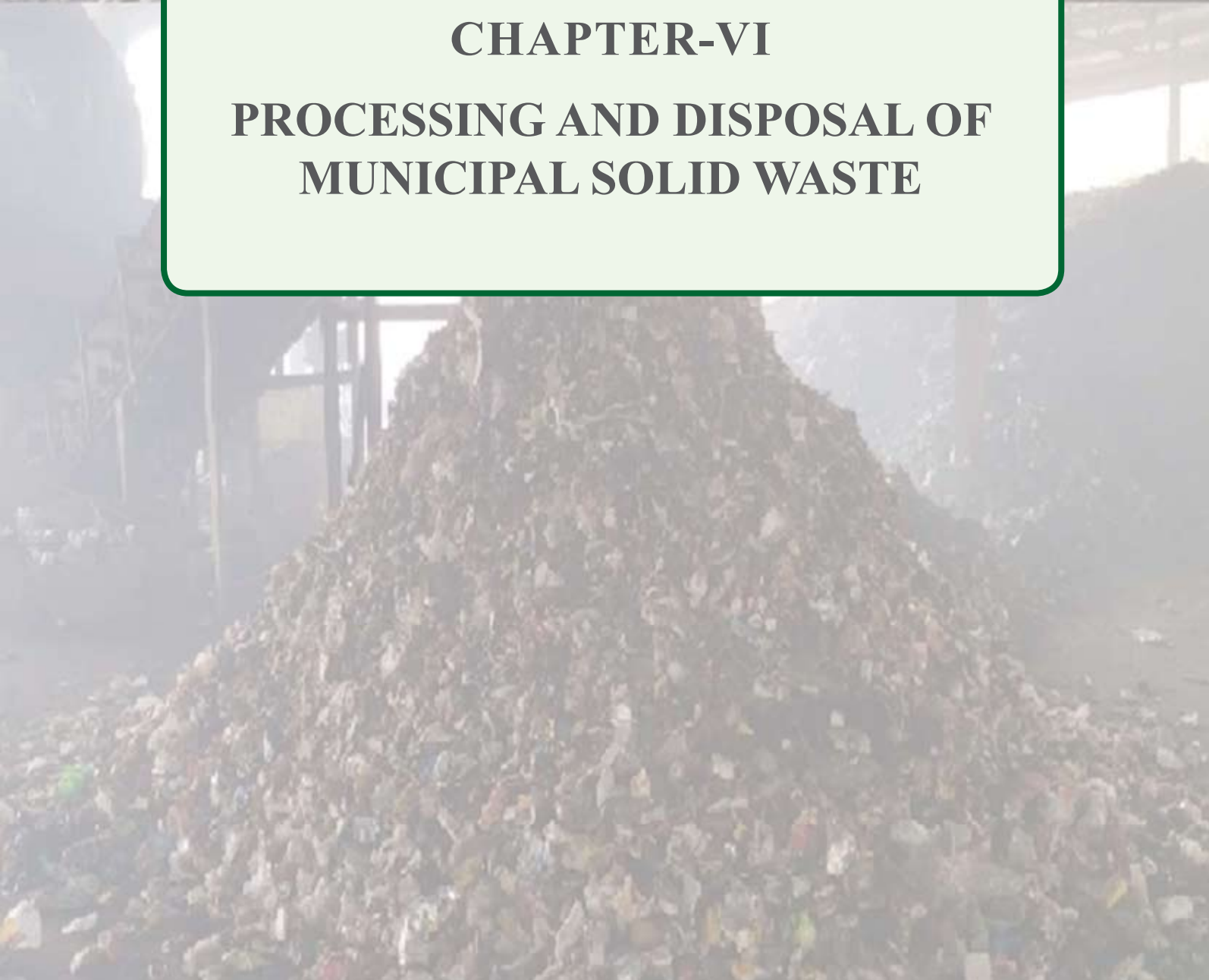




CHAPTER-VI
PROCESSING AND DISPOSAL OF
MUNICIPAL SOLID WASTE



Chapter- VI

Processing and Disposal of Municipal Solid Waste

The Annual Report (2019-20) of Meghalaya State Pollution Control Board indicates that despite the high percentage of municipal waste collection of 83 per cent in urban areas, a significant portion was disposed off in landfills without processing. Judicious processing of municipal waste not only creates value out of waste, but also aids in scientific and non-polluting methods of municipal waste disposal.

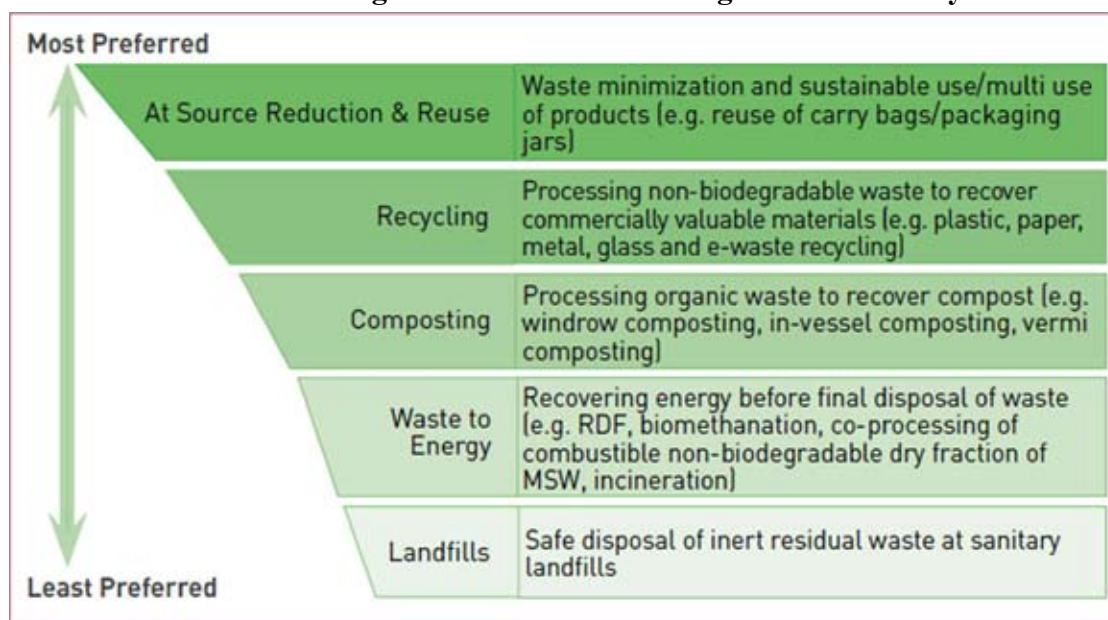
Municipal Solid Waste Management Manual (2016), provides guidance on management of Integrated Solid Waste Management (ISWM), pictorially depicted as follows:

6.1 Status of Waste Processing in Meghalaya

Test check of urban agglomerations revealed that significant portion (70 per cent to 98 per cent) of municipal waste ended up in landfills without any processing.

An ideal mechanism for processing municipal solid waste is depicted below:

Chart 6.1: Integrated Solid Waste Management Hierarchy



Source: Municipal Solid Waste Management Manual 2016.

In the hierarchy of solid waste management, dumping of solid waste in landfills should be of the residual waste remaining after retrieval, reuse, composting and processing of solid waste.

As per MSPCB Annual Report 2019-20, total waste generated in seven⁴⁴ urban local bodies was 229.18 TPD⁴⁵ out of which 83 per cent (191.19 TPD⁴⁶) was collected by

⁴⁴ Six Municipal Boards and one Cantonment Board, Shillong (SCB).

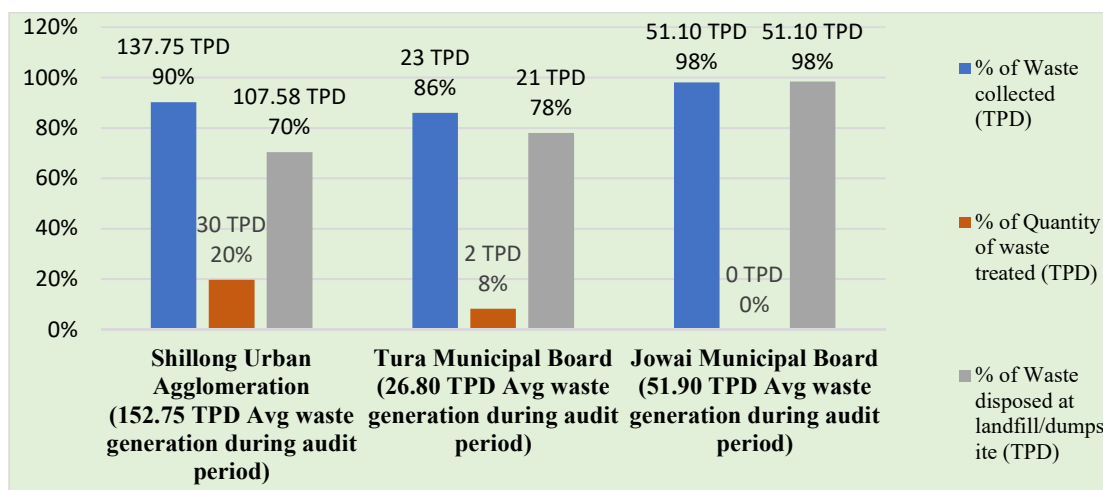
⁴⁵ SMB-59.85 TPD, SCB-16, JMB-60, TMB-75, WMB- 11.20, RMB-1.03, BMB-6.

⁴⁶ SMB-50.96, SCB-16, JMB-56, TMB-50, WMB- 11.20, RMB-1.03, BMB-6.

the ULBs and only 9.64 TPD⁴⁷ (four *per cent*) was processed and rest 181.55 TPD (79 *per cent*) was disposed to the landfill.

The status of waste collected and processed in the test-checked urban areas during the period 2017-18 to 2021-22 is given in the Graph below:

Chart 6.2 – Comparison of Waste processing and disposal in selected Urban Areas (Period from 2017-18 to 2021-22)



Source: Information submitted by the SIPMIU⁴⁸/selected ULBs.

From the information available as shown in the Chart above, it can be seen that the waste processing capacity of the major urban areas like Shillong and Tura were grossly insufficient. In Shillong, only 20 *per cent* of the total collected waste, *i.e.* 30 tonnes was being processed, while in Tura the percentage of waste processing was abysmal eight *per cent*. Although the collection of waste from selected urban areas were 90 *per cent* for Shillong Urban Agglomeration, 86 *per cent* for Tura MB and 98 *per cent* for Jowai MB, 70 to 98 *per cent* of unprocessed solid waste ended up in landfills.

No data was being maintained by the Nongpoh Town Committee till 2020-21. During 2021-22, seven TPD waste was generated in Nongpoh but nothing was processed.

Thus, in the hierarchy of Integrated Solid Waste Management laid down in the Municipal Solid Waste Management Manual, Meghalaya was operating at the lowest level of hierarchy or in the least preferred stage.

6.2 Value Chain in Waste Processing

An important component of value chain in solid waste management is recovery of materials that could be used further or recycled. After the initial collection of municipal waste, the first step is to transfer the waste to resource recovery centres, from where the initial segregation of recyclables, organic and inorganic waste and inert could be carried out.

⁴⁷ SMB

⁴⁸ In Shillong, as per information submitted by SIPMIU; 137.75 TPD of waste was generated of which 30 TPD was processed, 107.58 TPD was disposed in landfill while the remaining 0.17 TPD was unaccounted.

Recyclables like plastic, metal, glass *etc.* have a high potential of material recovery, that can be sold as scrap or used as raw materials if appropriate technology is available.

Organic waste, which forms a bulk of solid municipal waste can be treated further for composting or for energy conversion. The value chain in solid waste management was practically non-existent as composting was unsuccessful due to poor waste segregation practices as pointed out in the succeeding paragraphs.

6.3 Integration of the informal sector in recycling process

Despite the presence of recycling initiatives in certain urban areas, such as Shillong and Tura, the proper functioning and integration of waste recovery centers and recyclers into the solid waste management system, as required by SWM Rules, 2016, have been lacking, leading to suboptimal recycling efforts.

Section 3.1 of MSWM Manual 2016 defines recycling as “the process of transforming segregated solid waste into a new product or a raw material for producing new products.” Further, it also states that “arrangement shall be made to provide segregated recyclable material to the recycling industry through waste pickers or any other agency engaged or authorised by the urban local body for the purpose”. **Chart 6.1** indicates the importance of recycling in the ISWM hierarchy.

Audit carried out a survey of 26 Dorbar Shnongs (localities) under Mawlai and Umpling Census Towns (East Khasi Hills) to ascertain the recycling and composting activities in census town areas, of which 15 responded. Out of 15 respondents of the survey of Dorbar Shnongs, 14 (93 *per cent*) stated that no recycling or composting activities were undertaken in the localities.

During Joint Physical Verification (JPV) of the test checked Urban Areas, audit noticed the following:

- A Waste Recovery Centre (WRC) Shillong, to reduce waste transportation cost by recovering recyclable waste to be sold as scrap, was set up at Umpling, a census town within SUA, which was being operated by two people (unregistered as SHG till the date of JPV). The WRC was set up with space for composting and storing of waste. During JPV (September 2022), it was however seen that all the sheds to segregate and store valuable materials from the waste were empty except glass bottle shed. The person in-charge admitted that the WRC was not yet fully functional and there were no earnings from the WRC. It was also stated that due to improper segregation, the entire waste goes to landfill. The SMB in collaboration with the Dorbar Shnong of Umpling should take steps to fully operationalise this WRC in order to reduce the waste generated from the locality which will ultimately reduce the burden in the sanitary landfill at Marten.



Exhibit 6.1: Storage shed used not as intended



Exhibit 6.2: Glass bottle storage

- Eleven recyclers were operating in Marten landfill site to collect, sort and transport various types of recyclable materials segregated from the collected waste. However, there were no records to indicate that these recyclers have been formally integrated into the SWM system.



Exhibit 6.3: Recyclers operating at Marten, Shillong



Exhibit 6.4: Manual workers sorting recyclables from dumped waste

- In Tura, some workers were seen segregating/sorting the recyclables, valuable materials from the heap of garbage and transferring them to recycling industries. These workers were part of Swapan Industries and they are recycling about one TPD of waste from Rongkhon Songittal, the dumping site of Tura. The proprietor informed that his transporting capacity could be augmented if one plastic baling machine was made available to him.



Exhibit 6.5 & 6.6: Informal Sector workers sorting and packaging recyclables at Tura dumpsite

There is a vertical composting unit available at the Waste Recovery Centre (WRC), Umpling. However, plastic waste was seen mixed with the vertical composting which may degrade the quality of compost. There was no earning as on the date of audit from the sale of compost.

Thus, within the test checked urban areas, there were very limited mechanisms in place, including involvement of informal sector, for waste recovery for transferring them to recycling industry, observed only in Tura and Shillong.

6.4 Status of Composting

According to Section 3.2 of MSWM Manual, composting is a process of controlled decomposition of the organic waste, typically in aerobic conditions, resulting in the production of stable humus-like product, *i.e.*, compost. Composting improves soil quality, enhances water retention capacity of soil, increases biological activity, micronutrient content, and improves pest resistance of crops. It also minimises greenhouse gases emissions from anaerobic decomposition of organic waste and increases the design life of other waste management facilities.

As per Section 3.2.4 of MSWM Manual 2016, market development for compost and proper quality monitoring are crucial. The pricing mechanism for sale of compost should be assessed by fixing a minimum retail price for compost, which meets Fertiliser Control Order (FCO) 2009 standards. All state and local government departments should be encouraged to promote the use of compost in parks, gardens, nurseries, and urban forestry projects. The benefits of compost should be informed to farmers, who should be encouraged to partially substitute inorganic fertilisers with organic compost, as appropriate for their crop and specific soil. In addition, opportunities for involving agricultural officers to generate awareness of compost usage among farmers should be looked into.

In Meghalaya, sanction had been accorded through schemes like JnNURM (March 2009) and NERCCDIP (May 2019) for setting up of composting plants in Nongpoh, Tura and Shillong. The status of these composting plants is discussed in succeeding paragraphs.

6.4.1 Compost plant in Nongpoh

The Nongpoh solid waste management project, sanctioned under JnNURM, faced delays and remained incomplete, with the composting facility and associated structures left unused and non-functional, despite payments for civil works and machinery which led to wasteful expenditure of ₹ 4.48 crore.

SWM project for Nongpoh town was sanctioned (March 2009) at a cost of ₹ 600.16 lakh under UIDSSMT⁴⁹ of JnNURM. Mention was made in Paragraph 1.6 of the Report of the Comptroller and Auditor General of India on Social, Economic, General and Economic (PSUs) Sectors for the year ended 31 March 2015 regarding delay in executing the civil

⁴⁹ Urban Infrastructure Development Scheme for Small & Medium Towns.

and compost plant works in Nongpoh leading to the project remaining incomplete. Two major components of this project were ‘Civil works for Compost Plant site including windrow platform, vermi pits, office building for main structure, site development for plant and installation of ‘25 TPD Compost Plant’. The work was allotted to M/s Marbaniang Enterprises. Total expenditure incurred towards civil works as per final Running Account (RA) bills for civil works was ₹ 3.63 crore whereas the expenditure incurred towards the compost plant was ₹ 0.82 crore.

During Joint Physical Verification (JPV) of SWM facilities in Nongpoh (17 November 2022), the following were revealed:

- This facility was yet to be handed over to the Town Committee by MUDA.
- Though the composting plant and windrow platform was available at the site, no composting was being carried out.
- Facilities including the machineries, the windrow platforms, vermi-compost pits, office building, storage rooms, *etc.* was not used as they were originally intended.
- Machineries at Nongpoh could not be started and vegetation could be seen growing out of the machinery. The windrow platform, vermi-compost pits and office building, *etc.* were lying idle and unused since completion.



Exhibit 6.7: Compost Plant Machineries with vegetation coming up at Nongpoh



Exhibit 6.8: Unused windrow platform at Nongpoh



Exhibit 6.9: Damaged panel board of compost plant



Exhibit 6.10: Parts of the machineries lying separately

In reply to audit (January 2023), the Secretary, MUDA stated that the handing over of the facility was deferred due to the pandemic. It was further stated that present waste characteristics of the solid waste generated and collected in Nongpoh comprises mainly of biodegradable and recyclable waste and only a small fraction of inert waste is generated and collected. Hence, absence of sanitary landfill will not hamper operation of the solid waste management in Nongpoh.

Audit noted that the final bill for construction of the civil works for Compost Plant site was paid in March 2017, which was three years prior to the pandemic.

Further, according to the Detailed Project Report (DPR), 52 per cent of waste generated in Nongpoh town area was bio-degradable, 24 per cent was inert and rest was recyclable. Hence, the statement made by the Secretary that only a small fraction of inert waste is generated and collected was inconsistent with the DPR.

As evident from the photographs taken on site, civil structures for segregation, treatment and storage of waste as well as the compost plants were not used.



Exhibit 6.11: Unused vermi compost pits at Nongpoh



Exhibit 6.12: Unused office room

Thus, this resulted in wasteful expenditure on civil works for Compost Plant site and Compost Plant machineries. Further, absence of waste composting facility exacerbated the risk of dumping untreated waste in landfills.

6.4.2 Compost Plant in Tura

Tura solid waste management project sanctioned under JnNURM, including a compost plant, faced delays and remained incomplete, with the composting facilities and associated structures left unused and the machinery not utilised as intended, despite payments for civil works and commissioning which led to wasteful expenditure of ₹ 5.16 crore.

SWM project for Tura town was sanctioned (March 2009) at a cost of ₹ 833.10 lakh under UIDSSMT⁵⁰ of JnNURM. Mention was made in Paragraph 1.6 of the Report of the Comptroller and Auditor General of India on Social, Economic, General and Economic

⁵⁰ Urban Infrastructure Development Scheme for Small & Medium Towns.

(PSUs) Sectors for the year ended 31 March 2015 regarding delay in executing the civil and compost plant works in Tura leading to the project remaining incomplete. Two major components of this project were ‘Civil works for Compost Plant site including covered window platform, tromel shed, ramp, office, retaining walls, site development for plant, finished and semi-finished store *etc.*’ and installation of ‘Compost Plant’. The work was executed by Shri R.P. Marak and Smti S.Ch. Momin. The total expenditure incurred towards civil works as per final Running Account (RA) bills for civil works was ₹ 3.98 crore⁵¹.

A Compost Plant of 50 TPD was commissioned during February 2015. It was also noticed that an amount of ₹ 1.08 crore was incurred towards the Compost Plant.

During JPV (November 2022) of SWM facilities in Tura, the following were revealed:

- The facilities were handed over to TMB by the Executive Engineer, Urban Affairs, Tura (July 2019).
- A composting plant was also available at the site but it was observed that no composting was being carried out. Officials from the TMB apprised that the machinery was never used for its intended purpose.
- The road around the plant, drain around the road, leachate drain was not observed. Officials from the TMB apprised that those could not be seen as they were already under the dumped garbage.
- The vermi composting platform was learned to be dismantled and now being used to dump garbage and no traces of the same was visible.



Exhibit 6.13: Unused Compost Plant Machineries **Exhibit 6.14: Dumping of waste near Compost Plant**

Hence, it is evident that the civil structures for segregation, treatment and storage of waste as well as the compost plant machinery was not used as intended. This resulted in wasteful expenditure of ₹ 5.16 crore towards civil works for Compost Plant site and Compost Plant machineries leading to the risk of dumping untreated waste in landfills.

During the Exit Conference (May 2023), the Director, Urban Affairs Department stated that the Department would take steps to hand hold the Municipal Board to ensure that the Compost Plants become functional.

⁵¹ RP Marak (₹ 3.53 crore) + S. Ch Momin (₹ 0.45 crore).

6.4.3 Compost plant in Shillong

The compost plant installed at Marten landfill site in Shillong was handed over to the Shillong Municipal Board but experienced underutilisation due to challenges in source segregation, lack of marketing efforts, and issues with compost quality, resulting in a production far below its capacity.

The revised estimate for supply and installation of 170 TPD compost plant costing ₹ 16.32 crore was sanctioned (May 2019) under NERCCDIP which was to be installed in Marten, the sanitary landfill site of Shillong Municipal Board. The compost plant started functioning since March 2022. The Compost plant had been proposed as the only alternative for the safe treatment of segregated organic waste generated in Shillong Urban Agglomeration area. In the DPR, it was stated that the compost produced from mixed waste had very less acceptability and it was a herculean task to market the compost and due to this, it was proposed that only segregated biodegradable waste be treated in the composting plant to obtain the desired quality of the compost.

During JPV (September 2022), it was seen that the compost plant was functioning but was not utilised at full capacity due to poor source segregation of waste. This was apparent from the fact that even though the compost plant started functioning since March 2022, presently, SMB processed only 30 TPD of segregated waste collected against the capacity of 170 TPD during the year 2022. Audit noticed that the reasons for under performance was as under:

- The SMB could not ensure proper source segregation and transportation of segregated wastes to the composting units without getting mixed.
- Till now no steps were taken by the SMB to market the compost through publicity or by any other means.

Due to the above reasons, the SMB was unable to maximise the benefits of the compost plant due to which the quantum of processed waste in Shillong still remained low at 17 per cent⁵² during 2022.



Exhibit 6.15: Mixed waste put into first input section of the compost plant



Exhibit 6.16: Output from the first section not properly segregated

During the Exit Conference (May 2023), the Department admitted that the compost plant at Shillong was not functioning at its full capacity. Further, on being asked whether compost being produced is of commercial grade and being sold in the market,

⁵² 30 TPD compost out of 178 TPD generated.

it was stated that the sample of the compost was sent for testing but test report was still unsatisfactory. Therefore, the compost being produced is unmarketable currently.

6.5 Dumping of Municipal Waste

Discussion in the preceding paragraphs has revealed that most of the municipal waste in the urban areas in Meghalaya is being dumped in landfills in the absence of adequate and appropriate waste processing facilities.

Audit examined the condition of landfills falling under the jurisdiction of sampled municipal boards and observed the following:

6.5.1 Identification and acquisition of suitable land for sanitary landfill and other waste management facilities.

Solid Waste Management Rules mandated the identification and allocation of suitable land for waste processing, but despite the reconstitution of a Task Force Committee and recommendations for certain areas, the acquisition process for the required land in multiple urban areas including Shillong, Tura, and Jowai was still pending as of May 2023.

Rule 15(zh) of the SWM Rules, 2016 states that it is the duty of the local authorities to stop land filling or dumping of mixed waste and to set up and operationalise the sanitary landfill as per the timeline specified in Rule 22. The extract of timelines is given in **Table 6.1**.

Table 6.1: Timeline to identify suitable sites and setting up solid waste processing facility and sanitary landfill facilities.

Sl. No.	Activity	Time limit from the date of notification of rules (8 April 2016)
1.	Identification of suitable sites for setting up solid waste processing facilities.	1 year
2.	Identification of suitable sites for setting up common regional sanitary landfill facilities for suitable clusters of local authorities under 0.5 million population and for setting up common regional sanitary landfill facilities or standalone sanitary landfill facilities by all local authorities having a population of 0.5 million or more.	1 year
3.	Procurement of suitable sites for setting up solid waste processing facility and sanitary landfill facilities.	2 years

Source: Rule 22 of SWM Rules, 2016.

A Task Force Committee was constituted by the Urban Affairs Department on 11 March 2011 to identify a suitable location for a landfill site in all the districts which would meet the future requirement. The Committee was reconstituted on 13 February 2016 and 21 May 2018. The Committee comprised of the Director, Urban Affairs as Chairman and District Urban Planner of the concerned Districts as Member Secretary. During

April 2022, the Committee was again reconstituted with the Deputy Commissioner and the District Urban Planner of the concerned Districts as the Chairman and Member Secretary respectively. However, till date (May 2023), none of the four test checked Urban Areas were able to acquire suitable land as stipulated under Clause 4.5.2.1 of MSWM Manual 2016 which is detailed in the succeeding para.

As per Rule 11 (f) of the Solid Waste Management (SWM) Rules 2016, it was the duty of Secretary-in-charge, Urban Development in the States to ensure identification and allocation of suitable land to the local bodies within one year for setting up of processing and disposal facilities for solid waste and incorporate them in the master plans (land use plan) of the State or as the case may be, cities through metropolitan and district planning committees or town and country planning department.

In this regard, the Director, Urban Affairs Department stated (March 2023) that the Task Force Committee had recommended the sites for Shillong, Tura and Jowai and the acquisition process has been initiated for Tura but acquisition process for Shillong and Jowai was still awaited.

6.5.2 Availability and Landfill Capacity of the Waste Disposal Sites

Despite the establishment of Task Force Committees and the stipulation under Solid Waste Management Rules, none of the four tested urban areas have successfully acquired suitable land for processing and disposal facilities for solid waste, with only Tura having initiated the acquisition process among the three identified areas.

Mention was made in Paragraph 1.1.13.4 of the Report of the Comptroller and Auditor General of India on Social, Economic, General and Economic (PSUs) Sectors for the year ended 31 March 2011 regarding lack of scientific landfills in all the six municipal boards of the State resulting in open dumping of mixed waste which could lead to environmental pollution. The condition of the old and prevailing dumpsites and sanitary landfill (as on the date of JPVs) in the test checked Urban Areas are detailed in **Table 6.2**.

Table 6.2: Status of old dumpsites of test checked ULBs

Sl. No.	Name	Used by Locality	Category	Total Area of the existing disposal facility (in acre)	Current Condition
1	Marten	Shillong Urban Agglomeration	Converted to Sanitary Landfill	11.63 acres ⁵³	In use
2	Mynkjai	Jowai Town	Dumpsite	2.22 acres ⁵⁴	Closed
3	Ronkhon Songgital	Tura Town	Dumpsite	3.99 acres ⁵⁵	In use
4	Umshangling	Nongpoh Town	Dumpsite	1.50 acres	In use

Source: Information furnished by test checked ULBs.

⁵³ 4.706 hectares.

⁵⁴ 0.9 HA.

⁵⁵ 16187.24 sqm.

As per Clause 4.5.2.1 of MSWM Manual 2016 the Design Life for a Sanitary Landfill should be 20 to 25 years⁵⁶ and as per Clause 4.5.1.3 of MSWM manual the required area of the landfill site for the selected urban areas⁵⁷ should be 15 – 20 hectares (Section 4.5.2.1 of MSWM Manual). In this period, as per data submitted by Shillong, Jowai and Tura Municipal board and Nongpoh Town Committee, the estimated waste generation of these ULBs for 20 to 25 years is detailed in **Table 6.3** (considering five *per cent* annual increase in waste generation as per Section 1.4.3.3 of MSWM Manual 2016).

Table 6.3: Projection of Waste Generation for the next 20-25 years and area required for development of sanitary landfill and related infrastructure.

Sl. No.	Locality	Avg Waste Generation (TPD) from 2017-18 to 2021-22 (A)	Yearly waste generation (Ton) (B) = (A) * 365	Cumulative waste generation in 20-25 years (in lakh tonnes) (C) ⁵⁸	Area (in acre) required ⁵⁹	Total Area of the existing disposal facility (in acre)	Percentage area of available land in comparison with actual requirement
1	Shillong Urban Agglomeration	152.75	55754	1.48 - 1.89	37.01-49.42	11.63 acres	24 – 31 %
2	Jowai	51.9	18943.5	0.50 - 0.64	37.01-49.42	Nil ⁶⁰	-
3	Tura	26.8	9782	0.26 - 0.33	37.01-49.42	3.99 acres	8 – 11 %
4	Nongpoh	7	2555	0.07 - 0.09	37.01-49.42	1.5 acres	3 – 4 %

Hence, it is evident from the table above that, none of the test checked Urban Areas has enough space (not even 50 *per cent*) to carry out scientific SWM through setting up sanitary landfill and other required processing plants/infrastructure for the next 20-25 years.

Director, Urban Affairs Department stated (March 2023) that the Task Force Committee set up to identify landfill sites had recommended the sites for Shillong, Tura and Jowai and the acquisition process has been initiated for Tura but acquisition process for Shillong and Jowai was still awaited.

Thus, the State of Meghalaya is facing a precarious situation of non-availability of suitable land for scientific disposal and mining of municipal waste with an enhanced risk to public health and environment.

⁵⁶ only the active period excluding closure & post closure period.

⁵⁷ In all the selected areas, the quantity of waste generated would be less than 10 lakh ton during the period of Design Life.

⁵⁸ $C \text{ (lakh tonnes)} = [B \times (1.05)^{\text{Number of years}}] / 100000$.

⁵⁹ As per Clause 4.5.1.3 required sanitary landfill area including the related infrastructure is 15-20 HA (37.01 - 49.42 acres) for less than 10 lakh tonnes waste generation throughput design life of the sanitary landfill (only considering the active period excluding closure & post closure period).

⁶⁰ Mynkjai dumping site was closed since November 2021.

Case Study 1– Shillong Landfill Facility

The Shillong Landfill Facility (SLF) established under NERCCDIP in two phases has seen a shorter-than-anticipated operational lifespan due to poor waste processing efficiency, with Phase I fully utilised and Phase II rapidly filling, prompting the need for increased waste processing efficiency to extend the facility's use beyond the estimated eight years.



November 2017 image of Marten Landfill extracted from the Google Earth showing fully utilized Phase-I of the SLF



December 2019 image of Marten Landfill extracted from the Google Earth showing Phase I of SLF was half utilized

Phase I of SLF was completed in May 2017 while Phase II was completed in February 2021. As per the DPR, the proposed design life of the landfill was 15 years *i.e.*, up to 2029. This SLF was being used by Shillong Municipal Board (SMB) and the Dorbar Shnongs under the Census Towns.

Satellite imagery showed that Phase I of the SLF was already fully utilized and was covered under vegetation. Major portion of the Phase II SLF was already filled with waste. During Joint Physical Verification with the audit team, officials from the Shillong Municipal Board confirmed that the space (Phase II) would last only for three more years up to 2025.

Considering that the dumping of waste in Phase I started during October- November 2017 and would last up to 2025, it indicates that the SLF can now be used for eight years only, instead of the design life of 15 years.



November 2020 image of Marten Landfill extracted from the Google Earth showing the Phase-I area almost utilized fully but Phase-II area was yet to be started utilization (black portion)



April 2021 image of Marten Landfill extracted from the Google Earth showing Phase-I of SLF was fully utilized



During the Exit Conference (May 2023), the Department agreed to the audit findings. The Director, Urban Affairs Department stated that Request for proposal (RFP) was floated to process the legacy waste in Marten which will free up more space.

Case Study 2- Disposal of solid waste in Jowai

Since inception of JMB (November 1995) the municipal waste collected was being dumped at JHADC's old dump site situated at Mynkjai⁶¹. After receipt of a complaint (September 2015) from 12-Dorbar Shnong Joint Action Committee (JAC), West Jaintia Hills District, JHADC closed the old dumpsite (November 2015). Subsequently, a new dump site was identified on the other side of Mynkjai. An agreement was also entered between JMB and JHADC (August 2017) for disposal of waste at the new dumpsite until a sanitary landfill was established.

Protests emerged during March 2021 against the unhygienic dumping of waste at the new dump site at Mynkjai by the local villages⁶² and students, in response to which the district administration agreed to use this site as an interim arrangement for three months *w.e.f* 14 August 2021.



Exhibit 6.17: Traces of Haphazard dumping of waste at Mynkjai dumping ground (October 2022)

Exhibit 6.18: Traces of Unsegregated waste at Mynkjai dumping ground (October 2022)

⁶¹ Mynkjai is a site used for dumping by JHADC.

⁶² Pynthor, Langtein, Umsalang, Shken Pysit, Mupyut, Madan Tyrpait, Moosakhia and Sohmynting.

In this interim period of three months, the JMB identified a plot of land of 136.60 acre at Mookabeng Village belonging to one Smt. Baiamonlang Shylla as temporary dumping site.

On 8 November 2021, Deputy Commissioner, West Jaintia Hills gave an order to JMB to start disposing its waste at the temporary dumping ground at Mookabeng village immediately and to sign an agreement with the landowner *i.e.* Smt. Baiamonlang Shylla for the same. After signing the agreement 09 November 2021, the JMB started dumping wastes from 15 November 2021. It was observed from the proceedings of the meeting held (21 December 2021) between JMB and the local community members that the latter raised the objections on the temporary dumping site due to fear that the unscientific dumping of waste will lead to problems of air and water pollution and affect the nearby



Exhibit 6.19: Mixing of non-biodegradable (plastics) with biodegradable waste in temporary dumping of waste at Mookabeng

Umngi river, paddy fields, water sources and general health. The Elaka Nartiang Coordinate Committee (ENCC) also mentioned that the haphazard disposal of waste into shallow burial pits without establishing a sanitary landfill and scientific plants would definitely impact the land and village. The protest of the community members resulted in law-and-order problem in the area whereby Section 144 of Cr.P.C was imposed on 23 December 2021. Subsequently, on 3 January 2022, the four villages⁶³ and ENCC agreed to revoke their opposition and allowed to dump waste until 5 February 2022 provided the Government show sign of constructions for improvement of the site. An awareness programme was also conducted in the four villages on 31 January 2022 and 3 February 2022. However, action taken in this regard, if any, by the Deputy Commissioner or by JMB was not available on records. Subsequently, a Public Hearing was conducted on 04 March 2022. It was noticed from the minutes that though the Waheh Shnongs⁶⁴ of the aforementioned four villages had no objection with the project, however, majority of the general public present in the hearing opposed it.

Concurrently, the local administration in West Jaintia Hills submitted a proposal for acquiring land at a lumpsum rate of ₹ 5.65 crore to be used as a permanent landfill site to the State Government, which was not approved till date.

After the opposition over the dumping of waste in Mookabeng village by the ENCC, the JMB were able to dump their waste in Mookabeng only up to 5 February 2022. Thus, JMB was unable to dispose the loaded garbage and waste from Market areas as well as from households started accumulating in the town area for almost two months which led

⁶³ Larnai, Sohphoh, Thadmusem & Nongkroh.

⁶⁴ Waheh Shnongs denote locality/village headmen of villages under Jaintia Hills.

to a huge uproar by the residents/NGOs as well as negative media feedback on the issue. In view of the sensitive situation, the JMB resorted to dumping of waste in private land by using private dumpers.

Scrutiny of records made available to audit revealed that the JMB had already incurred an expenditure of ₹ 33.36 lakh (₹ 19.58 lakh which has already been paid (**Appendix III**) and pending bills as of 11 May 2022 amounting to ₹ 13.78 lakh for dumping of waste in private lands during the period from January 2022 up to August 2022. The Chairman, JMB also forwarded (August 2022) a proposal to the Minister-in-charge, Urban Affairs Department seeking additional funding of ₹ 60.80 lakh which will be used for dumping of waste from August 2022 to March 2023.



Exhibit 6.20: Temporary dumping site at Mukhla where waste was filled with loose soil

The case study of open and unscientific dumping of municipal waste in Jowai and adjoining areas under the Jowai Municipal Board and Jaintia Hills Autonomous District Council reveal the stark reality of absence of any mechanism of solid waste management in the urban agglomerates of West Jaintia Hills. The *ad hoc* measures taken by different government agencies for disposal of municipal waste, and failure of the government to identify a suitable landfill site have resulted in an unsustainable situation of waste disposal.

During the Exit Conference (May 2023), the Department stated that the municipal waste was currently being dumped at an undisclosed site. The department informed that a landfill site had been identified in Jowai, and an Environmental Impact Assessment (EIA) for identified landfill site at Jowai is underway.

Case Study 3 - Disposal of solid waste in Tura

Tura Municipal Board was constituted in 1979 and a small plot of land measuring only about 3.99 acres at Rongkhon Songittal was acquired for use as dumping site. At the time of acquisition, the site was uninhabited. As time passed, the surrounding of the dumpsite was occupied by residential buildings, graveyard, roads and public amenities. Continuous dumping resulted in spillage of garbage outside the compound which affected a public graveyard situated very near to the dumpsite. The Secretary of the Rongkhon Songittal⁶⁵ filed a case against indiscriminate dumping in and around the dumpsite causing encroachment of the graveyard, burning of garbage and violation of SWM Rules 2016. The Meghalaya High Court (December 2018) directed TMB not to use the graveyard as a dumpsite and clean the garbage from the graveyard. During June 2019, the TMB had to dismantle one of its assets vermi-composting pits to make space for dumping of waste.

⁶⁵ Secretary of the village traditional local body.



Exhibit 6.21: Haphazard dumping of waste at Tura



Exhibit 6.22: Spillage of waste at Tura

During the Exit Conference (May 2023), the Department stated that partial payment has recently been made for procurement of 30 acres of additional land for landfill.

Case Study 4- Disposal of municipal waste in Nongpoh

In **Nongpoh**, the waste is disposed at Umshangling dumpsite. During JPV, it was seen that mixed waste was openly dumped in a gorge in the dumpsite. It was also noticed that the waste was being burnt to which the officials from Nongpoh Town Committee stated that waste was burned by miscreants oftentimes as the dumpsite was neither fenced nor gated.



Exhibit 6.23: Traces of burning of wastes at Nongpoh



Exhibit 6.24 & 6.25: Unscientific dumping of unsegregated waste into a gorge at Nongpoh

During the Exit Conference (May 2023), the Director, Urban Affairs Department agreed that the Compost Plant must be made functional. He stated that the Department would take steps to decentralise the system of processing of waste so as to reduce the burden on the dumpsite.

6.6 Open dumping of waste

Waste generators in certain areas were observed to be violating Rule 4 (2) of the Solid Waste Management Rules, 2016 by dumping waste in open spaces and water bodies, as seen during Joint Physical Verifications and reported in news articles, causing both environmental degradation and health risks.

Rule 4 (2) of the Solid Waste Management Rules, 2016 clearly mandates that no waste generator shall throw, burn, or bury the solid waste generated, on streets, open public spaces, outside his premises or in the drain or water bodies. In contravention to this rule, it was observed during JPVs (22 & 23 August 2022) that waste was being dumped in open spaces in Shillong and Jowai. It was seen that this practice was carried out even in wards where door to door collection was available. A news report from the Shillong Times 13 March 2022 issue (Page 3) also highlighted the open dumping of waste in a stream in Kabul Market, Tura. Dumping of waste in open spaces or streams not only damages the aesthetics of an area but also poses a serious health hazard.



Exhibit 6.27 & 6.28: Household waste dumped in open spaces in Shillong (Laitumkhrah & Lower Mawprem)

6.7 Conclusion

Processing of municipal waste and its scientific disposal have emerged as the weakest links in the state's solid waste management system. In Shillong urban areas only 20 *per cent* of waste collected was processed through composting plants while in other urban areas the extent of waste processing was negligible. The grave situation of solid waste processing and disposal was caused by two key factors, namely, one that most of the municipal waste ended up in landfill sites untreated, and two, that the landfill sites were either grossly inadequate to handle the burden on dumping or were entirely absent, resulting in dumping of untreated waste in *ad hoc* dumping sites.

The value chain in solid waste management was practically non-existent as composting was unsuccessful due to poor waste segregation practices. Failure to make the compost plant functional under SWM project rendered the expenditure incurred on these plants unfruitful. Little incentive was visible for informal sector to be involved in waste segregation.

Recommendations:

- 10. The State Government needs to urgently acquire suitable land for establishing modern SWM facilities and sanitary landfill to mitigate the risk of public health disasters and soil and water pollution.**
- 11. Responsibility needs to be fixed for non-completion compost plant at Nongpoh & Tura and under-utilisation of the compost plant at Shillong.**

