

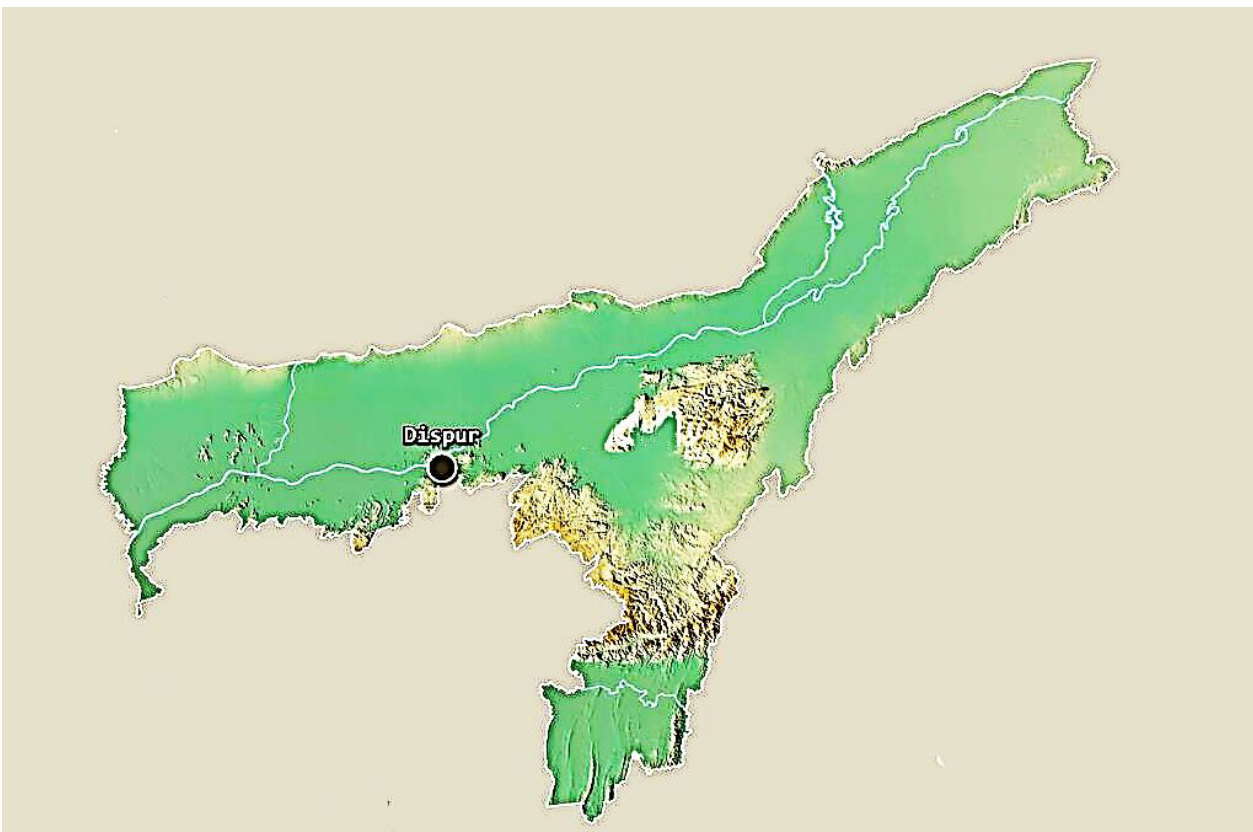
*DATA COLLECTION MECHANISM , CHALLENGES &  
NEW INITIATIVES*

# **WASTE MANAGEMENT IN ASSAM: THE WAY FORWARD**

**Presented by**

**Pollution Control Board, Assam**

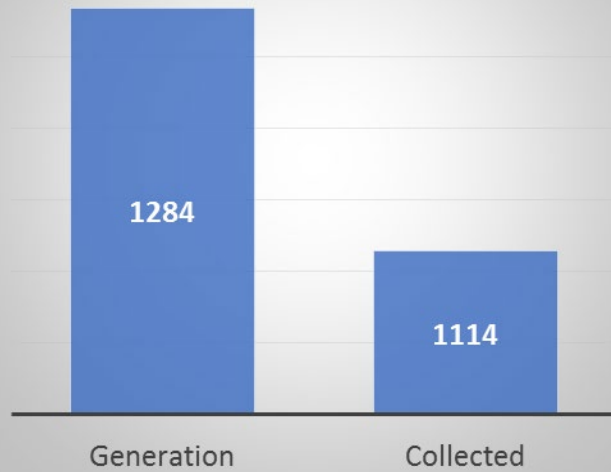
ASSAM



<b>Total Population</b>	<b>3.12 Cr (2011 Census)</b>
<b>Total Urban Population</b>	<b>43.9 lakhs</b>
<b>Districts</b>	<b>31</b>
<b>Gram Panchayat</b>	<b>2197</b>
<b>Urban Local Bodies</b>	<b>103 ULBs + 1 MC</b> (including 8 newly created MBs.)

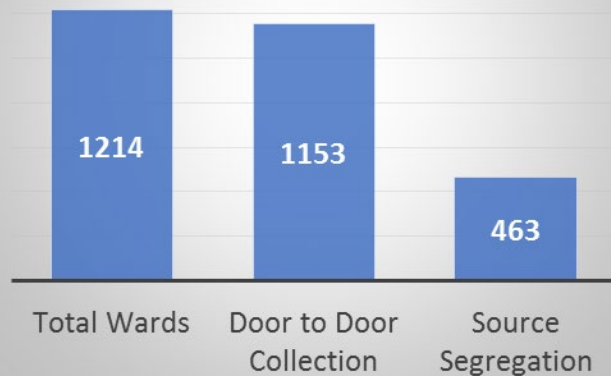
# STATUS OF SOLID WASTE MANAGEMENT IN ASSAM

Generation Vs Collection in TPD



Total Waste Generation (TPD)	Total Waste Collection (TPD)	• Gap
1284	1114	• 170

Door to Door Collection and Source Segregation at Ward level



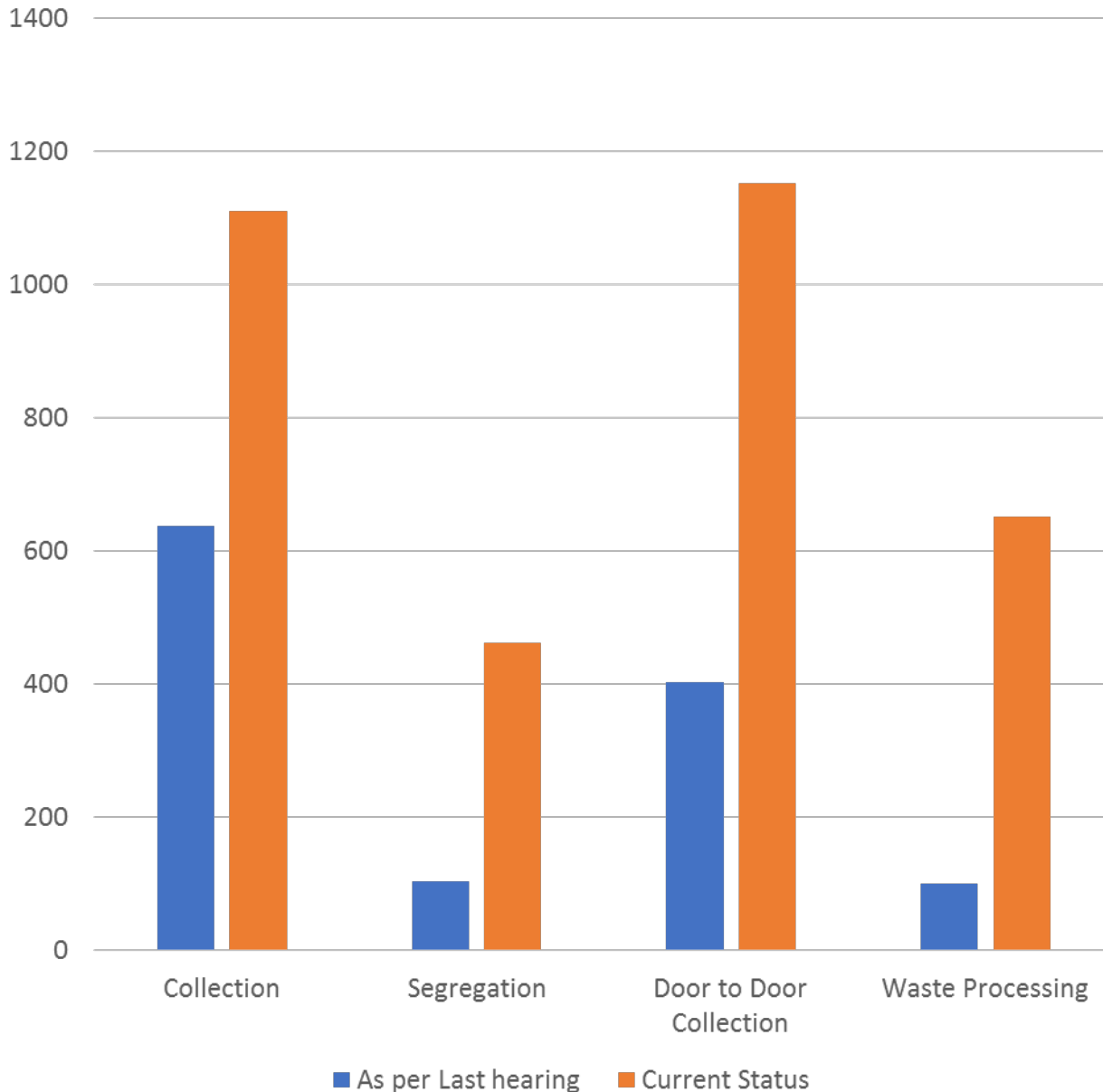
Total Wards	Wards with Door to Door Collection	Wards with Source Segregation
1214	1153 (95%)	463

\* Gap in 61 wards in newly created ULBs will also be bridged.



# STATUS OF SOLID WASTE MANAGEMENT IN ASSAM

## Progress since Last hearing 27-01-2023 IN O.A 606/2018



Collection	638 TPD (42%)	1114 TPD (85%)
Segregation	104 wards (9%)	463 wards (38%)
Door to Door Collection	403 wards (34%)	1153 wards (95%)
Waste Processing	100 TPD (7%)	652 TPD (51%)

# WASTE MANAGEMENT

## WET WASTE MANAGEMENT

Description		December 2022
Generation (TPD)		611
Processed (TPD)		169**
Gap (TPD)		442
Sl. No.	Available wet waste processing facilities	Processing Capacity available (TPD)
1	Organic Waste Converter	27.5
2	Drum Composting	3
3	Windrow Composting	100
4	Bio Methanation	7
5	Bed Composting/Pit composting	83.14
6	Windrow Composting (Guwahati)	50*
<b>Total</b>		<b>270.64</b>

\* Processing Plant at Guwahati of capacity 50 TPD is discontinued as per order passed by Hon'ble NGT in OA 472/2018.

\*\* Installed capacity not utilized 100%.

## DRY WASTE MANAGEMENT

Description		December 2022
Generation (TPD)		533
Processed (TPD)		363**
Gap (TPD)		170

Sl. No.	Available dry waste processing facility	No. of functional plants	Processing Capacity available (TPD)
1	Material Recovery Facilities/ Resource recovery centers	144*	430

\*96 nos. of MRF were constructed in 96 ULBs under SBM 1.0. Additional 48 R.R.C operated locally using Rag-pickers.

\*\* Installed capacity not utilized 100%.

# STEPS TAKEN TO MITIGATE THE GAP - WET WASTE

Sl.No.	Processing facility	Nos.	Capacity in TPD	Cost in Rs. cr	Source of Fund	Status of work
1	Waste to compost for GMC (Guwahati)	1	150	17.25	State Budget	The Plant is under construction. The output will be Compost & Refuse derived Fuel (RDF). The Plant is proposed to run in 2 shifts up to 300 TPD capacity.
2	Additional amount for civil works, land development, landfill facility, O&M etc for setting up of wet and dry waste processing plant including newly formed 8 ULBs	103	-	89.69	State Budget	Already Budgeted and earmarked
	Total			106.94		
3	Windrows composting/Pit composting	42	342	39.33	SBM 2.0	Approved under SBM 2.0. 1 <sup>st</sup> Installment released by GOI.
4	Bio Methanation in GMC (Adabari-Guwahati)	1	60	17.07	SBM 2.0	Earmarked
5	Windrows composting/Pit composting	53	156	18.94	SBM 2.0	Earmarked
	Total		558	75.34		
	Grand total		708	182.28		

# STEPS TAKEN TO MITIGATE THE GAP - DRY WASTE

Sl. No.	Processing facility	Nos.	Capacity in TPD	Cost in Rs. cr	Source of Fund	Status of work
1	Additional amount for civil works, land development, landfill facility, O&M etc. for setting up of wet and dry waste processing plant including newly formed 8 ULBs	103	-	30.89	State Budget	Already Budgeted and earmarked
<b>Total</b>				<b>30.89</b>		

2	Material Recovery Facilities including plastic waste management	42	184	15.68	SBM 2.0	42 ULBs approved under SBM 2.0. 1 <sup>st</sup> tranche released.
3	Material Recovery Facilities including plastic waste management	53	94	9.49	SBM 2.0	Earmarked.
4	MRF for GMC	3	225	13.26	SBM 2.0	Tender is in final Stage.
5	MRF for GMC	1	10	0.60	CSR	Under Construction
<b>Total</b>			<b>513</b>	<b>39.03</b>		
<b>Grand Total</b>			<b>513</b>	<b>69.92</b>		

# INERT WASTE MANAGEMENT

Description	December 2022
Generation (TPD)	140
Utilized (TPD)	0
Gap	140

**Steps taken to mitigate the gap in Inert Waste management**

Sl. No.	Processing facility	Capacity in TPD	Cost in Rs. Cr	Source of Fund	Status of work
1	Scientific Landfill site for GMC	-	11.06	State budget	On-going
2	Additional amount earmarked for civil works/land development for scientific landfill site including 5 year O&M	103	113.32	State Budget	Already Budgeted and earmarked
<b>Total</b>			<b>124.38</b>		

3	Scientific landfill site in 42 ULBs	144	9.36	SBM 2.0	42 ULBs approved under SBM 2.0. 1 <sup>st</sup> installment released.
4	Scientific landfill site in 53 ULBs	94	8.31	SBM 2.0	Earmarked
<b>Total</b>		<b>341</b>	<b>17.67</b>		
<b>Grand Total</b>			<b>142.05</b>		



# STEPS TAKEN TO MITIGATE THE LEGACY WASTE MANAGEMENT

Sl.No	No. of locations	Total quantity in lakh MT	Estimated expenditure in Rs. Cr	Source of Fund	Status
1	GMC	15	172.50	State Budget	Work ongoing
2	40 ULBs	9.58	122.98	State Budget	Earmarked
Total			295.48		
3	Lakhimpur MB	0.39	2.61	15 <sup>th</sup> FC	Work ongoing
4	39 ULBs	8	102.73	NESID	Approved
Total			105.34		
<b>Grand Total</b>			<b>400.82</b>		



## SOLID WASTE MANAGEMENT IN RURAL AREAS

SCHEMES	TOTAL ESTIMATED COST (IN CRORES)	SOURCE OF FUND
Construction of Waste collection and segregation facilities (120 to 340 Sq ft)	110.63	SBM-G and 15 <sup>th</sup> FC tied grants
Distribution of Waste Collection Vehicles to GPs ( Tricycles & Battery Rickshaws)	21.46	SBM-G and 15 <sup>th</sup> FC tied grants
Bio-Gas plants ( GOBARDHAN scheme: Community Management of Bio-Degradable Waste)	7.50	SBM-G
Block Level plastic Waste management units (shed construction and machineries for PWM)	31.36	SBM-G
<b>Total</b>	<b>166.09</b>	

# STATUS OF SWM SCHEMES IN RURAL AREAS

<b>Construction of Waste Collection and Segregation Facilities and distribution of Waste Collection Vehicles to GPs</b>	
Targeted villages (2022-23)	22536 Nos.
Completion in villages	489
Ongoing construction	198
<b>Bio-Gas Plants ( GOBARDHAN Scheme)</b>	
Targeted districts (2022-23)	15
Completion in Districts	3
Ongoing	2
<b>Block Level Plastic Waste Management Units</b>	
Targeted blocks (2022-23)	196
Completion in Blocks	20
Ongoing	8

# Status of Sewage Generation and Treatment

Sewage Generation (MLD)	Sewage Treated (MLD)	GAP (MLD)
435.5	Nil	435.5

## Action Plan for Sewage Management

- Detailed Road map with technical assistance from NIUA, MoHUA.
- Emphasis on Faecal Sludge Treatment Plants (FSTP) in smaller ULBs.
- Cesspool provided to ULBs under SBM 1.0.
- Polluted River Stretch Towns taken on priority for bio remediation.
- STP cum FSTP proposed for Sewage Management.

## Steps to Mitigate present gap of 435.5 MLD sewerage generation & future management

Sl. No	No. of locations	No of STP	Capacity of STP in MLD	Project Cost in Crore	Source of Fund	Status
1	1 (Nagaon)	1	2.0	12.56	State Budget	Under construction
2	Guwahati (Borsola)	1	2.0	5.50	State Budget	In tendering stage
3	75 (75 ULBs)	75	144	417.85	State Budget	Earmarked by State Government for implementation
Total			148.0	435.91		
4	Guwahati	3	187.0	2365.00	Externally Aided Project	20% State Contribution.
5	6 (Bongaigaon, Dhubri, Mangaldoi, Tezpur, Jorhat, Tinsukia)	6	38.5	123.7	SBM 2.0	Approved by MoHUA.
6	11 (11 ULBs)	11	60.0	227	SBM 2.0	Earmarked
7	2(Silchar, Dibrugarh)	2	9.5	67.34	AMRUT 2.0	Earmarked.
<b>TOTAL</b>			<b>295</b>	<b>2783.04</b>		
<b>Grand Total</b>			<b>443</b>	<b>3218.95</b>		

# MANAGEMENT OF LIQUID WASTE IN RURAL AREAS

## Liquid waste management schemes

<b>Household level</b>	Individual soak pits for liquid waste management. ( unit cost Rs. 0.05 to 0.08 lakhs from 15 <sup>th</sup> FC tied grants)
<b>Community level</b>	Soak pits for grey water at public institutions.

## Status of Implementation

Targeted soak pits (2022-23) Community level	1650
Completion	470
Ongoing	396

**FUNDS COMMITTED FOR LWM : Rs. 3.3 Crores**

**Assam plans to follow the Haryana and Punjab model for community level sewage management.**

# Faecal Sludge & Septage Management

- Construction of FSTPs in 32 towns on cluster basis are taken up with technical assistance from UNICEF.
- 1 Project at Titabor MB (10 KLD) is already commissioned and functioning efficiently.
- 1 Project at Goalpara MB (7 KLD) is under Construction.
- In 30 nos. of ULBs, Tenders are floated for construction of FSTP.
- An amount of Rs. 39.11 Crore is earmarked under 15<sup>th</sup> FC for construction of FSTP in 32 ULBs.



Photographs of Operationalized FSTP in Titabor MB, Jorhat.

# Silsako Beel (Guwahati)



Beel at the exit point in north flowing towards Brahmaputra River



Beel as on Aug 2022



Drain flowing to north direction along the boundary



Drain entering from east through unauthorised colony



Drain flowing from west into the Beel



Drain Entering from South to the Beel



Drain Entering from South, filled with water hyacinth



Drain Entering from South, showing silt deposition





Lake development with clear water

Beel as on date Jan 2023



Channel created for Bioremediation

**Bioremediation in bypass channel:**

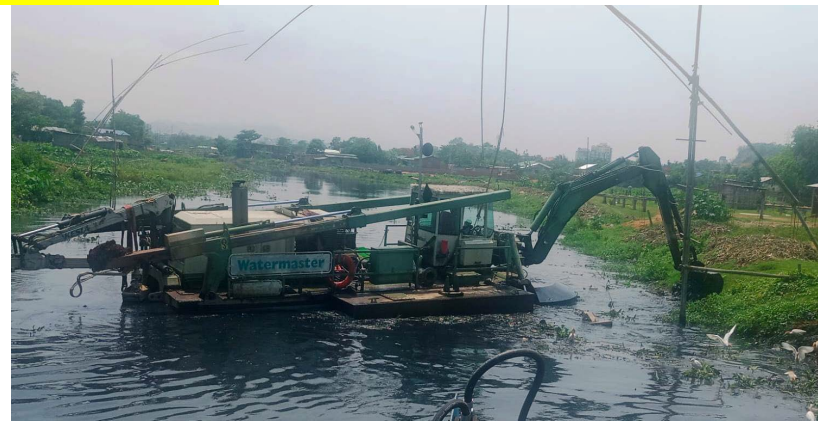
- Nature based bioremediation solutions to treat wastewater inflow to tertiary standards.
- The treatment deployed on the upstream inflow, aeration, coir log filtration for removal of major suspended solids and trapping of floating debris, bacterial bioremediation. Riparian zone will be created with plants.

The above initiative resulted in improvement of water quality in Silsako beel from **Priority - I to Priority III.**

In-situ bioremediation in bypass channel



14-Dec-2022 2:45:56 pm  
Satgaon Main Road  
Narengi Tinali  
Guwahati  
Assam



# WAY FORWARD

- Assam is committed for overall comprehensive coverage of solid waste management and waste water treatment
- The state has prepared road map for comprehensive coverage of STP and FSTP infrastructure in all the towns for treatment of black and grey water.
- Tie up with NIUA for used water management has been done. UNICEF is also providing technical support to the state in rolling out FSTPs in various towns in the state.
- The state has ring fenced more than Rs. 4000 Crore for the mitigation of gap in solid waste management and waste water treatment as follows.

Sl. No.	Component	State Commitment (Rs. Crore )	Central Allocation ( Rs. Crore )	Total (Rs. Crore ) (Central +State)
1	Solid Waste Management (waste processing, scientific landfill site development & legacy waste management	567.78	221.03	798.81
2	Sewerage & Septage Management	446.4	2769.816	3216.216
	Total Commitment	1014.18	2990.846	4005.026

# BREAKUP OF AMOUNT EARMARKED UNDER STATE/CENTRAL GOVERNMENT

Sl no	Component	Particulars	Budgetary provision in state budget for ongoing and proposed projects in Rs. Crore	Central Provision Like SBM 2.0/AMRUT/NESID/EAP (Rs. in Crore)	Total (Central + State)
1	SOLID WASTE MANAGEMENT	Waste to Compost (GMC)	17.25	--	17.25
2		Wet/Dry/Inert processing facilities for 96 ULBs	233.99	118.3 (SBM 2.0)	363.35
3		Landfill for GMC	11.06		
4		Legacy waste management for GMC	172.5	102.73 (Proposed under NESID)	275.23
5		Legacy waste management for Jorhat MB	10	---	10.00
6		Additional Sum for Legacy Waste Management	122.98		122.98
<b>TOTAL</b>			<b>567.78</b>	<b>221.03</b>	<b>798.81</b>

# BREAKUP OF AMOUNT EARMARKED UNDER STATE/CENTRAL GOVERNMENT

Sl no	Component	Particulars	Budgetary provision in state budget for ongoing and proposed projects in Rs. Crore	Central Provision Like SBM 2.0/AMRUT/NESID/EAP (Rs. in Crore)	Total (Central + State)
1	LIQUID WASTE MANAGEMENT	Guwahati Borsola STP	15.99	---	15.99
		Nagaon STP	12.56	---	12.56
2		Guwahati 3 Nos( Silsako, Borsola and Pachim Boragaon) of 187 MLD	--	2365.00 (EAP)	2365.00
3			STP for 92 ULBs	417.85	350.78 (SBM 2.0)
4		2 ULBs (Silchar MB & Dibrugarh MB)	---	54.036 (AMRUT 2.0)	54.036
<b>Total</b>			446.40	2769.816	3216.216
<b>GRAND TOTAL</b>			<b>1014.18</b>	<b>2990.846</b>	<b>4005.026</b>

# Status of Plastic Waste Management

PCBA has identified all the PIBOs and is ensuring their registration on the centralized EPR portal for monitoring the EPR implementation. The funding under EPR will offset the high costs of plastic waste collection and recycling and thereby improve the rate of recycling.

PCBA is also co-ordinating with producers, recyclers and ULBs in order to ensure that enough material for recycling is available for the recyclers.

PCBA is also facilitating disposal of non recyclable plastic waste through co-incineration

# Status of plastic wastes

<b>NO of registered producer</b>	<b>17</b>	<b>Number of Importer</b>	<b>29</b>
Quantity of Plastic waste generated in 2020- 2021	58765 TPA	Brand Owner	14
Capacity of Registered Plastic Manufacturing Unit	328 TPD	Plastic Waste Processor	17
Quantity of waste co-processed in cement plant by ULBS	26 TPD	Percentage of ULBs set up PWM system	67

# STATUS OF HAZARODUS WASTE

HAZARODUS WASTE GENERATION , TRAETMENT AND DISPOSAL STATUS	
YEAR 2021-22	
Quantity of Hazardous waste generated	129741 MT
Quantity of HW subjected to Captive treatment	26477 MT
Slop Oil generated in Refineries utilised	60,829.90 MT
Authorisation granted by PCBA	280 occupiers

PCBA of its own is coming out with a facility in Dibrugarh District and awarded the M/S Mumbai Waste Management Ltd to design, finance, Build and operate and integrated TSDF and CBWTF facility vide order no: WB/G-35/22-23/30 dated 10-05-23

# Status of BMW in Assam

Total Facility	Kg/Day	
	2019	2020
Quantity of BMW generated in Kg/day	8819.918	8252.47
Generation by bedded hospital	7915.399	7426.18
Generation by no bedded hospital	904.519	779.79
Generation by others	0	30.00
BMW treated and disposed	4574.08	3459.25
Total BMW treated (kg/day)	1660	1854.97
Wastes disposed through recyclers		856.90



# STATUS OF BIO-MEDICAL WASTSE

No of CBWTF : 2 , another 3 are coming up in three different parts of the State and another to be set up in Dibrugarh .



Fresh Air Waste Management Services (P) Ltd.



Ksepiya Environment Managment (P) Ltd

For CBWTF at Silchar PCBA  
PROCESS FOR LAND  
ACQUISITION HAS STARTED  
ALREADY

## CHALLENGES IN DATA COLLECTION WITH RESPECT TO HAZARDOUS WASTE MANAGEMENT IN THE STATE OF ASSAM :

- Lack of skilled manpower having basic know-how of hazardous waste characteristics and waste management has led to incomplete reporting of hazardous waste by most of the industries and occupier;, hence the data gap.
- Need of a Comprehensive system for verification of data pertaining to Hazardous waste generation, storage, transportation, recycling/utilization, treatment and disposal.
- Inclusion of new categories of waste, emergence of new technologies for waste utilisation, recycling etc. has rendered Waste management as a very dynamic field.

- Capacity building of workers, industrial personnel, officials dealing with waste management is a must to ensure proper reporting of information pertaining to waste management.
- Strengthening of enforcement mechanism for addressing data gaps including creation of task forces to carry out mass-balance exercise of various manufacturing processes; thereby quantifying generation of waste/residues, by products etc.
- Since there is no proper segregation of waste generated from households, quantification of domestic hazardous waste has not been possible.

- ▶ Apart from inventorisatio n of waste generation and management SPCBs have been mandated to undertake these major activities as mandated by The HoWM Rules,2016 :
- ▶ Grant and renewal of authorization
- ▶ Monitoring of compliance of various provisions of the Rules.
- ▶ Implementation of programs to prevent or reduce or minimize the generation of hazardous and other wastes
- ▶ Action against violations of these rules.
- ▶ Due to limited manpower and multiple responsibilities gaps in data collection is yet to be adequately addressed.

# NEW INITIATIVES FOR ADDRESSING DATA GAP/DATA INSUFFICIENCY

- Introducing e-manifest system for tracking waste movement from generator to recycler/actual user has helped in reducing data gaps.
- Inventorisation of Hazardous and other waste along with sensitization of stakeholders including HW generating industries through frequent interaction with occupiers.
- Random verification of reports on HW generation and management has helped reducing data gaps to some extent.
- Authorization of occupiers and ensuring compliance to conditions of authorisation.
- Introducing HW passbook for occupiers enabling them to maintain records of recyclable Hazardous waste generation and disposal.

# E-WASTE MANAGEMENT; CHALLENGES IN DATA COLLECTION

- ▶ There is a huge data gap considering the fact that there is significant quantities of E-waste generated from domestic households/ individuals, which usually goes unrecorded.
- ▶ There is only one(1) authorised Dismantler of E-Waste in the state and one(1) Refurbisher.
- ▶ The Board has been undertaking Inventorisation of E-waste generated, collected and recycled on the basis of Annual returns submitted by **Bulk consumers** of Electrical and Electronic equipment, Recyclers, dismantlers , PROs operating in the state of Assam.

**THANK YOU...**