



**Hon'ble National Green Tribunal
Principal Bench, New Delhi**

Presentation on O.A. No. – 606/2018

Government of Gujarat

21st March 2024

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Context

- O.A. No. 606/2018 was original dealt with various issues such as Compliance of Solid Waste Management, Bio-medical Waste Management, Plastic Waste Management ,Pollution of River Stretches, Non-attainment cities in terms of air quality, Polluted industrial clusters, and illegal sand mining etc....
- However, as per Hon'ble NGT's order dated 31/05/2022, the said matter was limited to proceeding to two specific issues of Solid Waste Management & Sewage Management.
- Hon'ble NGT also directed “Chief Secretaries continue the monitoring and interact with this Tribunal periodically by video conferencing with the status of compliance in respect of each of the States/UTs on the subject of Solid Waste Management and Sewage Management .” - *NGT OA 606/2018 has been regularly reviewed by Chief Secretary, GoG (11 Meetings) in SLMC as directed by Hon'ble NGT with Principal Secretary and all Commissioner of Municipal Corporation and RCM for the better performance and improvement in the matter.*
- Therefore, we are presenting Status & Measures taken for SWM and Sewage Management in Gujarat

Status & Measures taken for Liquid Waste Management

- **Sewage Treatment GAP :**
 - 1005 MLD (Gap as on Hon'ble NGT Order dated Feb -2023)
- **Commissioned STPs (2015-24)**
 - 192 STPs of capacity 5,434 MLD
- **Work In Progress STPs**
 - 29 STPs with 608 MLD capacity will be completed by **Dec 2024**
 - 12 STPs with 304 MLD capacity will be completed by **Dec 2025**
- The utilization of STPs is directly linked to sewage network and household connection.
 - To improve collection efficiency Govt provides **Rs. 7000/- per Sewage Connection**
 - **2.38 Lakhs** connections are planned under AMRUT 2.0 & **2.05 Lakhs** connections planned under SJMMSVY to be completed in next two years.

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Sewage Generation and Treatment in Gujarat

ULBs	Installed Capacity (MLD)		Wastewater Treated (MLD)		Current Collection Gap (MLD)		Future Planning (in MLD)
	On NGT Order	As on March 24	On NGT Order	As on March 24	On NGT Order	As on March 24	
Municipal Corporations (8 Numbers)	4,010	4,324	3,066	3,262	201	46	123
Regional Commissioner of Municipalities (RCM) Zones (6 Zones) Total - 157 Nagarpalikas*	744	1,113	343	595	802	504	575
Total	4,754	5,434	3,409	3,857	1,004	550	698

*RCM Ahmedabad-25 Nagarpalika
RCM Surat-19 Nagarpalika
RCM Bhavnagar-27 Nagarpalika

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RCM Vadodara- 26 Nagarpalika
RCM Rajkot-31 Nagarpalika
RCM Gandhinagar-29 Nagarpalika

Municipal Corporations Gap Reduction Details

#	Municipal Corporations	Population (At present)	Sewerage Generation (MLD)	Current Installed Capacity (MLD)	Capacity Utilized (MLD)	Gap as on NGT Order (MLD)	Gap as of March 2024 (MLD)	Expected date to fulfill the gap	Additional treatment capacity planned (MLD)
1	Ahmedabad	72,72,267	1,280	1,335	1,280	40	0	-	959
2	Surat	75,38,529	1,032	1,726	1,032	72	0	-	210
3	Vadodara	25,59,974	440	530	440	0	0	-	355
4	Rajkot	13,77,656	260	331.5	260	0	0	-	38
5	Bhavnagar	6,43,296	100	144.2	100	25	0	-	45
6	Jamnagar	6,09,613	80	70	70	10	10	Jun-25	50
7	Junagadh	3,83,354	40	34.70	16.50	32	24	Apr-25	30
8	Gandhinagar	5,14,358	75	153	63	23	12	Aug-25	43
	Total	2,08,99,047	3,307	4,324	2697	202	46		1,730

Municipalities Gap Reduction Details

#	RCM Zones	Present Population	Sewerage Generation (MLD)	Current Installed Capacity (MLD)	Capacity Utilized (MLD)	Gap as on NGT Order (MLD)	Gap as of March 2024 (MLD)	Expected date to fulfil the gap	Additional treatment capacity planned (MLD)	Additional Capacity Addressed by UGD Connection (MLD)
1	Ahmedabad	16,92,491	179	218.36	95.41	87	83.59	Dec-25	76.53	12
2	Bhavnagar	14,86,856	139.4	131.83	81.07	110	58.33	Dec-25	99.21	-
3	Gandhinagar	19,57,140	216	221.19	138.55	135	77.45	Dec-25	103.58	-
4	Rajkot	24,66,927	194.46	217.9	101.3	180	93.16	Oct-25	115.3	-
5	Surat	15,64,226	194.74	113.30	50.05	189	144.79	Oct-25	126	19
6	Vadodara	13,35,956	175	210.67	128.19	101	46.81	Dec-25	54.42	-
	Total	1,05,03,596	1,099	1,113	595	802	504		575	31

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Reuse of Treated Wastewater | Municipal Corporations

Municipal Corporations	Existing			Planned		
	Total Sewage Treated (MLD)	Existing Reuse of Treated wastewater (MLD)	Gap in reuse of treated wastewater (MLD)	Upcoming Projects		Tentative Operational Date
				No. of Projects	Capacity (MLD)	
Ahmedabad	1,280	356	924	1	160	Jun-2026
Surat	1,032	330	702	4	565	Dec-2025
Vadodara	440	65	375	2	67	Nov-2025
Rajkot	260	257	3	1	90	Mar-2026
Bhavnagar	100	11	89	2	6	Nov-2025
Jamnagar	70	5	65	1	70	Dec-2025
Junagadh	16	0	16	1	11	Dec-2025
Gandhinagar	63	0	63	1	65	Mar-2026
Total	3,261	1,024	2,237	13	1,034	

Details of Existing Reuse of Treated Wastewater Projects Municipal Corporations

Sr. No	Municipal Corporation	STP Details	Existing Reuse of Treated Wastewater (MLD)	Existing Users
1	Ahmedabad	5 STPs	356	356 MLD - Agri & Tree Plantation
2	Surat	11 STP	330	227 MLD - Industry (Textile Cluster & Other industry) 49 MLD - reused in treatment process at STPs 28 MLD - Agri - Mass Plantation 5 MLD - Ecological Park 2 MLD - Rejuvenation of Lakes 17 MLD - Gardening, Traffic Circles, Road Dividers through tanker filling stations
3	Vadodara	Vadodara - Rajivnagar	65	60 MLD - Industries 5 MLD - Agriculture & Garden
4	Rajkot	7 STPs	257	257 MLD - Agriculture
5	Bhavanagar	Bhavnagar - Excel Industries	11	10 MLD - Powerplant (GSECL) 1 MLD - Industries
6	Jamnagar	Jamnagar - Navagam Ghed	5 2700	1 MLD - Waste to Energy Plant 4 MLD - Construction sites & Agriculture

Reuse of Treated Wastewater | Municipalities

RCM Zones	Existing			Planned		
	Total Sewage Treated (MLD)	Existing Reuse of Treated wastewater(MLD)	Gap in reuse of treated wastewater (MLD)	Upcoming Projects		Tentative Operational Date
				No. of Projects	Capacity (MLD)	
Ahmedabad	95.41	20.33	75.08	10	55.68	Dec-2024
Bhavnagar	81.07	0	81.7	10	23.2	Jun-2025
Gandhinagar	138.55	19.5	119.05	11	67.55	Oct-24
Rajkot	101.3	25.5	75.8	13	57.6	Aug-24
Surat	50.05	0	50.05	4	36	May-24
Vadodara	128.19	3.80	124.39	12	42.55	Dec-25
Total	594.57	69.13	444.37	60	282.58	

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Details of Existing Reuse of Treated Wastewater Projects Municipalities

Sr. No	Zone	STP Details	Existing Reuse of Treated Wastewater (MLD)	Existing Users
1	RCM Ahmedabad	13 NPs	20.33	4.75 MLD - Botad - Agri 1.67 MLD - Nadiad - Industry 2.5 MLD - Surendranagar 0.5 MLD - Dholka 0.9 MLD - Dhangadhra - Industry 0.65 MLD - Viramgam - Industry 1.51 MLD - Dhandhukar - Agri 2 MLD - Kapadwanj - Agri 1.2 MLD - Kheda - Agri 1.5 MLD - Mahedabad - Agri 1 MLD - Bareja - Agri + Industry 1.5 MLD - Kanjari - Agri 0.65 MLD - Thangadh
2	RCM Vadodara	1 NP	3.8	3.8 MLD - Balasinor - Thermal Power Plant
3	RCM Rajkot	1 NP	25.5	25.5 MLD - Gandhidham Anjar - Industry
4	RCM Gandhinagar	3 NPs	19.5	10 MLD - Patan - Agriculture 7 MLD - Visnagar - Agriculture 2.5 MLD - Thara - Lake development

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Municipalities Gap Reduction Details

- To address the issues of fecal coliform, the State is continuously monitoring the quality of the treated wastewater and evaluating the performances of the Sewage Treatment Plant.
- To address this issue state is proposing that new STPs have ozonation or UV treatment as a part of treatment process for the better quality of treated wastewater.
- This will ensure that there is no fecal coliform remaining in the treated wastewater.

Addressing the Sewerage of Low Population Area

- Septic tanks and soak pits in the rural areas are being monitored for disposal of fecal matter. Government is concerned about controlling the disposal of wastewater generated from rural houses in the natural stream or water sources
- Houses in Gram Panchayats have been connected to Soak pits and Septic tanks in the State. The sewerage generated from these houses gets deposited in the installed soak pits and septic tanks.
- For addressing the areas with low population, state has identified 64 such urban locations, where “Nalla Treatment Units” will be installed. Wastewater from these areas will be



Expenditure & Financial Allocations for Liquid Waste Management

Year	Funded Amount (Rs. crores)	Sources of funds
2017-22	9,703	<ul style="list-style-type: none">● Govt. of India● Govt. of Gujarat● ULB own fund
2022-23	1,980	
2023-24	1,807	
2024-2027	6,622	Sanctioned under AMRUT 2.0 <ul style="list-style-type: none">● Rs. 3622 crore from GoI & GoG● Rs. 3000 crore from ULB own funds

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Sewage Management Projects to be Funded by the Hon'ble NGT Ring-Fenced Account (Rs. in Cr.)

Sr. No.	Details of Amount deposited in Ring Fenced Fund	RCM/MC	Gap as per NGT (MLD)	Funds in Ring Fenced A/C (@ 2cr. per MLD)	Fund allotted	Planned Fund Allotment
1	To be refunded by GUDC under the SJMMSVY scheme	RCM	802	500	350	150
2	To be refunded by GWSSB under the SJMMSVY scheme			600	600	0
3	Amount deposited in Ring Fenced Fund (by GMFB) for the outstanding amount due under the Swarnim Jayanti Yojna in current Financial Year			500	0	500
4	Amount deposited in Ring Fenced Fund (savings of GUDM under the SJMMSVY scheme) To be Utilised by MCs	AMC	40	410	404	80
		BMC	25			50
		GMC	23			46
		JMC	10			20
		JuMC	32			64
		SMC	0			0
		VMC	72			144
5	Amount deposited by Swacch Bharat Mission		-	90	0	90
Total amount deposited in GUDM ring fenced account			1004	2100	1354	746

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Success Stories for Reuse of Wastewater Treatment

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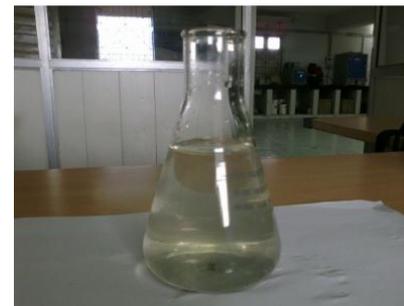
Gujarat Policy for Reuse of Treated Wastewater

- Gujarat has policy for reuse of Treated Wastewater during 2018 with vision of at-least 20% of waste water to be recycled” in all towns and cities of Gujarat state”.
- Presently in the Gujarat, reuse of about **800 MLD treated water** has already started
 - Surat is supplying about 319 MLD Treated wastewater up to potable water quality to Industries
 - Ahmedabad is using total of 356 MLD of recycled wastewater for Agricultural & Industrial supply
 - Bhavnagar is supplying 45 MLD of tertiary treated GSECL, private company
 - Gandhinagar is using 10 MLD of recycled wastewater for gardening & fire-brigade purpose
- Project of Supplying of treated waste water of 40 MLD to IOC and 20 MLD to Reliance Industries at an advance stage of completion and will start supply with 2-3 months
 - Rajkot has an agreement with farmer co-operative society with total of 50 MLD for irrigation purpose.
- Through these type of models, Gujarat will use more treated water instead of raw water for various purposes.

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TTP Inlet



TTP Outlet



Surat Municipal Corporation

□ Surat Municipal Corporation is currently utilizing more than 30 % reuse of TWW at present

1. Treated Wastewater Reused : 330.00 MLD
2. Textile Clusters – 115 MLD
3. Rejuvenation of Lakes – 2 MLD
4. Bio-diversity park – 0.5 MLD
5. Dream City Project – 0.5 MLD
6. Land Fill Closer – Ecological Park – 5 MLD
7. Waste to Compose Facility – 1 MLD
8. Agriculture – Mass Plantation – 28 MLD
9. Industrial Use – 112 MLD
10. Reuse in Treatment Process at STPs – 49 MLD
11. Gardening, Traffic Circles, Road dividers etc through Tanker Filling Station – 17 MLD
12. Next up Coming - Construction Purpose, Metro Rail Project, Bio-diversity park, Watering of Trench Lines, Rejuvenation of Lakes – 20 MLD



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Surat Municipal Corporation - Financial Model

- **Total Operation Maintenance Cost** Towards maintaining complete sewerage system, @ **Rs.200.00 Cr (Including O & M and Electricity Cost)**
- **Total Tertiary Treatment Plant Capacity : 115 MLD** (40+35+40) plus 10% additional capacity on demand.
- **Capital Project Cost : Rs. 314.39 Cr**
- **Operation & Maintenance Cost : Rs. 300 crore** (For 10 Years)
- **Total Recycle water Supplied to Industries till September 2023 : 1,61,817 ML**
- **Started with Rs. 18.20 per KL in year 2014**, rate increased yearly based on actual increase in O & M cost & **RBI indexation**, present rate of Tertiary Treated Wastewater is @ **Rs.36.22 per KL**
- **Annual Revenue Generation (2022-23) : Rs. 120 Cr.**
- **Expected Revenue Generation (2023-24) : @ Rs. 140 Cr. plus**

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Surat Municipal Corporation - Way Forward for Reuse

- More than 30 % of TWW is being reused at present.
- Target is to increase reuse of TWW from 30% to 70% by 2030 and 100% by 2035.

Sr. No.	Name of STP/TTP	Quantity of TWW to be Reused (MLD)	Industries & Type of Use
A	Projects under planning		
1	Bhesan - Asarma - Variav Kosad STP	340	Hazira based industries (Industrial use)
2	Varachha - Valak - Kamrej STP	140	Industries in Kadodara - Palsana (Industrial use)
3	TTP at Various lake Gardens	10	Lake Rejuvenation & Gardening
	Total :	490 MLD	
B	Present sewage quantity being recycled	330 MLD	Industrial, Land fill Site, Tanker Filling Station, Gardening etc.
	Grand Total (A + B) :	820 MLD	

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Reuse of Treated Wastewater Vadodara Rajiv nagar

- 78 MLD STP at Rajivnagar to users IOCL and RIL
- Initial Demand of TWW of IOCL is 20 MLD and will increase up to 40 MLD and RIL is 20 MLD.

The broad components of this project are:

- ☑ Softening treatment at STP site
- ☑ Treated Water Sump and Pump house with chlorination system
- ☑ PLC /SCADA with Quality analyser & Flow measurement system

Rising main, dia. of 900 mm from Rajivnagar STP to IOCL junction @ 16.5 Km length.

Rising main, dia. of 800 mm from IOCL junction to IOCL @ 85 meters length.

Rising main, dia. of 600 mm from IOCL junction to RIL and Distance from IOCL junction to RIL is 3.5 km.

15 years of Operation and Maintenance

- Total Expenditure incurred Rs.81.00 Cr.
- Reuse Plant & Pipeline work completed & TWW supply started to IOCL from Dt:-01/10/2023.
- Total Revenue Generation from this project to VMOP considering Rs.10.44 per KL for year 2023-24 TWW cost for 25 % model at STP outlet.



Reuse Plant



Rising main



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Softner

Reuse of treated Wastewater at Municipalities level

Anjar and Gandhidham, Kutch through PPP



Welspun STP – 40 MLD located in Anjar , Kutch

- Welspun has commissioned a **40 MLD STP** latest wastewater treatment technology with a **Cost of Rs. ~250 Crores**
 - STP – Rs ~150 Crore
 - 7 Pumping Stations & Pipelines – Rs ~100 Crore
- Reuse of urban sewage water, **generated by Anjar & Gandhidham ULB**, as a high-quality clean water for industrial use
- **The freshwater from the Narmada River is now utilized for agricultural purposes**
- **Revenue of INR 24 lakhs pa generated for Gandhidham ULB and of Rs 6.5 lakhs for Anjar ULB**

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New Initiative- Solar projects at STP & WTP

Godhra -STP



Vapi-WTP Chala Water Works



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Solid Waste Management

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Progress report of Solid Waste Management

Details	All Municipal Corporations	All Municipalities
Legacy Waste Remediation		
Legacy waste at Dumpsite (lakh MT)	255.36	179.03
Remediation of Legacy waste (lakh MT)	241.44 (94%)	179.03 (100%)
Pending Remediation (@NGT Hearing) (lakh MT)	113.79	59.15
As on date(20.03.2024 Pending Remediation (lakh MT)	13.92	0

Status of Solid Waste Management in Gujarat

Details of SW in the State	
Total number of wards	1387
Number of wards having 100% Door to Door Collection	1387 (100%)
Generation of total waste in all cities	10,317 TPD
Processing of waste per day	8872 TPD (86%)
Gap in Waste processing	1445 TPD

- For 100% treatment of Wet and dry waste, under SBM 2.0, one wet and dry waste plant is being set up in all Nagar Palikas at a cost of Rs.1056.47 crores.
- The SBM Urban Office has hired an agency for handholding of Nagar Palikas for preparation of DPRs and RFPs for these wet and dry-waste plants. After completion of tender process and the award of work-order, the State is trying to operationalize these plants by October 2024.

Legacy Waste Remediation: Municipal Corporation

No.	Municipal Corporation	Pending Legacy waste @ Dumpsite (Lakh MT) (23.02.23)	Pending Legacy waste @ Dumpsite (Lakh MT) (20.03.24)	Timeline
1	Surat	0	0	Completed
2	Jamnagar	0	0	
3	Gandhinagar	0	0	
4	Vadodara	1	0	
5	Rajkot	5.5	0	
6	Junagadh	2.79	0	
7	Bhavnagar	0.86	0	
8	Ahmedabad	49	0	
Total		59.15	0	

Legacy Waste Remediation: Regional Zones - Municipalities

No.	Zone Name	Total Number of ULBs	Legacy waste @ Dumpsite (Lakh MT)		Number of ULBs Cleared Legacy waste
			At NGT Hearing (23.02.23)	Today (20.03.24)	
1	Gandhinagar	29	12.92	3.53	13
2	Surat	19	4.93	0.66	14
3	Ahmedabad	25	8.72	0.84	21
4	Vadodara	26	6.27	1.81	16
5	Bhavnagar	27	7.62	0.84	22
6	Rajkot	31	14.18	6.24	15
Total		156	54.64	13.92	101

Inert and RDF disposal



No	Municipal Corporation	Inert / Soil	RDF material (Plastics/Cloths)
1	Ahmedabad	<ul style="list-style-type: none"> ▪ Inert Filling in low lying areas, road filling ▪ Use in various development project ▪ Inert used 86.46 Lakh MT (Such: Dholera exp., river front work Project) 	<ul style="list-style-type: none"> ▪ AMC has roped in GEPIL for processing RDF and selling it to Cement industries and Waste to Energy plant etc. ▪ RDF used 36.02 Lakh MT. ▪ Agency will give royalty of Rs. 51 Lakh/year for the same.
2	Rajkot	<ul style="list-style-type: none"> ▪ Soil - 3.01 lakh MT Sell to Farmer ▪ Inert - 0.12 Lakh MT disposed Scientifically. 	<ul style="list-style-type: none"> ▪ RDF - 1.12 Lakh MT being supplied to Cement industries via processor (Abellon Agency, at Waste to Energy plant, Jamnagar.)
3	Vadodara	<ul style="list-style-type: none"> ▪ Inert - 0.74 Lakh MT filling low lying area. ▪ Soil - 0.06 Lakh MT used in Afforestation, Parks work. 	<ul style="list-style-type: none"> ▪ RDF -0.99 Lakh MT being supplied to Cement industries via processor.
4	Junagadh	<ul style="list-style-type: none"> ▪ Soil - 1.35 Lakh MT used in Parks work ▪ Inert - 0.43 Lakh MT filling low lying area. 	<ul style="list-style-type: none"> ▪ RDF - 0.11 Lakh MT being supplied to Cement industries via processor (Neptra Resource Management Agency.)
5	Bhavnagar	<ul style="list-style-type: none"> ▪ Inert - 0.85 Lakh MT used in filling low lying area. 	<ul style="list-style-type: none"> ▪ RDF - 1.25 Lakh MT being supplied to Cement industries via processor (Gandhinagar Waste Fuels Ltd & Narmade Engimac LLP Agency.)

Thank You

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