



KERALA STATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004

പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004



PCB/HO/EE3/MPR/10/2023

Date: 07/03/2024

From

The Member Secretary

To

The Secretary
Ministry of Jal Shakthi,
Department of Water Resources,
River Development & Ganga
Rejuvenation, Shram Shakti
Bhawan, RafiMarg,
New Delhi- 110001

Sub:-Forwarding Monthly Progress Report for the month of December 2023 -reg.

Ref:-Order of the Hon'ble NGT in the matter of O.A No.673/2018

Sir,

Kind attention is invited to the subject matter. The monthly report prepared in revised format with respect to the progress in implementation of action plan of polluted river stretches, for the month of December 2023 is submitted herewith. As per CPCB report on water quality 2022, 11 polluted river stretches were deleted and 8 new stretches were added and hence the number of polluted river stretches is currently 18. Considering the water quality data, CPCB was requested to delist 7 stretches. But the reply is yet to be received. As part of actions taken, samplings have been started in new rivers. The river stretches namely Pullur, Uppala, river and Pulikkadavu stretch of Chalakudi river, BOD level has not exceeded 3 mg/l for the past three years and hence they may be delisted from polluted river stretches.

Yours faithfully,

Encl: As above

Sk. A. J.

MEMBER SECRETARY

National Mission for Clean Ganga
Monthly Progress Report for the month of December 2023 in the
NGT Matter OA No. 673 of 2018 (in compliance to NGT order dated
24.09.2020)

For the State of Kerala

Overall status of the State:

I. Total Population: Urban Population & Rural Population separately:

As per Census 2011, Kerala has a population of 3,37,77,386. Rural population in Kerala is 2,58,40,501 and urban population in the state is 79,36,885. Population projected for 2020 for rural area is 2,70,05,078 and for urban area is 82,94,583. The water consumption and wastewater generated are calculated based on the population projected for 2020.

• Estimated Sewage Generation(MLD):

A dossier on sewage and sullage generation in the State of Kerala has been prepared by the Board. Based on the report:

- Estimated Sewage and Sullage generation in Urban area - 1058 MLD
(Sewage – 317 MLD, Sullage- 741MLD)
- Estimated Sewage and Sullage generation in Rural area - 2917 MLD
(Sewage – 875 MLD, Sullage- 2042MLD)

Total Sewage and Sullage generation – 3975 MLD (Sewage – 1192 MLD, Sullage- 2783MLD)

• Details of Sewage Treatment Plant:

- Existing no. of common STPs/FSTPs: 25 (common STPs and other STPs) and 4 common FSTPs and $2144+39=2183$ number of individual STPs
- No. of functional common STPs in the state: 14
- No. of functional common septage treatment plants in the state: 4
- Total sewage treatment capacity in the state through existing common STPs: =134.041 MLD
- Total septage treatment capacity in the state through existing common FSTPs: 0.22 MLD
- Sewage treatment capacity via individual STPs in establishments = 90.488 MLD

- Treatment of sewage by septic tank, soak pit (Individual residences) -1011 MLD
- Gap in treatment of sewage =21.351 MLD
- Kerala is declared as open defecation free State. A survey of liquid waste management was conducted in 2016 for 66.7 lakh residences (www.haritham.kerala.gov.in). The study revealed that in most of the household sullage from (kitchen, bathroom) is separated from sewage (toilet).
- Sullage which forms 70% of domestic waste water and sewage is only 30%. The major quantity of sullage, which is not contaminated with faecal coliform, is disposed through soak pit and for farming in their own premises. Some instances of discharge to open public places were also identified and actions were taken to stop the same.
- Sewage is discharged through septic tank/ soakpit, common/ individual sewage treatment plant. The mixing of sewage and sullage occurs in the case of common sewage treatment plant and individual STPs. Based on the survey results retrofitting measures are also adopted in the State.
- In Kerala flats are less compared to individual households. Individual households which are having septic tank /soak pit existing for toilets attached to them. However action is being taken in urbanized areas to divert wastewater to common STPs.
- Based on the instruction from Jalsakthi Status of liquid waste management in all local bodies including panchayat have been called for by means of google spreadsheet. From the data received so far, the sullage which is not contaminated is disposed through soakpit and for farming in household premises is also reported.
- Asset mapping including septic tank and soak pit is completed in cities namely Kannur.
- Sanitation survey is conducted on the banks of rivers and drains in urban areas.

Proposals submitted for NRCP fund

- DPR for sewerage system in cluster 1 comprising Attukal, Ambalathara, Kalady, Kalippankulam, Kamaleswaram was forwarded to Ministry of Jalsakthi vide letter dated 24.11.2022 for funding under NRCP.
- DPR for sewer line at Muttar, Perandoor, Vennala, Elamkulam was forwarded to Ministry of Jalsakthi vide letter dated 31.01.2023 for funding under NRCP.

Further action taken

- Letter was issued to District Collector Thiruvananthapuram to complete the activities in Karamana action plan and copy of letter is enclosed. This includes following:
 1. Taking of urgent action for the full utilization of 5MLD plant of Medical college.

2. DG sets in sewage pumping/lift stations are to be operated urgently,
 3. To stop discharge from sewage lift station of Plamoodu,
 4. Urgent corrective actions are to be taken to divert discharge waste water from Rajaji Nagar,
 5. Urgent action is to be taken for the rehabilitation of sewer networks
 6. Urgent action is to be taken for completion of construction of slaughter house at Kunnukuzhi
 7. Urgent action is to be taken to treat waste water in the market of Pangode, Kumarichanda
 8. Urgent action is to be taken for completion of sewer work in newly added areas (sewerage system from Block F to G, Block H to R, Block A to E).
 9. Urgent action is to be taken to provide 155 houses in Kurukuvilakom with septic and treatment system.
 10. The process on addressing gap of 107 MLD plant at Muttathara is to be reported.
 11. Urgent action is needed to finish the work of rehabilitation of 8150 families from the banks of river.
- Direction was given to District Collectors to prepare action plan for new river stretches. Directions given to the District officers of PCB to start monitoring water quality of newly added polluted river stretches instead of deleted polluted river stretches from November onwards.

Non installation of STP at Ernakulam Junction railway station, South:- Notice was issued to railway Station, South Ernakulam for noncompliance of the Board's direction for installation of STP and for not providing treatment for the waste containing oil from locoshed. This has been brought to notice of CPCB vide letter dated 15.03.23. EC Notice issued to railway on 27/06/2023. Reply received on 17/07/2023 and hearing conducted on 07/09/2023. The decisions taken in hearing were to provide a temporary facility to treat sewage generated from toilets in South railway station and housing complexes and excess quantity shall be collected and transported to the common facility at Elamkulam within a period of one month. Also proper treatment facility shall be provided to the effluent and septage from bio toilets and residential complexes. Sewage treatment plant of 750KLD for Ernakulam South is expected by October 2024

Non installation of STP at Aluva station:- Principle approval for permanent STP of 50 KLD has been received and the proposal is under processing for final sanction. Meanwhile the possibility of providing of temporary STP was also deliberated and budgetary quote has been collected from an agency to provide 30 KLD temporary STP at Aluva

Non installation of STP at Ernakulam North:-Sewage treatment plant of 350KLD for Ernakulam Junction (Ernakulam North) is expected by March 2024. The work has been awarded to M/s Rank Projects and Development Private Limited on EPC mode.

Lapses in remediation of oil contaminated area at Diesel Loco Shed, Southern Railway, Ernakulam:-Removal of oily sludge near the diesel locoshed and remediation of the area shall be completed by 31/12/2023. The proposed cost of the work is Rs.22 lakhs

- In 5 MLD STP at Elamkulam of Kerala Water Authority, co-treatment started on July 2023. Kochi Corporation reported that byelaw for tracking and registration of tankers was approved by the Council and 92 vehicles have been registered.
- Action is also being taken for providing temporary measures like Phytoid waste water treatment technology by NEERI. Accordingly NEERI was addressed and online presentation was conducted on 13.03.23 by NEERI to the officials of the local body, Suchitwa Mission and KSPCB. NEERI, Nagpur then furnished a proposal for the feasibility study on the development of process package of treatment of domestic sewage for meeting the environmental compliance at Edappally canal and Perandoor canal at Ernakulam and Pallikalar at Kollam district for an amount of Rs 45 lakhs and this proposal was approved by the Board and draft MOU has been signed.
- Instruction was also given for the full utilization of Common STP at Guruvayur and Kureepuzha and they are taking steps for registering of tankers and byelaw approval.
- Action is also taken for the rejuvenation of Amayizhinanthodu, Ulloorthodu, Pattomthodu in Karamana catchment. Action is also taken to provide Jhokasou treatment at Rajaji Nagar slum area.
- As per the meeting chaired by Chief Secretary on 05.09.2023 it was asked to do a sanitation survey on the drains reaching Akkulam-Veli Lake and its watershed by Socio Economic Unit Foundation (SEUF). As per the request SEUF gave a proposal for the rejuvenation of Akkulam-Veli Lake and its watershed. For doing sanitation survey a training programs have been conducted by SEUF on 07.10.2023 to Environmental Engineering students (M.Tech) in CET and to NSS volunteers with support of KSPCB. Sanitation survey is progressing.
- At the district of Kollam, Manichithodu and Thoppilkadav are stretches where major pollution was reported. A site visit was conducted on 12.06.2023, 30.06.2023 and sewage contamination was observed. Direction was given to stop septage discharge near Santhinagar to Kollam Corporation, District Collector & Police. For rejuvenation of Thoppilkadav, it was decided to conduct a Survey by Engineering Colleges.

VC Meeting with 3 Engineering Colleges was conducted on this regard. It was decided to conduct survey to identify hotspot using A-SAN app, along the stretches of Manichithodu and TS Canal. Based on the meeting, it is decided to conduct a preliminary meeting to ensure co-ordination of the project and to assign specific areas of responsibility to each organization involved. Each institution was asked to prepare a list of students who are willing to involve in this project. A preliminary meeting was organized on 27.10.2023 at 12 Noon with engineering colleges. The Board issued directions to Kollam Corporation and police on 07.08.2023 and 21.08.2023 respectively.

- As per the decision of 6th Monitoring Committee Meeting held on 22.07.2023, combined study by Board and Irrigation Department to be conducted to find the scientific reason for the colour change in the downstream of Pathalam bund. A meeting was conducted in this regard on 01.11.2023 chaired by MS, KSPCB. The members from CUSAT, SreeSankaracharya University attended the meeting

Besides above, the following action were taken by LSGI for liquid waste management:

- District Level Inspection Committee for checking the feasibility of proposal for setting up FSTPs in degraded land was constituted as per GO (Rt) No. 2558/2022/LSGD dated 21.10.2022.
- 36 sites have been identified across the State for setting up FSTPs by the Technical Committee and site reports prepared. For one project, construction started. DPR submitted for one e-project, for 11 projects, DPC approved for 26 projects. Action is being taken.
- IEC campaign by way of Jalsabhas and transect walk by volunteers, students and local communities across water bodies to gauge pollution and develop community understanding of the dangers of inadequate liquid waste management to the health of water bodies was conducted in all local bodies, both rural and urban.
- Technical experts and agencies for Liquid Waste Management have been empanelled. Malam bhootham –intensive campaign to highlight the dangers of faecal contamination and the urgent intervention, has been launched
- In situ expertise is being encouraged through capacity building of structural engineers and other motivated civil engineers within LSGD, so as to be able to undertake the projects on their own.
- Self Help Groups. Micro enterprises are being mobilized and trained to take on the O&M of such projects.
- Liquid waste management projects have been included in the panel of projects for regular priority review by the Honorable CM, so as to resolve interdepartmental, financial and other policy issues in taking these projects forward expeditiously.

Progress in Action plans

- CSTPs / STPs were completed as per the Action Plan submitted –
 - STP of capacity 5 MLD at Medical College, Thiruvananthapuram,
 - 3 MLD at Chakkamkandam, Guruvayur, Thrissur.
 - 5 MLD at Elamkulam with septage treatment facility at Kochi, Ernakulam
 - 0.01 MLD FSTP at Kalpetta, Wayanad

- 0.01 MLD STP at Mattampuram, Thrissur
- 0.75 MLD STP owned by GCDA, Kaloor stadium
- 1 MLD STP at Padanappalam, Kannur
- 2 MLD STP at Kozhikode medical College.

Details of existing STPs/ Common STPs/ common Septage treatment plants in the State:

- 107 MLD STP in Thiruvananthapuram District at Muttathara (Activated Sludge with extended aeration process). The present sewerage system cover 43 out of 100 wards of Thiruvananthapuram corporation area either partly or fully. 75% of capacity of the 107 MLD STP is utilized. Completion of ongoing works will enhance the utilization by 15%. Co processing of septage is also taking place. Control room is available for tanker transportation of septage. Letter issued to KWA for full utilization of common STP in Thiruvananthapuram District at Muttathara. Copy enclosed.
- Considering the contamination of Karamanariver and for providing sewerage systems for the 19 wards on the bank of this river, DPR prepared and submitted to GoK on 16.10.2021 for issuing AS under RKI. DPR for the remaining 81 wards for the full capacity utilisation of 107 MLD STP is under preparation. DPR for sewerage system in cluster 1 comprising Attukal, Ambalathara, Kalady, Kalippankulam, Kamaleswaram was forwarded to Ministry of Jalsakthi on 24.11.2022 for funding under NRCD.
- Medical College 5MLD STP Works of 5MLD STP under AMRUT for Medical College, Thiruvananthapuram completed and started functioning from Sep 2021. This STP is exclusively for Thiruvananthapuram Medical college campus. Letter has been issued for full utilization of STP.
- 5 MLD STP (NEW PLANT) at Elamkulam is functional. Dilution tank constructed and co treatment of septage started from 4/8/2023. AS received for extra network for 1.75 MLD for an amount of Rs. 63.91 crores under RKI for the full utilization of plant and the work has been tendered.
- 3 MLD STP at Guruvayur (Activated sludge process)-The Guruvayur Sewerage Project is planned to provide an effective sewerage system for the thickly populated area under Guruvayur Municipality. The work completed and is functioning from September 2021. Length of network is approximately 7 km. Action is being taken for the complete utilization of STP. Dilution tank constructed for co treatment and trial run started. Instructions issued for full utilization of STP.

- 2 MLD STP –completed & inaugurated on 05.10.2023. O & M agreement to be signed between the Medical College and the Contractor.

Sl. No.	City/Town	STP location	STP Installed capacity	Utilization	Status
1	Thiruvananthapuram (PRS)	1. Common Sewage Treatment Plant, Muttathara, Trivandrum maintained by Kerala Water Authority (Co Processing facility for septage)	107 MLD (Activated Sludge Process)	80 MLD	Operational (pH-6.9, TSS-12.3 mg/l, BOD-1.2 mg/L, COD-24 mg/l, oil and grease-BDL, Faecal Coliform- 200 cfu/100 ml As per analysis report dated 20.12.2023. The values are within the permissible limits. DPR preparation of uncovered area of Corporation is under progress. On completion of ongoing works and on implementation of DPR under preparation, full utilization of 107 MLD can be achieved. Two DPRs submitted to GoK for AS. Directions issued to KWA for full utilization of plant
			5MLD (MBBR)	4 MLD	Operational (pH-6.9, TSS-

		2.STP at Medical College, Thiruvananthapuram-Phase I & II (PRS)			175 mg/l, BOD-46.1 mg/l, COD-112 mg/l, oil and grease-BDL, Faecal Coliform-1,40,000 cfu/100 ml. As per analysis report dated 20.12.2023. The values exceeds the permissible limits. The matter is being followed up.
2	Pathanamthitta	3.Sewage Treatment Plant at Sannidhanam (5MLD) Maintained Travancore Devaswom board	5 MLD (UASB and SBR)	3.5 MLD	(pH-7.9, TSS-44, BOD-55, TDS- 330, oil and grease-14, Total Coliform-absent as per analysis report dated 03.01.2024. The matter is being followed up
		4.Sewage Treatment Plant at Pamba (3.5MLD) maintained by Travancore Devaswom Board	3.5 MLD (Coagulation & settling)	3.5 MLD	(pH-8.9, BOD-29, COD - 90, TSS-40 Total Coliform-absent as per analysis report dated 03.01.2024.
3	Alappuzha	5.DEWATS system, Chathanad(	25 KLD (Anaerobic Baffle	25 KLD	Operational

		For 50houses in slum area)	Reactor)		
4	Kottayam	6.STP for Houseboat (0.09 MLD)at Kumarakom maintained by DTPC , Kottayam	0.09MLD (Activated Sludge Process)	0.09 MLD	Operating with (pH- 6.5, COD - 128 mg/l, BOD - 28 mg/l, SS - 20 mg/l, Oil & Grease- BDL) The quality of effluent conforming to standards.
5	Ernakulam	7.STP owned by Greater Cochin Development Authority, Marine drive, Kochi (0.45 MLD)	0.9 MLD (Activated Sludge Process)	0.9 MLD Proposed to augment to 2MLD Operational.	pH-7.9, TSS-56 mg/l, Ammonical Nitrogen-10.1 mg/l, BOD-7.7 mg/l, COD-12 mg/l, Oil & grease-BDL, Total nitrogen- 19.98 mg/l, fecal coliform-7000cfu/100ml according to the analysis report obtained on 24.11.2023. The parameters like TSS ,Ammonical nitrogen, BOD, COD, Total nitrogen and faecal Coliform are not within limits. The matter is being followed up.
		8.Septage Treatment Plant at Brahmapuram , Kochi Corporation, Ernakulam	0.1MLD(MBBR)	0.1 MLD	pH8.11,BOD -4.2.mg/l, COD- 24.0mg/l,SS- BDL,Phosphates- 0.113mg/l Sulphates- 4.758mg/L, Sulphides- BDL,

					Ammonical Nitrogen – BDL, Oil And Grease- BDL, Nitrate -1.336mg/l, Phenolic Compounds- BDL, Faecal Coliform- 6cfu/100ml, Faecal Streptococci- 24cfu/100ml as per analysis report of 04.01.2024.. Parameters are within limits
		9. Septage Treatment Plant at Wellington Island, Kochi Corporation	0.1MLD(MBBR)	0.1 MLD	Under maintainence
		10. STP at Elamkulam, Kochi (AMRUT)	5 MLD(MBBR) with Co treatment 24 KLD	3MLD	1782 households connected. Septage Treatment started on 04.08.2023 Sewerage network under Scrutiny and Technical sanction to be obtained. AR of sample collected on 03.10.2023 pH- 7.3, tss-21 mg/l, nitrate -3.97 mg/l, phosphates- 1.9 mg/l, ammoniacal nitrogen- bdl, bod-3.7 mg/l,

					cod-20 mg/l, oil & grease- BDL, total nitrogen- 5.7 mg/l. Parameters are within permissible limits.
		11.STP owned by GCDA, International Stadium Kaloor	0.75MLD (Activated Sludge Process)	0.05 MLD	Operational According to analysis report of sample collected on 07.09.2023 the value of Faecal Coliform(1800 cfu/100ml) exceeded the standard limits stipulated by KSPCB. Also notice was issued to GCDA seeking explanation for not complying with the standards.It was also directed to install online monitoring system in the CSTP for the parameters pH,BOD,SS
		12. STP at Kalamassery, Market, Kalamassery Municipality (PRS)	10 KLD		NOT WORKING
6	Idukki	13. Sewage treatment Plant at	0.01 MLD		Not workingElectro

		Comfort station, Adimaly Grama Panchayat, Idukki <i>Construction of 6 KLD ETP for Kumali Slaughter House Kumali GP, Idukki</i> <i>60 KLD STP at Taluk Hospital Adimaly, Adimaly Block Panchayat, Idukki</i>	0.006 MLD 0.06 MLD		coagulation. Letter was issued to Adimali grama panchayat, secretary on 11.12.2023 Operational. EKID Operational MBBR
7	Thrissur	14.Sewage treatment Plant at Guruvayur, Thrissur District	3 MLD(Act ivated Sludge Process)	0.5MLD	Operational. (pH-7.77, BOD-3.52 mg/l, COD - 12mg/l, Suspended solids-0.003, Oil and grease-BDL, Faecal coliform-Nil Sample collected from the outlet of STP after chlorination on 5.12.2023. Conforming to standards Instructions given for full utilization

					of treated effluent and for utilizing treated water. Planning to reuse the treated effluent for gardening and septage dilution. Construction work of dilution tank completed. Steps are been taken to give more sewer connections to bridge the gap between utilized and unutilized capacity. Bye-law prepared for septage collection is under scrutiny in the ULB. AMRUT-2.0: Council has approved the proposal for upgradation of 3 MLD STP (at Chakkamkandam) to 5 MLD STP (septage co-treatment) AMRUT-1.0: Specification of the vehicle to be modified by the ULB as per site conditions.
		15.FSTP at Mattampuram	0.01 MLD(Biological)	Started functioning	BOD- 3.2mg/l, COD- 12mg/l, Ammonical Nitrogen- 0.343, total

					nitrogen- 2.436 as per analysis report on 21.08.2023. Started functioning. PCB issued permission for conducting trial run. Letter to be issued to Mattampuram for full utilization. Consent to operate issued
		16.Revamping of 35 KLD STP at Kuriyanchira Slaughter House Corporation , Thrissur	0.035 MLD (MBBR)	0.035 MLD	Operational
8	Malappuram (PRS)	17.Sewage treatment Plant at Malappuram Municipal Bus stand	0.03MLD (MBBR)	0.03 MLD	Consent application is submitted for the revamping activities.Application has been returned for clarification. Action plan prepared through KWA.
		18.Sewage treatment Plant- at Tirur (fish market)	0.045MLD (Biological)		Not working condition.
		19.STP at Municipal Bus Stand, Tirur (PRS)	0.05MLD (Biological)	Completed	Trial run is ongoing. Also primary and secondary treatment is on going
		20. ETP in Fish Market,	0.01 MLD(A naerobic	Plant is working.	Operational

		Ponmunda m GP , Malappuram	)		
9	Kozhikode (PRS)	21. STP at Kozhikode Medical College.	2 MLD	Commissione d on 05.10.2023	Operational. According to latest analysis report on 18.12.2023 the following values were observed. pH -6.8, SS,COD,Ammoni cal Nitrogen, Oil and Grease- BDL, BOD-0.8 mg/l and the observed parameters are within limits
		22.Common Sewage Treatment Plant at Narayana nagaram, near stadium, Vatakara, Opp. New bus stand	0.1MLD (MBBR)	0.1MLD	Operational
10	Kannur	23.Sewage treatment Plant at Taliparambu (0. 5MLD) Taliparambu Municipality ,Kannur	0.5MLD (Activate d Sludge Process)	0.5MLD	Operational.
		24. STP at old age home Kannur	0.010		MBBR

		25. STP at Padannappalam	1 MLD		(Operational) Rotating Media Bio Reactor
11	Wayanad	26. Sewage Treatment Plant at Taluk Hospital, Sulthan Bathery Wayanad	0.14 MLD (MBR)	0.05 MLD	Operational
		27. FSTP at Kalpetta	0.01 MLD (Biological)	0.01 MLD	Operational

Details of under construction of major ETPs / STPs in the State

No.	Location	Capacity of the plant in MLD	Physical Progress in %	Status of I&D or House sewer connections	Incremental progress	Completion Timeline
1	STP at Kureepuzha- Phase I & II, Kollam (AMRUT)	12	86%	21358 house sewer connections are envisaged as per the new	Action is being taken to provide sewerage networks for the plant. Hon'ble LSGD minister	31.03.2024

	)			sewer work added (balance of KSUDP).	visited the site on 20.12.2023 and has directed to finish the work before second week of January 2024.	
2&3	STPs at Medical College with Septage Treatment, Kozhikode (AMRUT)	IMLD	90%	Only the buildings inside the Medical College campus will be connected.	Meeting is scheduled on February 13 th 2024 at Kozhikode corporation for finalizing the details of innaguration.	31.01.2024
4	FSTP at Cherthala Municipality, Alappuzha (IMPACT KERALA Ltd)	250KLD Septage TP	60%		Civil works are almost completed and progressing.	31.01.2024
5	STP at General Hospital, Thrissur (AMRUT-1.0)	0.36	76%	Only the buildings in the General Hospital campus will be connected.	First contractor put off the work and new contractor took the work. Now the work is in progress.	
6	STP at General Hospital, Alappuzha	0.24	99%	Only the buildings inside the General Hospital campus will be connected.	Trial run completed. To be commissioned. 1 building to be connected.	31.01.2024
7	190 KLD STP at Pathanapuram Market and Shopping	0.1	37% completed	Cover slab of Oil and grease trap tanks are complete		30.05.2024

	Mall			d. Manhole construction is on-going.		
8	STP at Pambad Housing Colony Malappuram Municipality , Malappuram	0.110	99 % Completed	Tendering for panel board completed. Electrical works completed.	Directions given to complete all works . Waiting for the SM to pass the bill, facing some technical problems- estimate preparations , engineering issues	30.01.2024
9	Wastewater treatment plant at Kuttiyadi government taluk hospital, Kozhikode	0.080	82%	RE has been prepared. Electric works will be started after passing RE.	Works are in progress	31.03.2024
10	Taluk Hospital Adimaly ,Adimaly Block Panchaya th, Idukki	0.060	99%	Trial run on-going	Trial run	
11	Construct ion of 45 KLD waste water treatment plant at Kalpetta Governme nt Ayurveda	0.045	65% work completed	Existing agency M/S Green eco water systems failed to complete within time- hence decision to terminate	Machineries has been supplied and civil work completed	30.04.2024

	Hospital DP , Wayanad			the contract. As requested from district panchayat Wayanad- M/S Ram biological confirmed implementation of projects. Necessary steps taken to install machinery and project completion		
12	STP at Chitumala Old Age Home. Chitumala BP, Kollam	0.015	90% Completed	Committee has decided to avoid tendering and complete the balance work with an accredited agency IRTC. The estimate submitted by accredited agency is not satisfactory to the LB and to be placed in council for decision.		28.02.2024
13	STP at CHC Cherpu BP, Thrissur	0.01	95% Completed	Civil and electrical works completed. Filter media filling is in progress		28.02.2024
14	FSTP at Munnar, Idukki	50KL D	5%	Due to a court case,	The honorable HC has disposed the case	Under jurisdiction

				work stopped temporarily	directing Govt. to own the land, leased to KDHP, either by acquisition or by resumption and start construction after such process is over. GP has submitted application to DC Idukki for resumption of land.	
15	190 KLD STP at Pathanapuram Market and Shopping Mall	0.190	38 %	O&G trap and manhole construction completed. Construction hindered due to funding.	65% completed. CC second and part bill amount is released by the department but bill is pending due to WAMS clearance. Balance work is hold by the contractor because of pending payment dueto treasury restrictions.	31.05.2024
16	Decentralized Sewerage System (STP at Ambedkar Colony) – Div-16, Edakochi South, Kochi (AMRUT-1.0)	1.1	1%	1500 sewer connections are envisaged.	*Work started on 27.11.2023. Works are in progress.	31.06.2024
17	Viyoor central jail STP (Thrissur)	0.05	30%	Work started at 23/04/2023		31.05.2024
18	Kunnumkulam,	0.01	100%	Completion		01.01.2024

	Thrissur			stage and ready for commissioning		
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Total capacity= 15.67 MLD

Details of proposed ETPs/ STPs in the State

No	Location	Capacity of the STP proposed in MLD	Status of Project (at DPR Stage/ Under Tendering/ Work to be Awarded)	Incremental progress	Likely Date of Completion of DPR preparation
1	<u>ERNAKULAM DISTRICT</u> 4 STPs are coming up under the KMRL's Integrated Water transport System project at Elamkulam(17.5 MLD), Vennala(24MLD), Muttar(16.5 MLD) Perandur(19 MLD)	17.5+24+16.5+19 =77	Tendering stage Funding sanction for Rs 341.97 crores received from KIIFB on 07.06.2023 DBOT tender published on 17.10.2023. Technical bid opening on 08.01.2024 DPR submitted at KIIFB. Expected funding sanction in upcoming KIIFB meeting. Tendering will be commenced after funding and	DPR for sewerline at Muttar,Perandoor,Vennala,Elamkulam forwarded to Ministry of Jalasakthi vide letter dated 31/01/2023 for funding under NRCP. KIIFB issued provisional sanction for funding the project.	

			technical sanction.		
2	STP with septage co-treatment at Elamkulam (AMRUT-2.0)	5	* The 5th SHPSC held on 02/03/23 approved the issuance of AS and G.O (711) dated 25.03.2023 was issued.	TS was issued by KWA Work to be tendered. AS obtained under AMRUT 2.0	31.03.2025
3	Detailed Engineering Report for Sewerage Sscheme in Kalamassery Municipality-Phase-1, Kochi	2.6 MLD	At DPR stage	DPR Submitted to Govt and RKI for AS on 14/03/2023	
4	Sewerage System for Aluva – Zone 1	1.72	DPR Submitted to Government of Kerala and RKI for AS on 19.09.2022	Work not commenced in site- land issue.	
5	ETP for slaughter house, Marakkadavu, Ernakulam	0.030	At DPR Stage	DPR under correction by the agency	
6	<u>KOZHICODE DISTRICT</u> 27 MLD STP with 49.76 km Sewerage network at Sarovaram, Kozhikode	27	DPR Stage	DPR of 27MLD STP with 49.76 km Sewerage Network at Sarovaram (in KWA land) for Rs 164.2 Crores submitted to Corporation on 13/3/2023 and DPR of sewerage network for 61.71 km Kozhikkode Corporation submitted on 26.4.23 for Administrative Sanction under AMRUT2.0. As suggested by the AMRUT SMMU the DPR is under revision. As per the GO (Rt)	

				No. 55/2024/LS GD Dated, 08.01.2024, received the AS – TS to be issued by the KWA. The SHPSC has approved the project. Proposal will be placed in the next SHPSC for approval of AS.	
7	STP at sewerage system in Zone A,PackageA,Avikk althodu ,Kozhikode (AMRUT) (PRS	7.0	<i>Started but stalled:</i> The Council held on 27.06.2023 decided to terminate the existing contracts and retender the STP works. Revised estimate was accepted by the 10 th SLTC held on 30.09.2023 for placing in the next SHPSC.	*The judgment of the Munsiff Court on OS No. 459/ 2022 is to be obtained. Next hearing on 29/02/2024. Proposal to include in AMRUT 2.0 project has been submitted before the SHPSC dated 14.12.2023. * The SHPSC held on 14.12.2023 directed KWA to check the project for reducing the cost per household. The district collector , Kozhikodu held a meeting with the stakeholders on 27/12/2023 to sort out the issues including public protest against waste water treatment plants and to commence the projects	31.03.2025
8	Construction of 7ML D capacity Sewage Treatment Plant and Laying Sewerage Network to Vatakara Municipality, Kozhikode	7 MLD	At DPR stage	DPR Submitted to Govt and RKI for AS on 14/02/2023	
9	Sewerage system (with STP) in Zone A, Package B, Kothi, Kozhikode(AMRUT) (PRS)	6	<i>AS to be issued:</i> *The Munsiff Court disposed the case, OS No. 450/ 2022, in favour of the ULB. * The Hon'ble High Court disposed the case, WPC No. 40164/ 2022, in favour of the ULB. * Since the price escalation	* The judgment of the Munsiff Court on OS No.217/ 2022 is to be obtained. * Revised estimate was accepted by the 10 th SLTC held on 30.09.2023 for placing in the next SHPSC. The SHPSC held on 14.12.2023 directed KWA to check the project for reducing the cost per household.	31.03.2025

			request of the Contractor can't be considered the 27th SLTC held on 10.05.2023 directed the ULB to furnish their opinion regarding cancelling the existing contracts and retendering the works. * The Council held on 27.06.2023 decided to terminate the existing contracts and retender the STP works. Revised estimate was accepted by the 10th SLTC held on 30.09.2023 for placing in the next SHPSC.		
10	Kozhikkode corporation Zone F	4 MLD	At DPR stage	Submitted to Govt and RKI for AS on 29.09.2022	
11	STP at Vadakara Municipality, Kozhikkode (IMPACT KERALA Ltd) (PRS)	0.5 MLD Sewage TP 20KLD FSTP 20KLD	DPR appraisal ongoing in KIIFB. Present council decided to drop FSTP and include another STP at the proposed FSTP site. Consultant modifying DPR as per that. Land issue. Unnotified land conversion	DPR approved by RKI	-

			required at Narayananagaram and ownership details not received for Thazhangadi. Reminder to Municipality given. Not yet submitted.		
1 2	<u>MALAPPURAM DISTRICT</u> Sewage Treatment Plant and Sewerage System for Ponnani Municipality (Harbour Zone)	7.12	DPR in PRICE 3 Submitted to Govt and RKI for AS on 17.10.2022	DPR Submitted to Government of Kerala and RKI for AS on 17.10.2022 and now it is revising as per the direction of SBM 2.0. Letter number Letter F. No.,J-24025/1/2022-NRCD-I dated 07.12.2023 from NRCD was forwarded to KWA (letter number KSPCB/1852/2023-AE-13	
13	Sewerage system for Ponnani municipality(Kottathara Zone) with STP of capacity 4.2 MLD	4.2	DPR Submitted to Government of Kerala and RKI for AS on 20.10.2022	AS expected from GoK/RKI and it is revising as per direction of SBM 2.0	
1 4	District Hospital Perunthallana, District Panchayath, Malappuram	0.200	At DPR Stage	DPR under correction by agency	
15	Eco-Friendly wastewater Treatment Plant (140 KLD) for Women and Children Hospital Ponnani Municipality, Malappuram	0.14	At tendering stage	DBOT Tendering in process. Fund for the project has been sanctioned and the fund transferred to KWA.	
16	DPR on STP at District Hospital, Tirur, Malappuram	0.5	At DPR Stage	DPR under verification stage	
	ETP at Tirur	0.060	At DPR	LB to submit the revised	

17	Municipality		Stage	DPR with revised DPC form	
18	ETP at Tirur Municipality Slaughter house	0.030	At tendering Stage	TS issued. Tendering is in progress. Tender opened. Retender published on 06.01.2024	
19	<u>TRIVANDRU</u> <u>M DISTRICT</u> FSTP at Varkala Municipality, Thiruvananthapuram (IMPACT KERALA Ltd)	50 KLD FSTP	RKI issued AS on 28.2.2022. Financial bid opened on 11.12.2023. Negotiation with the L1 bidder done. Bidder submitted the negotiated rate. Meeting with the local body & contractor held on 08.01.24. Municipality submitted Council Resolution regarding acceptance of O&M cost. Placed in the Tender Acceptance Committee on 30.01.24, selection notice to be issued to the Contractor.	DPR approved by RKI and tender published	
20	Sewerage system for Thiruvananthapuram Corporation- Cluster 1 Attukal, Ambalathara, Kaladi, Kalipankulam & Kamaleswaram	7.0 (for utilizing existing 107 MLD)	DPR in PRICE 3 Submitted to Govt and RKI for AS on 15.10.2022	DPR was forwarded to Ministry of Jalsakthi on 24.11.2022 for funding under NRCP. Letter number F.NoJ-24025/1/2022-NRCD-11 dated 07.12.2023 was forwarded to KWA for clarification.	

21	Preparation of DPR for proposed sewerage system to the Madhippuram colony and surrounding areas near Vizhinjam Harbour, TVM	5		DPR submitted to GoK and corporation on 20.10.2023	
22	Detailed Engineering Report for Sewerage Scheme in Neyyattinkara Zone I, TVM	2.5 MLD		AS is expecting from GoK/RKI and now it is revising as per the direction of SBM 2.0	
23	<u>PALAKKAD DISTRICT</u> Sewerage system for Pattambi municipality	5.4	DPR Submitted to Government of Kerala and RKI for AS on 06.08.2022	AS expected from GoK/RKI and it is revising as per direction of SBM 2.0	
24	Sewerage scheme in Shornur Municipality consisting of sewage network and FSSM with 2.5 MLD capacity STP with co-treatment unit, Palakkad	2.5 MLD	At DPR stage	DPR Submitted to Govt and RKI for AS on 16.2.23 and now it is revising as per the direction of SBM 2.0, but ULB move for FSTP	
25	STP at Ottappalam Municipality, Palakkad District (IMPACT KERALA Ltd)	1.50MLD Co-treatment	Issue regarding Railway NOC being sorted out. Site handed over on 16.10.23. Preliminary works initiated at site. STP Design vetting being done from IIT, Jodhpur. PMC on board. The progress was apprised to Hon'ble MLA, a meeting held	DPR approved by KIIFB.	

			online on 28.12.2023. MLA to convene meeting of different departments to sort out issues related to road cutting permission.		
26	FSTP at Yakkara, Palakkad Municipality	0.1 MLD	Tendered but not awarded: Tender (DBO) was floated by the ULB on 08.08.2023. The Council held on 30.09.2023 approved the bid received.	* 29 th SLTC held on 07.11.2023 accepted the proposal for AS revision. The Technical committee held on 20.11.2023 approved the L1 bid. The SHPSC held on 14.12.2023 approved the revision of AS. Tender approved by SLTC	30.06.2024
27	CHC Alathur, Alathur Block Panchayat, Palakkad	0.090	At DPR Stage	Since there issue regarding land availability and the suitability of proposed plant, board meetings at LB level were conducted. Decided to call for tender with prefabricated STP plant agencies.	
28	ALAPPUZHA DISTRICT Detailed Engineering Report for the Sewerage scheme in Alappuzha Municipality with ST P – Phase 1	5 MLD	At DPR stage	DPR submitted SE on 20/12/22, Kochi to getting A S under AM RUT	
29	STP at Alissery with 13 KLD septage co-treatment and associated network	5		The SHPSC held on 14.12.2023 approved the project inclusion in SWAP-3. To be send to MoHUA for approval after finalization of SWAP-3 projects	
30	Sewerage system for Haripad municipality(Kottathara Zone) with STP of capacity 4.2 MLD	3.8	DPR Submitted to Government of Kerala and RKI for AS on 01.09.2022	AS expected from GoK/RKI and it is revising as per direction of SBM 2.0	

31	Detailed Engineering Report for the Sewerage scheme in Haripad Municipality - Sewage Treatment Plant of Capacity 2.6 MLD- Phase 1 and Sewerage Network of Length 58km - Phase 2, Alapuzha	2.6 MLD		DPR submitted to Govt and RKI for AS on 27.04.2023. AS is expecting from SBM 2.0	
32	STP at Thottumadi Colony, Alappuzha	0.05	<i>Tendered but not awarded</i> The detailed engineering report submitted by the bidder was discussed in the Technical Committee held on 21/01/23 & the Committee directed the ULB to get the design & drawings vetted by an IIT or NIT. The ULB submitted the design & drawings to IIT Palakkad for vetting on 07.02.23. IIT officials visited the site.	Report on design vetting is awaited from IIT Palakkad for placing in the Technical Committee for approval of the bid received. The SHPSC held on 14.12.2023 decided to cancel the project as the same is not likely to be started by 31.03.2024.	30.06.2024
33	Mobile Septage Units- 2 nos, Alappuzha (AMRUT-1.0)	0.02 (0.01 *2 nos.)	<i>Tendered but not awarded:</i> * Quotations were called for by the ULB with 15.11.22 as the last date of submission * The detailed engineering report submitted by the bidder was discussed in the Technical	* 29 th SLTC held on 07.11.2023 accepted the proposal for revision of AS. The SHPSC held on 14.12.2023 approved the revision of AS.	31.03.2024

			Committee held on 21.01/23 The Technical Committee held on 23.08.2023 approved the technology and recommended the revision of the AS.		
34	THRISSUR DISTRICT 5MLD capacity STP and sewerage system of Kottappuram zone of TSR corporation.	5 MLD		AS expected from AMRUT 2.0	
35	STP at Kottapuram with 22KLD septage co-treatment and associated network	5		The SHPSC held on 14.12.2023 approved the project inclusion in SWAP-3. To be send to MoHUA for approval after finalization of SWAP-3 projects.	
36	STP at Athani, Wadakkanchery Municipality, Trissur (PRS)	350 KLD STP	Site identified. DPR under preparation	DPR approved by RKI	
37	Decentralized Sewerage Scheme (with STP), Thrissur Corporation	2.5	AS to be issued: * To be retendered after obtaining permission from the Govt. for constructing the STP at the proposed location (Paddy Land). * The 28 th SLTC held on 14.06.2023 recommended LLMC to give clearance for the STP since the Agriculture Dept.	*The LLMC held on 25.07.2023 decided to approve the change in category of the proposed land * Request is to be submitted by the ULB to the SLMC for changing the category of the proposed land. Decision of SLMC is awaited for placing the project in the SLTC/ SHPSC for approval for inclusion in the SWAP-3 of AMRUT-2.0.	31.03.2025

			has not furnished proof that the proposed site for the STP is coming under the Ramsar site category. *The LLMC held on 25.07.2023 decided to approve the change in category of the proposed land.		
38	STP at Wadakkanchery Municipality, Thrissur (IMPACT KERALA Ltd) (PRS)	1.00MLD Co-treatment	Initially planned at Puramboke land. NOC to be obtained from district collector. Now municipality planning for decentralized plants at different locations which needs to be finalized in consultation with PCB. Municipality to submit DPR accordingly. Not yet submitted.	DPR to be prepared.	-
39	STP at Kunnamkulam Municipality, Thrissur (IMPACT KERALA Ltd)	1.00MLD Co-treatment	Letter received from the Municipality on 28.12.2022 with Council resolution that Municipality is not going ahead with the Project. Letter forwarded to CEO, KIIFB and ACS, LSGD	DPR approved by KIIFB	

			regarding cancellation of the project on 11.01.2023. ACS directed Municipality to find place for LWM projects. Municipality informed that they have not considered anything further on this regard.		
40	Pazhayanoor STP (Thrissur)	0.45 KLD	At DPR stage	Clearance from KSPCB received and design revision is progressing.	31.12.2024
41	General Hospital, Irinjalakuda Municipality, Thrissur (PRS)	0.150	At DPR Stage	DPR correction in progress by the agency	
42	35 KLD STP at Ramavarma District ayurveda hospital, Thrissur	0.035	At DPR stage	DPR under correction by the agency	
43	FSTP at Ramavarmapura m, Thrissur (AMRUT) (PRS)	0.1 MLD	<i>Tendered but not started</i> The ULB selected the technical bid submitted by M/s. SEUF. Vetted design & technology details were submitted by SEUF on 19.07.2023. * The Technical Committee held on 23.08.2023 approved the technology and recommended	* TS dated 19.10.2023 was issued by the CE, LSGD. * Agreement to be executed with the contractor. Selection memo issued to SEUF, Thrissur.	31.03.2024

			issuance of TS.		
44	IDUKKI DISTRICT Sewerage System for Kattappana Municipality	1.76	DPR Submitted to Government of Kerala and RKI for AS on 19/09/2022	AS expected from GoK/RKI and now it is revising as per the direction of SBM 2.0	
45	STP for Idukki district hospital and district Ayurveda hospital, Thodupuzha municipality, Idukki	0.205	Tendered	Project modified as DPR for Taluk hospital alone with reduced capacity. DPR submitted to LB	
46	STP at private bus station, Kothayikkunnu, Thodupuzha municipality Idukki	0.03	Tendering stage.	TS issued. <i>Tendering works in progress</i>	
47	KANNUR DISTRICT Thalassery, Kannur	22	At DPR stage	DPR Submitted to Govt and RKI for AS on 28/11/2022	
48	Kannur corporation Zone 1	13	At DPR stage	DPR Submitted to Govt and RKI for AS on 25/11/2022	
49	Payyannur, Kannur	13 MLD	At DPR stage	DPR Submitted to Govt and RKI for AS on 25/11/2022	
50	STP plant at Maithanappally, Kannur with co-treatment capacity of 130 KLD	5		CWAP submitted by the ULB is to be placed in the next SLTC/SHPC for approval for inclusion in SWAP-3	
51	STP at Palayad Taliparamba municipality, Kannur	1	At DPR Stage	For the project land has to be purchased. The municipality is interested in buying the land of the weavers society. Need to submit reports regarding the land acquisition. Reports are under preparation	
52	200 KLD Sewage Treatment Plant - Mattannur Municipality	0.2	At DPR stage	Soft copy sent to SSM. DPR under verification at SSM. Send	

	- Reg			for technical sanction.	
53	STP at hospital, Pazhayangadi, Kannur	0.120	At tendering stage	Project vetting completed Agency has submitted a rough cost estimate for electrical components. Steps for issuing TS are in progress	
54	FSTP at Chellora, Kannur Corporation (AMRUT)	0.1 MLD	<i>Awarded but not started. *</i> Agreement was signed with M/s. IRTC to execute the project in DBOT mode. DPR to be submitted by M/s. IRTC. * DPR was submitted by IRTC on 30.06.2023. The same was approved by the council held on 25.07.2023. The ULB has directed M/s. IRTC to get the design vetted.	DPR submitted by IRTC was approved by the council held on 25.07.2023 * The ULB has directed IRTC to get the design vetted * The legacy waste removal from the proposed site is expected to be completed by Nov-23. * Agenda has been placed in the 29th SLTC scheduled on 07.11.2023 for revision of AS. The SHPSC held on 14.12.2023 approved the revision of AS.	30.06.20 24
55	<u>KOLLAM</u> <u>DISTRICT</u> STP at Mayyand GP, Kollam (IMPACT KERALA Ltd)	590KLD Co- treatment	RKI issued AS on 4/3/2022. 8 th Tender Acceptance Committee held on 14/11/23 approved selection of L1 bidder. Agreement executed with M/s Pollucon Technologies Ltd. on 30.12.2023. Contr actor to submit	DPR approved by RKI.	-

			vetted design within 2 months.		
56	<u>PATHANAMTHITTA DISTRICT</u> Taluk Hospital Thiruvalla , Thiruvalla Municipality, Pathanamthitta	0.225	At tendering stage	Vetting process in progress. Letter issued towards DPR preparation consultancy regd assistance in procurement. Tender document preparing.	
57	<u>KASARGOD DISTRICT</u> 200 KLD Wastewater treatment plant at Tata Trust Govt Hospital, Kasargod	0.2	At DPR Stage	Local body decided to hand over the work of DPR preparation to another agency	
58	Kasargod Zone 1	4 MLD	At DPR stage	Private land identified . Action to be taken from land aquisition	
59	Kasargod Zone 2	4 MLD	At DPR stage	DPR Submitted to Govt and RKI for AS on 23/11/2022	
60	Taluk Hospital , Neeleswaram Municipality Kasaragod	0.040	At tendering stage	TS issued, Tendering process delayed due to issues regarding rate changes in Price software. BOQ for Tendering under preparation	
61	135 KLD Capacity decentralized sullage Treatment plant at Uppala Town Mangalpadi, Kasaragod	0.135	At DPR Stage	Access was not available. NOC obtained from department concerned. <i>DPR verified and to be placed in next TC</i>	
62	<u>KOTTAYAM DISTRICT</u> Comprehensive sewerage scheme-	5 MLD	At DPR stage	DPR submitted to Kottayam medical college.	

	Government medical college, Kottayam				
63	Taluk Hospital Pampady, Pampady Block panchayat, Kottayam	0.085	At Tendering stage	TS received, tendering completed. KSPCB consent to establish proceedings in progress	-
64	ETP at Kodimatha, Kottayam Municipality	0.030	At DPR Stage	Revised DPR submitted to District Suchitwa Mission and returned for correction	
65	<u>WAYANAD DISTRICT</u> 65 KLD Sewage Treatment Plant at Taluk Head Quarters Hospital Vythiri, Kalpetta Block Panchayat, Wayanad	0.065	At DPR Stage	Agency submitted New estimate and DPR to LB	
66	Mananthavady, Wayanad	2 MLD	At DPR stage	Submitted to Govt and RKI for AS on 29/09/2022	
67	Construction of 2 MLD capacity sewage treatment Plant and laying sewerage network at SulthanBethery, Wayanad	2 MLD	At DPR stage	DPR Submitted to Govt and RKI for AS on 01/02/2023	

Total capacity= 269.48 MLD

IV.Details of Industrial Pollution:

- Total registered industrial and non industrial units -- **129915(Dossier)**
- **15095** consents issued in 2023- More industries are brought under consent

purview

1.Details of existing/under construction/proposed CETPs in the State

- 14422 (dossier)effluent generating units (large and medium=1298 ; Small scale13124) (as per dossier)
 - The Board issue consent only after ensuring providing of treatment system and is monitored.
 - OCEMS facility provided in 48 industries and are linked to the SPCB/CPCB servers. In case of exceedance follow up is done.
 - Quantity of effluent generated from the industries in MLD: 170.464+0.075276=170.539
 - Quantity of Hazardous Sludge generated from the Industries in TPA : 2584.572
 - Number of industrial units connected to CETP: As per the available data-95nos
 - Number and total capacity of CETPs (details of existing/under construction /proposed)
- I. 11 nos of CETPs are functional (Total Capacity -- 9.545 MLD
- I. Proposed CETPs --2 nos. (Total Capacity- 3.1MLD).

CETP Name	Treatment Capacity	Operational Capacity	Status(Whether Operational or Non operational)	Number of member units	Number of complying units	Whether complying with parameters
Kinfra Apparel Park, St.Xavier's College P.O, Thumba, Thiruvananthapuram	4.5 MLD	4.5 MLD	Operational	10		Faecal Coliform-200 cfu/100 ml is not complying within limits according to analysis report on 01/12/2023
CETP,KINFRA,Elamannoor,Pathanamthitta	0.22 MLD	30 Cubic metre per day	Operational	4	4	All parameters are within limits as per the analysis report on 29/12/2023
Mega Food Park, Aroor Alappuzha	2 MLD	0.5 MLD	Operational	6		Parameters complied Within limits
Sea Food Park (India) Ltd., Aroor, Alappuzha	0.3 MLD	0.3 MLD	Operational	10		Parameters complied Within limits
Kinfra Small Industries Park Nellad, Mazhuvanoor	0.4 MLD	0.4 MLD	Operational	15		Legal sample collected and directions sought from HO for legal action. , As per AR of Decemeber, TSS not within limits, all other parameters are within limits. According to the analysis report obtained on 16.12.2023 at ACF Outlet. The following values are pH 6.85, Bod 18.01, Cod128, TSS 128,Oil and Greese – BDL, Fluoride- 0.96, Chloride- 138.96, Sulphate- 0.075, Sulphajds- BDL, Phosphosphate- 2.04, Amonical

						Nitergeogon -2.12, Phenolic Compounds-BDL, Niterate-1.22,
Rubber Park India Private Limited, Common Effluent Treatment Plant, 2 A, Kaudileeyam, Rubber Park, Valayanchira ngara, Ernakulam- 683556	0.25 MLD	0.25 MLD	Operational	17 Units Dormit ory and Canteen		Parameters not complied within limits. Show cause notice issued.Finished the construction of a new plant 250 KLD to increase capacity. Also submitted application for consent to operate new plant on 18.11.2023.
CSEZ, Kakkanad, Cochin Special Economic Zone Ernakulam	1 MLD		Operational	14	Ph-7.2,TSS- BDL, TDS- 1733mg/l , phosphate-20 mg/l,sulphide , ammonical nitrogen , BOD- BDL, COD-24 mg/l, lead-0.10 mg/l, zinc- 0.54 mg/l, arsenic- 0.02 mg/l , iron- 0.33 mg/l, total nitrogen- 125. 82 mg/l according to the analysis report obtained from outlet of CETP, CSEZ, Kakkanad, Cochin	Parameters such as TSS, Phosphates, lead,Zinc, Argon, iron ,total nitrogen are not within limits.
KinfraTechno Industrial Park, Kakkanchery Chelambara P.O, Malappuram	0.675 MLD	0.675 MLD	Operational	17	17	Parameters complied within limits
Kinfra Textile Centre,	0.2 MLD	0.2 MLD	Operational	2	2	Parameters complied within limits

Nadukani, Pallivayal P.O, Thaliparambu, Kannur-670142						
CETP, Industrialde partment ,Aroor	1.5 MLD		The land in an extent of 100 cents in survey 411/1-A7-12, 411/1A,411/2 and 411/3 of Aroor Village in Development Area, Aroor is taken over to the Industries Department with immediate effect and exclusively earmarked for establishing a Common Effluent Treatment Plant (CETP) in Development Area, Aroor. GM issued proceedings on 08/01/2024 to resume the 1 acre land from JIS international			NA

Effluent Treatment Plants							
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Idukki District

Sl. No.	Industry Name	Industry Type	Consumption of water in MLD	Effluent quantity in MLD	Mode of disposal	ETP Units	Date of monitoring	Limiting Standards	Latest analysis report	Conforming to Standards or not if not steps taken
1	<u>Gokulam Park Munnar A Unit Of SreeGokulam Hotel India Pvt Ltd., Chithirapuram P.O Munnar</u>	<u>Hotel</u>	<u>0.05</u>	<u>0.05</u>	<u>Soak Pit</u>	Sullage: Bar screen, grit cum oil separator, chemical precipitation tank, settling tank, Sewage: Septic tank, anaerobic up flow filter, diffused aeration tank, secondary settling, pressure sand filter, activated carbon filter, treated water tank, soak pit, bio-	06.11.2023	pH=5.5 to 9, BOD=30 mg/l, S.S=100mg/l, Oil & Grease=10mg/l	pH=7.15, BOD=65mg/l, S.S=54.7mg/l, Oil & Grease=BDL	<u>BOD found exceeding the limits</u> <u>Direction letter issued to unit to rectify the defects of STP.</u>

						gas plant.				
2	<u>Misty Mountai n Resorts, Pallivasal</u>	<u>Resort</u>	<u>0.048</u>	<u>0.04</u>	<u>Soak Pit</u>	Bar screen chamber, oil/grease trap, equalization tank, chemical coagulation, aeration tank, settling tank, treated water tank, sand filter, carbon filter, soak pit	<u>10.11.2023</u>	pH=5.5 to 9, BOD=30 mg/l, S.S=100mg/l, Oil & Grease=10mg/l	pH=5.21, BOD=172.5, S.S=24.2mg/l, Oil & Grease=BDL	<u>BOD found exceeding the limits</u> <u>Direction letter issued to unit to rectify the defects of STP</u>

Pathanamthitta District

Sl. No.	Industry Name	Industry Type	Consumption of water in MLD	Effluent quantity in MLD	Mode of disposal	ETP Units	Date of monitoring	Limiting Standards	Latest analysis report	Conforming to Standards or not if not steps taken
1	AutoCleaner, Eraviperor	Car Wash				ETP	01.12.2023	pH - 6.5-8.5, TSS - 100, BOD-30, O&G - 10	pH - 7.1, TSS - 90, BOD-24, O&G - 9.2	All parameters are within the limit
2	Malayala	Laun				ETP	01.12.20	pH - 6.5	pH -8.4, TSS -	All

m Power Laundry & Dry Cleaning Co. Pvt. Ltd., Koipuram	dry					23	to 9, TSS - 100, BOD - 30, O&G - 10	86, BOD - 28, O&G - 8.8	paramet ers are within the limit
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Solid Waste Management:

Kerala's densely populated settlements and the rural-urban continuum contribute to this substantial waste output. This waste consists of both organic and inorganic components. Approximately 77% of the waste generated is organic material and remaining 23% is inorganic waste including 5% reject material, which has a combustibility rate of 79.2%. 3823 TPD of waste is produced in urban LSGIs and 6857 in rural LSGIs, respectively, based on the present population. The state of Kerala produces 10680 tonnes of waste every day in total based on current population (as per projected population data for 2024). Out of 3823 TPD waste generated, 2944 TPD is bio waste and 879 TPD is non bio waste including reject.

The state of Kerala adopts a decentralized waste management approach for handling wet waste. Various types of composting devices and smaller capacity biogas units are used for managing the wet waste at source. The compost produced by household waste treatment is utilised as manure for cultivation in the respective residences. 80% of the total bio waste generated at households is being managed at source. The remaining 20% and waste generated from community facilities are the responsibility of LSGIs. Based on the land availability, medium capacity decentralized composting facilities such as aerobic compost units, organic waste converters, windrow plants, biomethanation facilities etc are established at community level widely in Kerala. The compost generated from the treatment of waste at community facilities is branded and marketed as manure at Pattambi municipality, Wadakkanchery municipality, Perinthalmanna municipality and Munnar GP, and compost produced from many other facilities are being supplied to farmers groups at free of cost.

Total number of Urban Local Bodies and their Population: 93 Urban Local Bodies (6 Corporation and 87 Municipalities) , Total Urban Population : 79,36,885 (As per 2011 Census)

- Current Municipal Solid Waste Generation :3823 TPD (Urban local bodies- Based on population)

- Processing Capacity : 3797 TPD

- Gap in Municipal Solid Waste Management : 0 TPD

The District wise number of units are given below;

- 8 Waste to energy plants in progress (DPR stage-1 no, Tendering stage-1 no, Bid evaluation stage- 2 nos. , Initial stage of construction-2 nos, Land identified-2 nos)

Status of proposed Waste- to- Energy Plants

Status report of Waste to Energy Plant				
Sl. N o.	Waste to Energyplant	Land Identified	Procured	Status
1	Kozhikode Njاليانparambu	Kozhikode corporation	(Govt. land)12.67acre at Njاليانparabu	• Work awarded to ZontaInfratech Private Limited for the construction of Waste to Energy Plant. • Consent to establish was issued to Malabar Waste Management Private Limited on 12-8-2020 with a validity upto 30-6-2023 for the generation of 6MW electricity and 20T of compost. • Biomining of legacy waste is 75% complete. The total area for biomining is 1.8 acres. • All licenses from the corresponding departments were obtained for the construction of waste to energy plant. Preliminary site work started. Financial closure is expected to be achieved by the end of the month.
2	Kannur Chelora	Kannur Corporation	(Govt. Land) 9.7 acres at Chelora	• Work of WtE plant can be started only after the work of biomining is carried out. WtE plant is proposed in 9.7 acres of land after clearing the legacy waste. • Tendering completed and DPR prepared by Blue planet.

				Consent application is yet to be received. For biomining, volume of legacy waste – 1,22,844 m³ (NIT). First given to Zonta and they asked to revise the amount of biomining. Again retendered and identified a suitable contractor, Jan-AdharSevabhaviSanstha. Bio mining already started. Agreement to be executed Biomining is already started (6500) cum is biomined (50%).
3.	Palakkad Kanjikode	Palakkad Municipality	Land taken over from Kerala State Electricity Board Ltd. in advance possession 15 acres at Kanjiko de	- Blue Planet Palakkad Waste Solutions Private Limited was formed to take up the development of the project. - Consent to establish was issued on 21-12-2021 to the project with a validity upto 30-11-2023. 200T of municipal solid waste will be processed. - Financial closure achieved
4	Kollam Kureepuzha	Kollam Corporation	7.05 acres at Kureepuzha (Govt. land)	- The SPV constituted for setting up of the Waste to Energy Plant of Kollam Corporation, - M/s. Venad Waste Management Private Limited had applied for Consent to Establish on 09.09.2021. The proposed waste to energy plant is bio methanation based and is having a capacity of 200 TPD. - Consent to establish was issued to project on 10-1-2022 with a validity upto 9-1-2025 for the production of 8.165TPD of compressed biogas from 200TPD of municipal solid wastes - Biomining of legacy waste completed. - Financial closure for waste to energy plant is expected to be achieved by December 2022.
5	ErnakulamBrahmap	Kochi corporation	20 acres at	Bio mining of legacy waste

	uram		Brahmapur am (Govt. land)	is progressing. 25% completed. A high level monitoring committee was constituted with CE,LSGD as convenor to periodically monitor Bio mining at Brahmapuram. • Steps are being taken for the biomethanation plant of BPCL
6	Thrissur	Thrissur corporation		Land is yet to be Identified .Biomining 45% completed.
7	Malappuram	Malappuram municipality	8.09 acres of land at Kurumbathoor village in Tirur Taluk	• 8.09 acres of land identified by District Administration at Kurumbathur village. Tirur taluk for setting up of WtE plant. The land is under possession of KSIDC. Details of this are reported to be submitted to Government already by LR Deputy Collector.
8	Thiruvananthapuram	Thiruvananthapuram Corporation		• Land is not yet identified.

Table 3. Details of Existing Waste Management Facilities

Sl. No.	Waste management facility	Urban LBs		Rural LBs	
		No of units	Capacity (TPD)	No of units	Capacity (TPD)
I.	Wet Waste Management				
A	Composting Facilities				
	a. Household level composting devices	392750	907	1858310	2787
	b. Compost pits	495940	480	1845281	1845

	c. Institutional Composting Facilities	28420	83	694	2
	d. Community Level composting facilities	793	458	365	18
	e. Centralized composting facilities	24	228	103	52
	<i>Total capacity of composting facilities</i>		<i>2156</i>		<i>4704</i>
B	<i>Bio methanation Facilities</i>				
	a. Household level Biomethanation facilities	77250	386	57406	57
	b. Community Level Biomethanation facilities	117	58	310	78
	c. Centralized Biomethanation facilities	4	25	7	7
	<i>Total capacity of Biomethanation facilities</i>		<i>469</i>		<i>142</i>
C	<i>Rendering plants</i>	20	401	20	401
	<i>Total Bio waste processing facilities</i>		<i>3026</i>		<i>5247</i>
II	<i>Dry Waste Management</i>				
A	<i>Dry waste processing facilities (Public Sector)</i>	348	696	1800	1385
B	<i>Dry waste processing facilities (Private Sector)</i>	30	60	18	36
C	<i>Sanitary waste disposal Facility (Community Level)</i>	1	5	0	0
D	<i>Sanitary waste disposal Facility (Institutional Level)</i>	3272	10	17897	54
	<i>Total Dry waste processing facilities</i>		<i>771</i>		<i>1475</i>
	<i>Total Capacity of Existing</i>		<i>3797</i>		<i>6722</i>

	<i>facilities</i>				
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With the available financial support from central and state, 2625 TPD capacity bio waste management facilities have already been installed at household, institutional and community levels in urban areas. In addition to that, from 401 TPD poultry slaughter waste is converted to various products such as pet feed, protein supplement, compost etc.. For managing the dry waste including public and private sector there are 771 TPD capacity processing facilities have been established in the urban areas. As a whole 3797 TPD waste management facilities are in the state, to cater the present waste generated.

Local bodies, with the assistance of women's self-help groups known as Harita Karma Sena, manage the collection of dry waste from households and establishments. Subsequently, the collected waste undergoes segregation at Material Collection Facilities (MCFs) and Resource Recovery Facilities (RRFs). Recyclable waste is sent to recycling units, while non-recyclable waste is directed to co-processing facilities, such as cement plants, as Refuse-Derived Fuel (RDF) for energy recovery. To address specific waste components like sanitary waste, e-waste, construction & demolition waste, and hair waste, private partnerships are encouraged. Continuous monitoring of projects in this sector is conducted to ensure the effective maintenance of the system. The reject waste generated statewide in households/shops are segregated at MCFs and are sent to cement factories for onward utilization for energy generation.

Table 4. Quantity of Reject Waste transferred to Cement Plants from January 2023 to December 2023

Quantity of Reject Waste transferred	By Govt sector	29,826 Tonnes
	By Pvt Sector	18,205 Tonnes
	Total	48,031 Tonnes

In order to manage the waste generated including the future requirements, projects have been planned & proposed in local bodies. Projects worth ₹ 45.2 cr have been taken up in local bodies for wet waste management and ₹18.54 cr have been taken up in local bodies for dry waste management. For clearing the existing legacy dumpsites, projects worth ₹120 cr have been taken up under KSWMP. and projects worth ₹56 cr taken up under other funds.

Table 5. Details of Projects Undertaken by LSGI's for solid waste management (Excluding Word Bank)

<i>Name of Districts</i>	<i>Biomethanation</i>		<i>Composting</i>		<i>MCF/RRF/ MRF/Mini MCF</i>		<i>Sanitary</i>	
	<i>No. of Projects</i>	<i>Fund Earmarked (in Rs)</i>	<i>No. of Projects</i>	<i>Fund Earmarked (in Rs)</i>	<i>No. of Projects</i>	<i>Fund Earmarked (in Rs)</i>	<i>No. of Projects</i>	<i>Fund Earmarked (in Rs)</i>
Thiruvananthapuram	76	45676434	245	263512921	205	256914050	7	13970925
Kollam	12	28165206	52	76370924	156	127928818	13	32684045
Pathanamthitta	3	2151062	7	27485623	20	19019521	2	5398091
Alappuzha	4	7865200	12	72602977	33	57928247	1	600000
Kottayam	2	700000	8	6006399	9	4324813	1	100000
Idukki	2	5000000	1	5583750	15	10100893	1	650000
Ernakulam	8	24713033	14	38229878	36	55856234	3	350000
Thrissur	8	18865944	24	101533565	68	102300901	4	2177774
Palakkad	-	-	7	21260294	24	28838153	3	15083344
Malappuram	2	463000	15	115701485	16	38340116	-	-

Kozhikode	6	848600	9	29458635	37	89730235	3	2735324
Wayanad	-	-	2	3742500	2	5000000	-	-
Kannur	3	2950000	17	84310090	29	51964428	3	9992350
Kasargod	2	185000	2	11456000	10	22091140	-	-
Total	128	137583479	415	857255041	660	870337549	41	83741853

Projects have been taken up by LSGIs in all districts for effectively addressing the gap in the processing capacity. Statewide 128 nos of biomethanation projects, 415 nos of composting projects, 660 nos of MCF/MRF and 41 nos sanitary waste treatment plants have been proposed by various LSGIs. A total outlay of 194.89 cr has been earmarked for these projects.

Table 6: Details of world bank funded projects

No	KSWMP - World Bank funded SWM Project Components	Total Outlay in Rs. Cr	FY 2022-23 & FY 2023-24 till date (31/01/24)		Projected expenses till 31/03/24 in Rs. Cr
			Committed expenditure in Rs. Cr	Firm Contracts / Actual expenditure in Rs. Cr	
I	Component 1				
1	Planning, Execution, Admn Expenses & Capacity Building	320.00	50.00	44.00	16
II	Component 2				
2	ULB level Investments (procurement of SWM Goods & Works)	1,200.00	65.00	10.00	10
III	Component 3				

3	Dumpsite Remediation	120.00			10
4	Regional Infrastructure	760.00			10
	Total	2,400.00	115.00	54.00	46

Similarly, as part of KSWMP funded by World Bank a total outlay of 2400 cr has been earmarked for capacity building, procurement of SWM goods, dumpsite remediation and regional infrastructure.

2.3 Dumpsites Remediation

Legacy dump sites are remediated by biomining, in which microorganisms and natural processes are used to excavate, treat, segregate, and recover valuable materials from old, accumulated waste dumps (landfills). These legacy wastes contain organic matter, plastics, metals, and other materials that have been compacted and decomposed over decades.

As part of dumpsite identification, 44 legacy waste dump sites were identified. As part of a planned process, remediation by biomining has been completed on 18 sites. The quantity of waste processed on these sites is 2.46 lakh tonnes. The remediation work is ongoing in 12 sites. The quantity of waste processed on these sites is 3.94 lakh tonnes. The remediation process is initiated in 14 sites. The quantity of waste to be processed at these sites is 1.63 lakh tonnes. Total fund expended for legacy waste remediation is Rs 11.49 Cr. For clearing the existing legacy dumpsites, projects worth ₹120 Cr have been taken up under KWSMP and projects worth ₹56.60 Cr taken up under other funds. Total fund earmarked for legacy waste remediation is Rs 176.60 Cr.

The processed waste soil from bio mining is used for soil filling at various locations. Specific interventions have been done at Brahmapuram and remediation by biomining is in progress there. The biomining is successfully completed in Kureepuzha, Kollam and a total quantity of 92,874 T of legacy waste has been processed as part of this project. The total waste has been successfully segregated into soil, stones, RDF, glass aggregate, plastic aggregate, OBMS aggregate, S S aggregate, tyre aggregate, wood aggregate and footwear and a total of 74,093.00 T has been disposed of and remaining quantity is stocked.

2.4 Other interventions taken by the State in Solid Waste Management

2.4.1 Door-to-Door Waste Collection

In the fiscal year 2023–2024, there has been a significant increase in door-to-door waste collection coverage across the State. 100% door to door collection is ensured by special interventions at LSGI level. HarithaMithram app facilitated developing systematic and professional approach on customized strategies for increasing the D2D coverage, user fee collection, segregated material movement, and scheduled transportation of waste from door steps to disposal facilities. During this period, the volume of dry waste delivered to MCF/RRF facilities has correspondingly risen. To accommodate the increased amount of collected waste, an additional 41 godowns were established. Currently, there are 57 godowns with a combined area of 4,97,000sqft to effectively manage the heightened volume of waste.

Table 7: Details of Solid Waste Management facilities in the state

<i>Facility</i>	<i>Up to March 2023</i>	<i>Up to Jan 2024</i>
RRF	93 Nos	167 Nos
MCF	1182 Nos	1981 Nos
Mini MCF	9357 Nos	20904 Nos
Godown facility	16 Nos	57 Nos
Godown Area	85,250 sqft	4,97,000 sqft

The state has made significant investments in infrastructure for the storage of dry waste.

Currently, there are 167 Resource Recovery Facilities (RRF), 1981 Material Collection Facilities (MCF), 20904 Mini Material Collection Facilities (Mini MCF), and 57 storage godowns covering an area of 4,97,000 square feet.

2.3.2 Registration of Unauthorized Dealers

Scrap dealers are pivotal in the non-biodegradable waste management process in Kerala, contributing significantly to the collection and processing of waste. They engage in collecting, sorting, and processing diverse scrap materials, such as metals, paper, plastics, and electronics, contributing to the reduction of waste reaching the mainstream. Efforts are underway to register them officially and evaluate the volume of waste they manage.

2.3.3 Lifting Plan and Forward Linkage

The transfer of waste from mini MCF to MCF and RRFs faced inefficiencies due to insufficient vehicle resources and a lack of professionalism. Through the assistance of Haritha Sahayasthapanams, a systematic plan for waste lifting has been devised and implemented. Additionally, a seamless disposal process for segregated waste has been established by identifying appropriate disposal facilities and recycling markets. To efficiently handle non-recyclable rejects, plans are underway to propose RDF plants at the district level.

Non-recyclable plastic waste is shredded in the MCF/RRFs and is used for the tarring of PWD and LSGD roads. During the period 2016-2023, Clean Kerala Company Limited (CKCL) has produced 34443.142 T of shredded plastics and given to various agencies (NHAI- 12-18 T, PWD-947.76 T, LSGI-1151.2 T). The total length of polymerized road constructed during this period using shredded plastic is 3838.04 km.

2.3.4 MCF Modernization

Most of the MCF/RRF facilities faced a shortage of sufficient space and machinery to handle the increased volume of waste. Technical measures have been implemented to recognize these gaps and upgrade the existing facilities. New projects have been initiated to address and bridge these gaps. 660 projects are taken up for an amount 87,03,37,549/- of this year for the construction of new MCFs and improvement and maintenance of existing MCFs.

2.3.5 GPS Tracking Facility

To control the illegal dumping of waste, GPS tracking systems have been mandated for vehicles transporting waste. The Kerala State Pollution Control Board has created a web portal for real-

time monitoring of waste-carrying vehicles, both interstate and intrastate. Additionally, vehicles involved in the transfer of non-bio waste have been equipped with security stickers embedded with holograms.

2.3.6 IEC Interventions

IEC initiatives have been intensified to improve door-to-door waste collection and eliminate open littering.

- An incentive program has been instituted to encourage public engagement in identifying Garbage Vulnerable Points.
- Technical assistance has been provided to BWGs to strategize and establish waste management facilities independently.
- For effective waste management, private partnership has been ensured
- Ranking of LSGIs based on their performance on waste management
- Ranking of public and private sector institutions based on cleanliness index
- 100% User Fee challenge among LSGIs

2.3.7 Enforcement Action

To enforce waste management regulations and prevent open dumping, 23 squads were established in March 2023 to undertake enforcement actions. Single-use items constitute a significant portion of the waste discarded on roadsides. The enforcement team has conducted 33,405 inspections to date, identifying 9,078 violations and punishment actions have been taken. A fine amounting to Rs. 1,04,55,622/- has been collected. Additionally, approximately 161,456 kgs of single-use plastic items have been seized as a result of these enforcement efforts.

Control rooms have been decided to be set up at the District and Local Self-Government levels to closely monitor the existing collection of waste and their proper disposal. Control rooms are functioning effectively in 16 local self-government bodies, which are taken as pilot projects.

2.3.8 Clearing and beautification of Garbage Vulnerable Points

With active public participation in a mass campaign, garbage vulnerable points were pinpointed. These 1983 locations underwent clearing and beautification efforts, with students and environmentalists playing a crucial role. The once unsightly wayside waste heaps transformed into attractive gardens, conveying a significant message on cleanliness to the public. The operation and maintenance (O&M) of each of these parks are scheduled to be carried out with the support of LSGIs, Resident Welfare Associations, trade unions, NGOs, etc.

2.3.9 Sanitary Waste Management

An incinerator plant for sanitary waste has been established in Palakkad district. Following satisfactory monitoring of its operation, new plants are now being proposed in all districts. The total number of planned projects for implementation in the state is 57. These plants will have a cumulative capacity of 44.80 TPD.

Table 8. Community Level Sanitary Waste Incinerator Projects taken in local bodies

<i>Sl No.</i>	<i>Name of District</i>	<i>Total Projects taken up in districts</i>	<i>Capacity (TPD)</i>
1	Thiruvananthapuram	4	3.3
2	Kollam	8	5
3	Pathanamthitta	4	1.5
4	Alappuzha	5	3.5
5	Kottayam	4	4
6	Idukki	2	2
7	Ernakulam	3	4
8	Thrissur	4	4

9	Palakkad	3	2
10	Malappuram	5	5
11	Kozhikode	8	6
12	Wayanad	1	1
13	Kannur	5	2.5
14	Kasargod	1	1
<i>TOTAL</i>		<i>57</i>	<i>44.80</i>

2.3.10 Rendering plants

Meat rendering plants process animal by-product materials for the production of tallow, grease, and high-protein meat and bone meal. Plants operate in conjunction with animal slaughterhouses or poultry processing plants. The Government of Kerala developed guidelines for the operation of rendering plants which led to the standardization of facilities. The facilities use wastes as an input material to create valuable products as new outputs. The aim of resource-recovery is to reduce the amount of waste generated and optimize the values created from waste. Here, the newly functioning plants lead to the management of around 850 TPD of poultry waste which would have ended-up as waste and created a menace to the people.

Table 9. Details of Existing Rendering Plants

<i>District</i>	<i>Plants in ULBs</i>		<i>Plants in Rural local Bodies</i>	
	<i>No.</i>	<i>Capacity</i>	<i>No.</i>	<i>Capacity</i>
Thiruvananthapuram	0	0	0	0
Kollam	0	0	2	9
Pathanamthitta	0	0	1	30
Alappuzha	0	0	0	0
Kottayam	0	0	0	0
Idukki	0	0	0	0
Ernakulam	0	0	7	242
Thrissur	0	0	2	6.5
Palakkad	2	36.25	6	102
Malappuram	2	13	17	236.5
Kozhikode	0	0	1	30
Wayanad	0	0	1	12
Kannur	1	40	1	14
Kasargod	0	0	2	110
	5	89.25	40	792

Rendering plants are available in 10 districts and the waste from other 4 districts are also processed through these plant.

- Status Report of Bio mining in the State of Kerala

In Kerala there are no live dump sites. 58 old dumpsites were identified in different parts of the State. Out of which 21 were bioremediated. Bio-mining of legacy waste is progressing at various stages in the remaining 37 dump sites.

In the State, for a Regional Sanitary Landfill 25 acre of land has been earmarked by KINFRA at site of FACT at Ernakulam and action is being carried out to set up. Another secured landfill is under construction in Attingal Municipality.

Bio mining of dumpsites

<i>Description</i>	<i>As on 01.12.2022</i>	<i>As on 13.10.2023</i>
Number of Dumpsites Identified	44	58
Remaining dumpsites to be bio-mined	26	37
a.Dumpsites where bio-mining is progressing	6	10
b.Number of dumpsites to be biomined	20	27 (work order: 3, tender proceedings: 5 Tender process initiated: 19)
Fund earmarked	15.15 crore	
Fund utilized		13.7 crore

Clearing of dump sites - Processing sites

<i>Sl.</i>	<i>Location</i>	<i>Status of Bioremediation</i>
1	<i>Attingal, TVM</i>	75% remediated, process ongoing.

2	Sarvodayapuram, ALP	95% remediated.
3	Vadavathoor, KTM	Phase I completed (8000 m3 cleared), Phase II SBM(U) + CFC project (Project cost - 2 cr - TS pending(returned to Municipal office)). Phase III project taken up as KSWMP.
4	Brahmapuram, EKM	Work retendered, Remediation work allotted to 'M/s Bhoomi'. Trial run completed
5	Laloor, TSR	85% completed.
6	Njaliparambu, KKD	Zone 1, Zone 2 and Zone 3 biominning completed. Capping -First stage completed, Second Stage under process. Shifting of remaining rejects to second stage of capping will be commenced soon.
7	Chavakkad, TSR	80% completed.
8	Chelora, KNR	76 m3 remediated and bill passed. 25 tonne RDF given to cement factory (Karnataka).
9	Ottapalam, PKLD	Ist phase completed, II phase- Work started, will be completed before 31, march 2024.
10	Kodungallur, TSR	Work started and 60 % remediated

- Status of facility for treatment of Biodegradable waste

The Government of Kerala has taken efforts to implement the Solid Waste Management Rules, 2016 in the State. There are 6 Corporations, 87 Municipalities and 941 GPs in the State. The Kerala State Pollution Control Board (KPSCB) issued repeated directions to all local bodies to ensure compliance of the Solid Waste Management Rules, 2016. 3472 TPD of solid waste is generated from the cities and towns. The status of the present facilities is given below:

Sanitary landfill

The non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive inert waste and preprocessing rejects and residues from waste processing facilities shall only go to sanitary landfill and its specifications are given in zi of Rule 15 of the Solid Waste Management Rules, 2016.

In the State, for a Regional Sanitary Landfill 25 acre of land has been earmarked by KINFRA at site of FACT at Ernakulam and action is being carried

out to set up. Another secured landfill is under construction in Attingal Municipality.

- Bio-medical Waste Management:

As per Annual Report in the whole state for the year 2022-23:

- Total Bio-medical generation: 62122.78 kg/day
- No. of Hospitals and Health Care Facilities: 17122
- Existing Total Bio- Medical treatment capacity (captive and CBMW) : 79.637 TPD
- Total Bio-Medical waste treated : 40.2 TPD (Common- 36817 kg/D + Captive- 3.39 TPD)

Board has entrusted Council of Scientific and Industrial Research organization , National Institute for Interdisciplinary Science and Technology (CSIR-NIIST) for conducting a detailed assessment of healthcare facilities in the Kerala state. The works include field inspection, field data collection, estimation of gap and for projected/ extrapolated requirements of CBWTF'S for next ten years and entered into an agreement. The project is progressing

- Hazardous Waste Management:

As per Annual Report in the whole state for the year 2022-23:

- Total Hazardous Waste generation: 46674.8567 Metric Tonne/year
- Total hazardous waste recycled: 3376.2752 Metric Tonne/year
- Total hazardous waste utilized: 11.88 Metric Tonne/year
- No. of Industries generating Hazardous waste: 2186
- Treatment Capacity of all TSDFs in the State: 27,50,000 MTA for 45 years
- Total hazardous waste treated (captive and Common) : 43272.46 Tonne/year

VIII . Plastic Waste Management:

- Total Plastic Waste generation: 71000 TPA(as per annual report in the whole state for the year 2021-22).
 - Material Collection Facility – 1201 nos.; Resource Recovery Facility-137 nos.
 - Gap between current status and desirable level : 2641.8 TPA
- Details of Alternate Treatment Technology being adopted by the State/UT:
- Decentralized Wastewater Treatment System (DEWATS) system coupled with Phyto- remediation was provided in a slum area, Chathanad in Alappuzha, Kerala. The system consists of Anaerobic baffle reactor, planted gravel filter. Waste water from the houses in the colony is collected through pipe line and then it enters the anaerobic baffle reactor and then it is passed through planted gravel filter and treated sewage is discharged into drain (Photos of the same enclosed in AnnexureIII-g)

The Hon'ble NGT issued directions for bioremediation/phytoremediation for the treatment of sewage. In OA 673/2018, the Oversight Committee submitted suggestions for controlling pollution due to sewage.

Centre for Water Resources Development and Management, Kozhikode submitted "proposal for the study of sewer infiltration into water resources via isotopic tracing and treatment of liquid waste by constructed wetland" submitted to Indian National Committee on Ground Water(INCGW) on 25-10-2021, a response is awaited from the INCGW.

Demonstration projects regarding phyto remediation at a relatively much lower cost with the help of environment experts so that these proposed projects could be realistically remodelled.

There is lack of expertise on phyto remediation projects. Though there are model project on phytoremediation in other states such as at Golf Links, Hyderabad, such models shall be showcased and action is highly needed for transfer of technology of such projects and to strengthen the environmental experts in our State. Online Presentation by NEERI was conducted on 13.03.2023 and site visit by NEERI officials conducted from 11/05/2023 to 13/05/2023. Proposal for feasibility study submitted by NEERI and order issued. NEERI, Nagpur then furnished a proposal for the feasibility study on the development of process package of treatment of domestic sewage for meeting the environmental compliance at Edappally canal and Perandoor canal at Ernakulam and Pallikalar at

Kollam district for an amount of Rs 45 lakhs and this proposal was approved by the Board and draft MOU has been submitted.

The Ministry of water resources Jal Sakthi gave the reference of Mr. Kamal Tiwari, Chief Operating Officer, Daiki Axis India pvt. Ltd. For providing Jokhasou technology. Accordingly Mr. Kamal Tiwari visited Rajaji Nagar and Poojappura central jail in Trivandrum with the officials of Trivandrum corporation, Kerala Water Authority and KSPCB. Further a video conference was conducted on 24/08/2023. In the meeting it was decided to constitute a committee for the establishment of Jokhasou model treatment plant at Rajaji Nagar Thiruvananthapuram.

As per MPRs in compliance to the Order of Hon'ble NGT in O.A.673/2018, the State requests for expertise aid in in-situ treatment.

- Identification of polluting sources including drains contributing to river pollution and action as per Hon'ble NGT order on in-situ treatment:
- Polluting sources including drains contributing to river pollution were already identified and according to that action plans were prepared and submitted to CPCB. STPs were proposed in the action plans wherever necessary. Measures for management of waste were also incorporated in the action plans. In situ primary treatment were proposed for the river stretches Bharathapuzha and Pamba in the action plans. As part of the Cochin Metro Rail Limited's Integrated water transported system project 4 STPs are proposed at Elamkulam, Vennala, Muttar, and Perandur for treating the water coming through drains and discharging treated water to water bodies. DPR for sewer line at Muttar, Perandoor, Vennala, Elamkulam was forwarded to Ministry of Jalsakthi on 31.01.2023 for funding under NRCP.

- Details of Nodal Officer appointed by Chief Secretary in the State/UT:

Vide G.O.(Rt)No.93/2020/WRD dated 28.01.2020 Government of Kerala nominated Deputy Secretary (Projects), Water Resource Department as the nodal authority, Government of Kerala for monitoring the compliance of the directions in the order on fortnightly basis and to maintain record of progress and to act as an accountable person to the Chief Secretary for the purpose.

Vide G.O.(Rt)No.223/2020/WRD dated 12.03.2020 Government of Kerala appointed a monitoring committee comprising of Additional Chief Secretary, Water Resources Department as Chairperson and Principal Secretary, LSGD, Principal Secretary, Environment, Secretary, Water Resources Department and Staff officer to Chief Secretary as nodal officers & members.

- Details of meetings carried under the Chairmanship Chief of Secretary in the State/UT:

Regarding OA 514/2019 (Solid Waste Management) Chief Secretary convened meetings on 22.09.2020 and 25.09.2020 Regarding OA 804/17 (Implementation of Hazardous and Other Waste Management Rules, 2016) Chief Secretary convened meeting of 16/10/2020. Additional Chief Secretary Labour Department had convened 1st meeting on the same for Chief Secretary on 09/10/2020. Meeting of State Level Advisory Committee (SLAC) on Waste Management, chaired by Chief Secretary is being conducted in the State regularly to discuss the various matters. 38 such meetings were conducted in Kerala so far. Last SLAC meeting was conducted on 12.02.2021.

Meetings were held by the Chief Secretary on 11-12-2020, 30-03-2021 and 05-04- 2021 with the Stake holder Departments/ Authorities, to review the progress in implementation of the projects taken up on the basis of orders of the Hon'ble National Green Tribunal in O.A. No. 673 of 2018(PZ).

RRC Meetings were held on 28/05/2021 and 23/06/2021 and Review meeting was held by the Chief Secretary on 31-05-2021. RRC meeting convened on 22.07.2021. Review meeting was held by the Chief Secretary on 27.07.2021. RRC meeting convened on 02.09.2021 and Review meeting was held by Chief Secretary on 09.09.2021. RRC meeting convened on 01.10.2021 and Review meeting was convened by Chief Secretary on 23.10.2021. RRC meeting convened on 29.11.2021 and Review meeting was convened by Chief Secretary on 16.12.2021. RRC meeting convened on 13.01.2022 and Review meeting was convened by Chief Secretary on 27.01.2022. RRC meetings convened on 23.02.2022, 01.04.2022, 15.07.2022, 13.10.2022, 2/12/2022, 08.02.2023, 13.04.2023, 20.05.2023, 11.08.2023, 11.10.2023, 27.12.2023

Review meetings were convened by Chief Secretary on 31.03.2022, 19.04.2022, 26.5.2022, 21.6.2022, 15.07.2022 & 23.08.2022, 18/10/2022 & 21.12.2022, 09.02.2023, 31/07/2023, 06.11.2023

- Latest water quality of polluted river, its tributaries, drains with flow details and ground water quality in the catchment of polluted river:

Latest Monthly Progress Report and Analysis report of Polluted River Stretches as per December 2023 are attached as Annexure I.

XIV Action against identified polluters, law violators and officers responsible for failure for vigorous monitoring:

1176 notices under the provisions of Water Act has been issued from the Board to apartments/ hotels/houseboats/ industrial units as having no valid consent from the Board/ no sewage treatment plant / non functional sewage treatment plant so far. List of the units submitted as Annexure-6. In Alappuzha district a total of 790 notices were issued including Closure Intention Notice and Consent Withdrawal Intention Notice were issued to 624 houseboats, 112 Closure Intention Notices and 54 Show Cause Notices were issued to other units including peeling shed/ resorts/ hotels for illegal discharge (unauthorized units) coming into the water bodies and to Vembanad lake. A total of 167 apartments/ restaurants are served notice in Ernakulam district. In Kottayam notices were issued to 215 units including 106 house boats and 109 apartments/ hotels/restaurants/ auditorium/ lodge/ service station/ nursing homes. In Kollam district 2 Closure Intention Notice and 2 show cause notices were issued to units functioning without Consent & functioning STP. Direction was also issued to Neendakara secretary as wastewater discharge noticed from fish peeling sheds in Neendakara. List enclosed in Annexure III-i. Show cause notice issued to 2 corporations & 7 municipalities for isolations under Water Act and show cause notice for not imposing environmental compensation was issued to 2 corporations and 6 municipalities and hearing conducted on 07/09/2023.

XV Ground water regulation:

As per the consolidated report submitted in O.A.No.496/2016, the Ground water Department is implementing a "Scheme for Ground water Conservation and Recharge". Under this scheme, rain water collected from the roof-top is harvested for recharging the aquifer through dug wells and recharge pits. The recharging of deep aquifers through bore wells is also being experimented. The total budget outlay during the period 2019- 2020 was 450 lakhs. It is estimated that there are about 65 Lakhs dug wells in Kerala and the ground water extractions by means of traditional dug wells are prevalent source of fresh water. There are number of public dug wells left abandoned and needs renovation. These dug wells can be considered as suitable stretches to recharge ground water. The Central Groundwater Board has prepared a Block wise master plan in 2015 to take up artificial groundwater recharge to groundwater. The same can be used as a guideline to stream line groundwater recharge activities of the Department.

The State Government has enacted the Kerala Groundwater (Control and Regulation) act 2002 to provide for the conservation of groundwater and for the regulation and control for its extraction

and its use in Kerala. The State Groundwater Authority has been constituted on 16.01.2004 to notify the area where groundwater abstraction is to be regulated. As per the Act Groundwater User' refers to the person who are using ground water from a pumping well (> 1.5 HP for Open dug wells and > 3 HP for BW/TW) for any purpose including domestic purpose. In notified blocks of the state, permission required for the construction of new groundwater abstraction structures.

The Groundwater Department has been conducting mass awareness programmes to public., students, people's representatives, government officials etc. on groundwater conservation and management in all Districts under the Plan Scheme "Control and Regulation of Groundwater Exploitation for the effective groundwater management. During the last 4 years, the department has conducted more than 100 numbers of awareness programs across the State.

The Ministry of Water Resources ,River Development &Ganga Rejuvenation (Central Groundwater Authority) has recently issued a new guide lines to regulate and control groundwater extraction in the country in pursuance of the directions of Hon'ble National Green Tribunal and the powers conferred under section 5 of the Environment (Protection) act, 1986 (29 of 1986) dated 24th December 2020.

XVI Good Irrigation practices being adopted by the State:

Irrigation in Kerala is classified into two schemes.

- Major Irrigation and Medium Irrigation
- Minor Irrigation

As per the classification followed by the department, schemes having a cultivable command area upto 2000ha are treated as minor irrigation works. Medium irrigation works are those with irrigable command area of more than 2000 ha, but less than 10,000 ha. Those schemes above 10,000 ha are classified as Major irrigation schemes. Surface flow irrigation method is currently practiced in Kerala. As the department is more focusing on effective utilization of available water for irrigation as well as for its efficient use, new types of irrigation methods like micro/community irrigation for cash crops and horticulture are proposed under this scheme.

- Major Irrigation and Medium Irrigation

The Irrigation department develops and maintains major and medium irrigation schemes/projects across the state. The primary activity of the Department is providing irrigation facility to the farmers of the State

through its system comprising reservoirs, main canals, branch canals, feeder canals and other related infrastructure. The department maintains water distribution through the canal system. Water distribution is being carried out based on the cropping pattern of a particular area and a water distribution calendar prepared and approved by a committee headed by the District Collector with members of farming community, other stake holders and department officials. For proper distribution and maintenance of the canals Water Users Association (WUA)/ Farmers Association plays an important role.

1. Minor Irrigation

Minor Irrigation schemes are divided into Class-I and Class-II depending on the ayacut served. Schemes serving above 50Ha up to 2000Ha are classified as MI Class-I. Lift irrigation schemes are also Minor irrigation schemes serving at least 40Ha. Aims to Construct RCBs, SWEGBs, ponds, VCBs, check dams, salt water barriers, storage weirs, cross bars, and protection works etc.

- MI Class-I schemes Minor works like improvements to tanks and rivulet, construction of check dams, sluices, regulators, bunds, vented crossbars, salt water barriers, layout of channels and drainage structures etc are usually undertaken under MI Class-I schemes.
- MI Class-II Schemes Minor irrigation works including construction of vented cross bars, canals, improvements to natural drains etc are taken up under this scheme.
- Lift Irrigation
 - Lifting of water is required for irrigating fertile land at a higher elevation where gravity flow of stored water is not possible. Although mechanical lifting is required, these schemes are very useful and serve the marginal farmers of the State.
 - Optimum utilization of water by supplying designed quantity
 - Works involving lifting of water with a command area not less than 40 hectares come under this category.

- This will increase in the ground water table in high altitude areas, Ensure water availability to farmers before the cropping period.
- This will reduce agricultural loss in high altitude areas due to water scarcity, their by reducing distress to farmers.
- At present the Irrigation Department has under its control 450 Lift Irrigation Scheme (LI schemes) with a total Ayacut of 43170ha.
- Micro Irrigation
- Micro-irrigation system is a modern method of irrigation in which water is delivered slowly. Usually in the form of discrete droplets, continuous drops, streams, etc. Micro-irrigation system is popular these days for its low cost and water-efficiency.
- The benefits of micro irrigation and precision farming are well demonstrated with an average increase in yield by three times. Pepper as a case in point shows enhancement from 1.9 kg/wine to 6/wine on precision agriculture. Coconut also shows increase in productivity to 150 nuts per plant as against 45 without precision irrigation support.
- In the coming year department is planning to implement atleast one micro irrigation scheme in each district with the coordination of line departments and farmers. Steps are initiated to identify the location as well as crops in coordination with the agriculture department.

XVIIIRain Water Harvesting:

In compliance with the Hon'ble NGT Order dated 11.09.2019 in O.A. No. 496/2016, the consolidated report of Kerala State regarding the present status of the implementation and action plans on rain water Harvesting for conservation of water was submitted by the Kerala State Government on 27.11.2019.

The State Groundwater Department has been implementing a scheme for Groundwater Conservation and Recharge under plan fund made available since 2004-05. The project

component includes roof top rainwater harvesting for groundwater recharge through dug wells, recharge pits, bore wells and recharge shafts and construction of subsurface dykes and small check dams on micro water shed basis. The recharge schemes are being implemented as a long term measures to achieve sustainable groundwater development in the State. The Department is engaged in recharging groundwater through roof top rain water harvesting in public buildings and government schools and giving priority to implement such structures in notified blocks. The Department has successfully implemented roof top rainwater harvesting through recharge pits to

enhance groundwater levels of dug wells in the Kattakkada Constituency of Thiruvananthapuram District. The Constituency was officially declared in November 14th 2019 as the first assembly constituency in Kerala to implement artificial groundwater recharging structures in all Government schools and offices. The State Groundwater Department has implemented 169 nos of recharge pit/direct dug well recharge schemes, 4 check dams and one sub surface dyke during the 12th plan period. In the 13th plan period as on October 2020, the Department has completed 370 nos of recharge pit/dug well recharge schemes and 18 nos of bore well recharge schemes.

The Department has also taken initiatives to implement roof top rainwater harvesting structures in order to replenish the aquifer system in Chittur (Over- Exploited), Malampuzha and Kasaragod (Critical) blocks under Jal Shakti Abhiyan Programme by Ministry of Jal Shakti Government of India.

XVIII Demarcation of Floodplain and removal of illegal encroachment:

- Kerala receives about 90% of the annual rainfall during the monsoon months from June to August and from October to November. The remaining period from December to May is practically dry. Most of the rain water received during monsoon period flows to sea within 48 hours of rainfall due to the character of the geographic terrain of the state.
- State Disaster Management plan 2016 was prepared by National Centre for Earth Science Studies in 1:50,000 scale using satellite images.
- Based on the request of central water commission, Government of Kerala constituted Regional Committee for scientific assessment of Flood prone areas in Kerala.
- Flood-level marking for the flood affected rivers has been carried out. Steps have been taken for conducting the studies regarding Flood plain Zoning. Due to the peculiar topography and dense population, evacuation of people from these zones is difficult.

Flood plain zoning is considered as an effective measure for flood management. As far as Kerala is concerned, the topography and total number of rivers, major lakes and other water bodies are entirely different compared to other states. Since Kerala has 44 rivers, except three rivers, all are west flowing; that is about every 14 km (average) there is a river. It may please be noted that the width of Kerala varying from roughly 30 to 120 km, and the total geographical area is 38863 km². Kerala is the 21st largest Indian state by area. As per census of 2011 the density of population per square kilometer is 859. By considering the above facts, implementation of zonation and demarcation of priority areas/non development zones will affect the populace of Kerala or leads

to displacement from their ancestral settlement. This is why the Model Bill of 1975 issued by CWC has not been implemented in Kerala. However intensive contour may delineate and notification of limits of flood plains through LSGIs is a possible way out as far as Kerala is concerned to avoid future developmental activities in such area, for which a policy decision is necessary.

Desilting:- Flood havoc in 2018& 2019 very much affected the storage capacity of several regulators and check dams due to the accumulation of silt/ sand and other debris. In some cases, the proper functioning of the regulators become halted due to the accumulation of the above said materials.

Vide G.O (Rf) No.50/2019/WRD dt 08-11-2019 Government issued AS for desilting of 6 structures, namely:-

- Cheruthuruthy check dam
- Changanamkunnu regulator
- Manjummel regulator
- Purappallikavu regulator
- Velliyankallu regulator cum bridge
- Pookkottumana regulator cum bridge

The work for desilting of 6 regulators/ check dams were tendered and the works are in different stages.

Along with irrigation structures action were taken to desilt the dams as a pilot project to enhance the storage capacity which results more outflows and ground water recharge. Mangalam dam, Chulliyar dam, Meenkara dam and Walayar dam are the four dams listed. Apart from the above Irrigation department has initiated action to prepare an inventory of the present status of all the rivers in Kerala by entrusting the job to Executive Engineers. The primary objective is to find out the obstructions to free flow in rivers. It is expected to complete the process within a month and draft reports/ status reports were also be ready. As a follow up, the department intends to desilt the river stretches which need urgent action to avoid flooding in the vicinity; by utilising the amount announced in the Budget.

Encroachments can be assessed after detailed survey with the help of Revenue Department. Executive Engineers entrusted with ownership of rivers have been directed to identify the encroachments along rivers and prepare a list at the earliest Public Grievance report form has been developed in department website. 300 petitions were forwarded to the revenue officials for remedial action. 133 petitions also received since then are also forwarded to the concerned.

XIX.Maintaining minimum e-flow of river:

- As per order of the Hon'ble NGT dated 9/8/2017 in O.A.no 498/2015 it is mandatory to maintain 15% - 20% of average lean season flow.

- For lean flow calculation the process of data collection for the last 25 years of all 44 rivers during summer months ie. from January to May is been undertaken.
- Study of individual rivers needs to be considered for maintaining e-flow during lean season. Storage structures/diversion structures needs to be proposed at certain locations to regulate the e-flow.

As per order of the Hon'ble NGT Order in OA no.498/2015 it is mandatory to maintain 15%-20% of average lean season flow in the river. E-flow can be assessed in many ways. Hydrological methods and holistic methods are generally used for this purpose. A good Hydrological data is maintained at IDRIB Chief Engineers office at VikasBhavan. Steps have been initiated to collect last 25 years average flow details of all 44 rivers during summer season, ie from January to May.

As per Order in OA 498/2015 Hon. NGT has directed all States to maintain 15-20 % of the average lean season flow of that river. Ministry of Water resources, RD& Ganga Rejuvenation issued a notification (SO.5195 (E) dated 9.10.2018) to maintain e-flow in River Ganga. Hon'ble NGT order has given some relaxation to states, which are unable to adhere to the average percentage fixed as e-flow CE (I&A), & CE (IDRB) made discussion in this regard and action has been taken by IDRIB to compile the last 25 years discharge of rivers. As per the report of Kerala State Disaster Management Authority (KSDMA) nearly 15% of the land area of the state is prone to flood. On two (2) occasions, GOI (CWC) and Ministry of

Environment Forest and climate change had circulated model bill on (i) Flood Plain Zoning (1975) (ii) River Regulation Zone (2015). Considering the already enacted regulations viz i) Forest area ii) Coastal Regulation Zone (CRZ), the topography of the state, high population density, and number of rivers, Government has not yet taken a policy decision in this matter. The State Government has sent the apprehension of the State to GOI with regard to River Regulation Zone Bill.

As per the direction of the Additional Chief Secretary (WRD), meetings were conducted with Chief Engineer, IDRIB to discuss the availability of historical data. To carry forward the study of e-flow a training was arranged on 12.09.2021 to the engineers entrusted for e-flow calculation. A review meeting in this regard was also conducted on 01.10.2021 and in the meeting it was decided to calculate e-flow of the rivers, Meenachil and Manimala as pilot project. Data collection for Manimala river completed. Data collection for Meenachil, Kadalundi, Karamana and Vamanapuram is in progress.

E-flow for forty rivers out of 40 have been worked out.

: It was decided in the last RRC meeting that an expert committee to be constituted to recalculate the e-flow. Accordingly an initial discussion of the technical committee has been convened and it has been decided to recalculate the e-flow for the rivers on the revised methodology. Secretary WRD directed (08/2023) to conduct a meeting with KSEB authorities, to collect required data for the e Flow calculation. Also details of dam, ground water, amount of water ejected out from hydro electric projects in various seasons are to be collected for the calculation of flow. For these, ***the Expert committee framed for vetting e Flow needs to be restructured to include representatives from KSEB, Fisheries, Environmental Scientists, etc.*** Hence we have requested

to the above departments to nominate suitable officials from their department /institution who have expertise in e-flow analysis/who can contribute to the same to be included in the Expert Committee. Follow-ups are going on. Based on the direction from the Administrative Department, an Expert committee was constituted for vetting the same. The first meeting of the committee is scheduled to be held on 10.01.2024. The present e flow calculation was done in line with the old methodology as per the direction of NGT. As per the existing NGT order the minimum E flow calculation required is 15-20. Since it is based on the flow of Himalayan fed rivers, the same method cannot be applied to Southern states which are monsoon fed. Hence a new methodology is required

XX.Plantation activities along the rivers

Proposal submitted by Irrigation Department. Waiting for approval.

XX1 Development of bio-diversity park:

As per the action plan for Kallai River, a bio park in Kozhikode district is proposed by Irrigation Department and as per the action plan of Karamana river, Bio diversity park at Karamana is implemented by Irrigation Department and 96% work is now completed and remaining work is in progress. Also, for other action plans of polluted river stretches, proposals are submitted by Irrigation Department and action is initiated. As stipulated by the Biological Diversity Act 2002, Biodiversity Management Committees (BMC) are mandated with conservation of Biodiversity in their localities. In Kerala BMCs has being established at all 3 tiers of local bodies. As part of the 13th five year plan, KSBB had started a project to empower Local Self Government Biodiversity Management Committee (BMC) as Model BMC to conserve Biodiversity by providing a minimal assistance of Rs 5.00 lakh. The lists of various projects relating to river bank conservation by planting suitable species/ biodiversity parks in the river banks being undertaken by BMCs during the last two years are given below:

- Ayiroor Grama panchayat, Pathanamthitta– Planting of Homonoiariparia along the banks of Pamba River
- Ayarkunnam Grama panchayat, Kottayam - Conservation of Homonoiariparia along the banks of Meenachil River.
- Mariyapuram Grama panchayat, Idukki - Harithapuram park- Eco restoration and conservation of Periyar River bank severely damaged due to flood.
- Kottur Grama panchayat, Kozhikode - (a) Establishment of Biodiversity Park near Kuttiyadi river (b) Biodiversity gardens (50 units)
- Vanimel Grama panchayat, Kozhikode - Conservation of Vanimel riverbank

- Kurumathur Grama panchayat, Kannur – (a) Afforestation along tributaries of river banks of Kuttikol river, Valapattanam river (b) Planting of Pandanus along canal banks
- Muzhakunnu Grama panchayat, Kannur – Puzhayora Oushada Sugandha Udyanam along the banks of Aralam river.

As part of Rebuild Kerala Initiative a project on Riverine Biodiversity Rejuvenation of Pamba for an amount of Rs 200 crore is being undertaken. The project aims at Protecting riverbanks and conservation of riparian vegetation using locally available plants. The major activities on going are:

- Restoration of riparian vegetation on degraded river banks in selected 10 Grama Panchayats (Ayiroor, Cherukol, Kozhenchery, Ranni- Angadi, Ranni- Pazhavangadi, Ranni, Ranni-Perunad, Vadasserikkara, Vechoochira and Naranammoozhi) belonging to three Block Panchayats viz., Elanthoor, Koipuram and Ranni in Pathanamthitta district
- About 77,000 saplings of 93 species of riparian plants are being planted along a stretch of 93km.
- Ensure sustainable livelihood for the local people through providing training for developing microenterprises and establishing nursery of native species. Develop a sustainable community based management model of conservation of aquatic ecosystems.
- To create awareness and sensitize local population and students for promotion of riparian ecosystem services.

XXII.Reuse of Treated Water:

Possibility of utilizing the treated effluent for irrigation, gardening, industries, construction and recharge are being explored. The DPR for tertiary treatment of effluents of STP at Muttathara is ready and in TS stage.

XXIII.Model River being adopted by the State & Action proposed for achieving the bathing quality standards:

Tirur-Ponnani River, Malappuram

XXIV.Status of Preparation of Action Plan by the 13 Coastal States:

As per the NGT order in O.A 829/2019 dated 22.06.2020 regarding the remedial action to restore sea water quality along the Indian Coastal areas, the Hon'ble NGT ordered that "All States/UTs through their concerned

departments such as Urban/Rural Development, Irrigation & Public Health, Local Bodies, Environment, etc. may ensure formulation and execution of plans for sewage treatment and utilization of treated sewage effluent with respect to each city, town and village, adhering to the timeline as directed by Hon'ble Supreme Court. STPs must meet the prescribed standards, including fecal coli form. CPCB may further continue efforts on compilation of River Basin-wise data. Action plans be firmed up with Budgets/Financial tie up." In compliance with the order, CPCB instructed that the State PCB shall associate National Centre for Coastal Research, Chennai under Ministry of Earth Science for monitoring and assessment of coastal water within the jurisdiction of the Kerala State up to 5 km from shore and to evolve strategies for protection of the coastal areas in association with Coastal Zone Management Authority in the State and Prepare time bound comprehensive action plan along with implementing agency in consultation with Kerala State Coastal Zone Management Authority for control of coastal pollution in Kerala State. Also the State Government has instructed the Board to prepare action plan by consulting CUSAT. Based on this, the Member Secretary of Kerala State Pollution Control Board has conducted meeting with officials of CUSAT, National Centre for Coastal Research, Kerala State Coastal Zone Management Authority and also with the field level officers through video conferencing.. The Action plan was forwarded to CPCB. CPCB put forward some suggestions and requested to modify the action plan upon concurrence with River Rejuvenation Committee. So, the Coastal Action Plan prepared has been forwarded to the concerned Stakeholder Departments for their remarks. Meetings in this regard convened on 23.07.2021 and 02.08.2021. The modified Coastal Action Plan was approved by RRC and the same has been submitted before State Govt. for approval. The Coastal Action Plan was submitted to CPCB with the approval of State Govt.

XXV. Regulation of Mining Activities in the State/UT:

Indian parliament has enacted the Mines & Minerals (Development & Regulation) Act, 1957 and it stipulates for the conservation, prudent and discriminate exploitation of minerals with a view

to secure maximum benefit to the community. In exercise of powers conferred by section 13 of Mines and Minerals (Development & Regulation) Act 1957, the Central Government has framed the Mineral concession Rules, 1960. The Central Government has also framed the Mineral Conservation and Development Rules, 1988 in exercise of the powers conferred by section 18 of the Act. These Rules are applicable to all minerals except coal, atomic minerals and minor minerals. The powers of framing rules for minor minerals have been delegated to the State under section 15 of the mines Act. In exercise of the powers conferred by section 15 (1) of the Act the State has framed the Kerala Minor Mineral Concession Rules 2015 and Kerala Minerals (Prevention of Illegal Mining, Storage and Transportation) Rules 2015 for the regulation and extraction of minor minerals. The Central

Government in exercise of powers conferred by section 18 of the Act has also framed the Granite Conservation and Development Rules, 1999 for conservation & systematic development and scientific mining of the granite resources. The grant of reconnaissance permit, prospecting license or mining lease are governed by the central Act. The State with the prior approval of the Government of India grants permission for reconnaissance permit, prospecting license or mining lease for major minerals. The state Government issue quarrying permits and leases for minor Minerals based on the Kerala Minor Mineral Concession Rules, 2015. Other Acts and Rules which govern the mineral administration of India applicable to the State are the following:

- The Mines Act, 1952 (Act 35 to 1952)
- The Mines Rules, 1955 (35 of 1952)
- The Metalliferous Mines Regulations, 1961
- The Mines Rescue Rules, 1985
- Mines Vocational Training Rules, 1966
- Payment of wages (Mines Rules , 1966)
- Payment of undisbursed wages (mines rules, 1989)
- The Indian Explosive Act, 1884
- Air (Prevention & Control of Pollution) Act, 1981(14 of 1981)
- Environment (protection) Act, 1986 (29 of 1986)
- Indian Registration Act, 1908 (Central Act of Act 16 of 1908)
- Kerala Protection of River Banks and Regulation of Removal of Sand Act, 2001
- Kerala paddy field and wetland conservation Act, 2008.
- Kerala Panchayath Act.

There is no large scale mining activity in Kerala as in other parts of the country. Almost all the mines are open cast and limited in areal extent. The important mines of major minerals are china clay, laterite/bauxite, limestone and lime shell. Mineral sands and silica sand are excavated by scooping and quartz is being extracted by taking trenches and pits. The important minor minerals in the state are granite, building stones, dimension stone, laterite, tile/brick clay and ordinary sand. The state owns mineral deposits like placers, china clay (kaolin), limestone, silica sand, bauxite, graphite, iron ore, granite etc.

The major mineral based industries like Indian Rare Earths Ltd. (Chavara), Kerala Minerals and Metals Ltd. (Chavara), Malabar cements (Walayar), Travancore cements Ltd. (Kottayam), Kerala ceramics (Kundara) Travancore Titanium products Ltd. And English

Indian Clays Ltd, Thiruvananthapuram, Excel Glass Industry, Alappuzha, KeralaClays and Ceramic Products Ltd. (Pazhayangadi) are some of the mineral based industries working in the State since several years. A number of tile based industries are also functioning mainly in Thrissur and Kozhikode districts.

In exercise of the powers conferred by section 15(1) of the Mines and Mineral (Development & Regulation) Act, 1957, the State has framed the Kerala Minor Mineral Concession Rules 1967 for regulating the extraction of minor minerals. The State with prior approval of the Govt. of India grants permission for reconnaissance permit, prospecting license or mining lease for the first schedule minerals on first cum first served basis. In addition to EIA requirements as stipulated by the Central Govt, an EIA report is insisted on all mining activities before granting mining lease. No quarrying permits or leases are granted in the State unless there is a Mining plan duly approved by the competent authority. Afforestation of the reclaimed areas is promoted. Environment Rehabilitation is insisted in all mining projects.

The Kerala District Mineral Foundation Rules 2018 has been formed with an objective to work for the interest and benefit of persons and area affected by mining related

operations. The permissible activities under District Mineral Foundation includes among other things, developing sources of irrigation, development alternate sources of energy and rain water harvesting, conservation measures of biodiversity of the affected areas.

The expert study in all selected quarries in Kerala was carried out with one day for ambient air quality measurement (without the operation of quarry) and next day with the operation of the quarry. Individual site reports with the observations on dust, noise and mine pit water quality was prepared by the monitoring team of 24 25 KSPCB for all the nine quarry sites. Combined site report of all nine quarries is annexed as Annexure iii

- Action taken status with regard to directions issued for prohibition of immersion of idols, puja materials and other items of religious offerings in rivers & other water bodies in particular during the occasion of festivals
- Regarding the Ganesh Utsav celebration and immersion of idols ,it may kindly be noted this is not widely practiced in the State of Kerala. The Board had instructed the District offices to conduct monitoring of water bodies where immersion of idols is practiced on a large scale. Water quality was carried out in three stages-pre immersion, during immersion & post immersion periods. A press release was also issued by the Board in connection with the festival for information of the public on the guidelines for immersion,

issued by CPCB. In Kerala idol immersion are not celebrated as a major festival. The Govt. take steps to avoid water pollution due to immersion of idols. If to celebrate natural clay and colours are being used and that too in artificial ponds arranged by local authorities

- During Sabarimala festival season, there is a traditional celebration "Pettathullal", for the same the pilgrims will apply coloured Kumkum on their body. It was directed that only natural colours shall be used for the celebration. Separate arrangement like shower bath are provided for carrying out bath after the celebration, in order to avoid the reach of coloured water into the main waterbody. The waste water from the shower bath location will be treated in ETP provided.

XXVII Current status of water quality of rivers based on draft revised categorisation of CPCB

- Out of 21 stretches, the following 11 stretches delisted from PRS.
Mogral- at Kasaragod, Kuppam, Peruvamba, Ramapuram, Kavvayi- at Kannur, Bharathapuzha, Bhavani- at Palakkad, Kutiyadi-Kozhikode, Kecheri, Karuvannur, Puzhakkal- at Thrissur
- Due to improvement in water quality priority class of the following 4 rivers has been shifted to lower priority class. No priority I rivers in Kerala now.
Karamana, at Thiruvananthapuram- Priority III (from Priority-I)
Manimala at Alappuzha – Priority V (from Priority IV)
Pamba at Pathanamthitta – Priority V (from Priority IV) Kadambrayar at Ernakulam –Priority V (from Priority IV)

S. M. A.

MEMBER SECRETARY

Status of compliance of ETPs less than 30 KLD

1	CHC Sooranadu, Sasthancotta Block Panchath, Kollam	0.028	At Tendering Stage	Tendering process is in progress	
2	CHC Kadayiruppu ,VadavukodeBlockPanc hayath , Ernakulam	0.025	At DPR Stage	DPR send back to LSGI for corrections	
3	STP at Community Health Centre Pazhayannoor Block Panchayath ,Thirssur	0.025	Tendering Stage	Retendering process under progress	
4 & 5	Mobile Septage Units- 2 nos, Alappuzha (AMRUT)	0.02 (0.01 *2 nos.)	<i>Tendered but not awarded:</i> The quotation received was discussed in the Technical Committee held on 21/01/23 & the Committee directed the ULB to get the design & drawings vetted by an IIT / NIT. The ULB submitted the design &drawings to IIT Palakkad for vetting on 13/02/23. A joint meeting was held by the ULB on 05/05/2023 with officials of IIT and the Bidder. Design vetting report was submitted by the IIT Palakkad on 31/07/2023. The design vetting report was submitted	* The design vetting report was submitted to CE, LSGD on 05/08/2023 for placing in the Technical committee * The technical committee held on 23.08.2023 approved the technology and recommended the revision of AS	31.12.202 3

			to the CE, LSGD on 05.08.2023 for placing in the Technical Committee. The Technical Committee held on 23.08.2023 approved the technology and recommended the revision of the AS.		
6	Sewage Treatment Plant 20 KLD at Shopping Complex cum multiplex Theatre, Kallumutti, IruttiPayam, Grama Panchayath1, Kannur	0.02	65%	The second allotment of funds was released from SM. Work to be started after transfer of amount to KWA	30.04.2024
7	STP for Convention Centre ,PinarayiGramaPanchayat h, Kannur	0.02	60%	Site inspection completed by the agency and report preparation in progress. By the amount said by the agency, the LB revised the project. IRTC started designing and estimation	30.04.2024
8	STP at Ottuppara Market, Wadakkanchery Municipality, Trissur (IMPACT KERALA Ltd) (PRS)	18 KLD STP	DPR submitted to KIIFB as a part of the project "Modernisation of Ottuppara Market in Wadakkanch	DPR Approved by KIIFB	-

			ery Municipality ”.		
9	STP at ShatabdhiMandiram, Alappuzha (AMRUT) (PRS)	0.015	To be cancelled: The Council held on 29/10/22 decided to cancel the work.The SLTC held on 24/12/2022 recommended the same to the SHPSC.	*The 32ndSHPSC held on 23/01/23 approved the cancellation of work since the ShathabdiMandi ram will be covered under the sewerage sector proposal planned under AMRUT-2.0.	-
10	STP at Athani market, Wadakkanchery Municipality, Trissur(PRS) (IMPACT KERALA Ltd)	13.9 KLD STP	.	DPR Approved by KIIFB, KIIFB Proceeding s awaited	-
12	ETP 10 KLD Capacity, Nedumangad Municipality, Thiruvananthapuram	0.01	At Tendering stage	TS issued	
13	Eco Friendly waste water Treatment plant 10 KLD in vettam Community Health centre , Tirur BP	0.01	At DPR Stage	Agency selection completed. DPR preparation initiated.	
14	10 KLD Sewage Treatment Plant at EMS Memorial Municipal Town Hall, Koyilandy Municipality, Kozhikkode	0.01	At DPR Stage	This was included in the list of projects to be handed over to KWA. KWA prepared DPR. Funds to be transferred as deposit for carrying out the work.	
15	STP at Fish market, Payyannur	10	Technical committee	DPR	-

	Municipality, Kannur (PRS)	KLD STP	verified the project. Suggested modification. DPR modification is going on	modification is going on	
16	STP at old age home, Kannur	0.0 10	Tendering Stage	TS issued	
17	DPR for perumba fish market Payyanur Municipality, Kannur	0.01	At DPR Stage	New DPC project form taken and balance amount will be transferred to KWA from Municipality as they recieve the fund	
18	Waste water treatment plant at K R Narayanan memorial hall, Adat GP	0.00 65	At DPR stage	DPR revision work is progressing	
19	ETP of 2 KLD at Konnamkulam Milk Production Cooperative Society	0.002	At DPR Stage	Under technical scrutiny	
20	Waste water Treatment (90 KLD) System for coastal housing and Tsunmai resettlement facility at karikuzhimayyanad Grama Panchayath , Kollam	0.09	At DPR Stage	Transferred to KIIFB	
21	Taluk Hospital Thiruvalla ,Thiruvalla Municipality, Pathanamthitta	0.09	At DPR Stage	Under technical scrutiny	
22	CHC Alathoor, Alathoor Block Panchath , Palakkad	0.0 9	At DPR Stage	DPR under verification at Block Panchayath-	

				project having issue with land availability	
23	Taluk Hospital . Pambady, Pambady Block panchayath , Kottayam	0.085	At DPR Stage	Under technical scrutiny	
24	The wastewater treatment plant at Kuttiyadi Government taluk hospital, Kozhikode	0.08	Tendering stage		31.01.2024
25	ETP at Tirur Municipality	0.060	At DPR Stage	DPR returned to LSGI	
26	Eco Friendly waste water Treatment Plant (140 KLD) for Women and Children Hospital Ponnani Municipality, Malappuram	0.14	At DPR Stage	Fund for the project has been sanctioned and and the fund transferred to KWA	
27	65 KLD Sewage Treatment Plant at Taluk Head Quarters Hospital Vithiri, Kalpetta BP, Wayanad	0.065	At DPR Stage	Agency prepared the new estimate and submitted	
28	STP at Thottumadi Colony, Alappuzha (AMRUT)	0.05	<i>Tendered but not awarded:</i> * Bid received in the 4th tender to be finalized. The ULB's Technical Committee held on 30/06/22 decided to recommend the lowest bid to the Technical Committee for	*The Technical Committee for SEW & SEP works held on 26/08/22 approved the technology. Detailed engineering report is to be collected by the ULB from the bidder.	

			Sewerage works for approval of the bid along with revised TS & for checking the reliability of O & M quoted by the bidder		
29	Septage Treatment Plant for Munnar Grama Panchayath, Idukki	0.05	5%	Due to a court case work stopped temporarily. Stay against the project in the honorable High Court of Kerala has been vacated. As such Munnargrama panchayat has brought the matter to the attention of the district administration to return the land back to the local body. The commissioner land revenue shall look into the matter and take decision at the earlier so as to commence the plant within the timeline.	
30	Taluk Hospital ,Neelaswaram, Kasaragod	0.04 0	At DPR Stage	Revised AS awaited	
31	ETP at Kodimatha, Kottayam Municipality	0.030	At DPR Stage	<i>Revised DPR submitted to District Suchitwa Mission and returned for</i>	

				correction	
32	Sewage Treatment plant at Private Bus stand, Thodupuzh a Thodupuzha Municipality , Idukki	0.030	Tendering stage	TC held on 16.09.23 decided to give sanction to the recast estimate	
33	ETP for slaughter house, Marakkadavu, Ernakulam	0.030	At DPR Stage	DPR under correction by agency	
34	ETP at GovtAyurvedic Hospital, Talayad, PanangadGramapanchayath , Kozhikode	0.03	At DPR Stage	Submitted in TC held on 29.11.2023. Correction points will be intimated to agency and LB	
35	CHC, Sooranad Sasthamcotta Block Panchayat, Kollam	0.028	At DPR Stage	DPR returned to LSGI- Planning to do tender for DPR Preparation	
36	CHC Kadayiruppu, Vadavucode Block Panchayat, Ernakulam	0.025	At DPR Stage	Agency submitted revised drawing to LB. LB preparing estimate in Price software	
37	STP at Community Health Centre Pazhayannur Block Panchayat, Thirssur	0.025	At tendering stage	Retendered. Work awarded. Preliminary work initiated.	
38	STP for Convention Centre, Pinaryi Gramapanchayath, Kannur	0.02	60% works are completed	Site inspection completed by the agency and report preparation inprogress.	30.04.2024
39	Sewage Treatment Plant 20 KLD at Shopping Complex cum multiplex Theatre, Kallumutti, Irutti	0.02	65% completed.	Suchitwa Mission has to release fund to	30.04.2024

	Payam, Grama Panchayat, Kannur			LB. Second allotment of fund is awaiting. Fund received at SM. Proceedings for issuing the amount is ongoing. Second allotment of funds is awaiting.	
40	10 KLD Sewage Treatment Plant at EMS Memorial Municipal Town Hall, Koyilandy Municipality, Kozhikode	0.01	At Tendering Stage	Municipality fund transferred to KWA, Trivandrum. Work yet to be started	
41	DPR for Perumba fish market, Payyanur Municipality, Kannur	0.010	Work tendered	Balance amount will be transferred shortly to KWA from Municipality as they receive the fund. <i>The fund will be dispersed after allotment of CFC fund.</i>	
42	Eco- friendly waste water Treatment plant 10 KLD in Vettam community Health center, Tirur BP	0.01	At DPR Stage	Agency selection completed. DPR preparation in progress	
43	STP at CHC Mullassery Block Panchayat Thrissur	0.01	At DPR Stage	Project dropped	
44	ETP 10 KLD Capacity, Nedumangad Municipality, Thiruvananthapuram	0.01	At TS Stage.	TS issued. Tendering process completed.	
45	Waste water treatment plant	0.0065	At DPR stage	D PR revision	

	at K.R Narayanan memorial hall, Adat GP			work is under progress by the agency	
46	CHC, Mangalpady, Manjeshwar Block Panchayath, Kasragod	0.014		New project taken. Project revised as Mangalpady taluk hospital	
47	11 KLD effluent treatment plant at Kuravilangad Fish market, Kuravilangad Grama Panchayat, Kottayam	0.011		New project taken and DPC approved	

Total capacity=1.2779 MLD