



KERALASTATEPOLLUTIONCONTROLBOARD

Pattom P.O., Thiruvananthapuram-695004

PCB/HO/EE3/MPR/10/2022

Date: 07/10/2022

From

The Member Secretary

To

The Secretary

Ministry of Jal Shakthi,

Department of Water Resources, River Development

& Ganga Rejuvenation, Shram Shakti Bhawan,

Rafi Marg, New Delhi-110001

Sub:-Forwarding Monthly Progress Report for the month of August 2022-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 report prepared in revised format with respect to the progress in implementation of action plan of 21 polluted river stretches, for the month of August 2022 is submitted herewith.

Yours faithfully,

MEMBER SECRETARY

Encl: As above

National Mission for Clean Ganga
Monthly Progress Report for the month of August 2022 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 27,005,078 and for urban area is 82,94,583. The water consumption and wastewater generated are calculated based on the population projected for 2020.

II. Estimated Sewage Generation(MLD):

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

- Estimate Sewage and Sullage generation in Urban area - 1058 MLD (Sewage – 317 MLD, Sullage- 741MLD)
- Estimate 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)

III. Details of Sewage Treatment Plant:

- Existing no. of common STPs/FSTPs: 19 (6 common STPs and 13 other STPs) and 3 common FSTPs
- No. of functional common STPs in the State:14
- No. of functional common septage treatment plants in the State:2
- No. of common FSTP which has not started functioning:1
- Total sewage treatment capacity in the State through existing common STPs: 134.5 MLD
- Total septage treatment capacity in the State through existing common FSTPs: 0.21MLD
- Sewage treatment capacity via individual STPs in establishments: 69MLD
- Treatment of sewage by septic tank, soak pit (Individual residences) -1011MLD
- Gap in treatment of sewage: 46.314MLD (Kerala is declared as open defecation free State. In Kerala ,majority are individual households which are having septic tank /soak pit existing for toilets attached to them. However initiatives are taken to divert the same from urban areas to common STPs).

- STPs were completed as per the Action Plan submitted –
 - 1) STP of capacity 5 MLD at Medical College, Thiruvananthapuram,
 - 2) 3 MLD at Chakkamkandam, Guruvayur, Thrissur.
 - 3) 5 MLD at Elamkulam, Kochi, Ernakulam
 - 4) STP of capacity 0.01 MLD at Kumarichantha, Thiruvananthapuram
 - 5) STP of capacity 0.03 MLD at Tirur Municipal Bus Stand, Malappuram

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%.
- Considering the contamination of Karamana river 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. Sewer laying work of this 19 wards can be finished by 31/12/23, subject to the availability of funds. DPR for the remaining 81 wards for the full capacity utilisation of 107 MLD STP is under preparation
- ***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.
- ***5 MLD STP (NEW PLANT) at Elamkulam*** Trial run of the new plant is in progress.
- ***4.5 MLD STP at Elamkulam, Kochi (Activated sludge process)*** The existing Sewage Treatment Plant located at Elamkulam is having a capacity of 4.50 MLD. The plant works in activated sludge treatment process. In Kochi existing sewerage system covers only 5% of Kochi Corporation. Present utilisation capacity of this plant is only 3MLD. DPR for utilizing unutilized capacity of Elamkulam plant is under preparation. The plant was commissioned as early in 1959 and maintenance of the sewage Treatment Plant is done by KWA.
- ***3 MLD STP at Guruvayur (Activated sludge process)***-The Guruvayoor Sewerage Project is planned to provide an effective sewerage system for the thickly populated area under Guruvayoor Municipality. The work completed and is functioning from September 2021. Length of network is approximately 7 km.

Status of CSTP/FSTP which are operational

Sl. No.	City/Town	STP location	STP Installed capacity	Utilization	Process	Status
1	Thiruvananthapuram (PRS)	1.Common Sewage Treatment Plant, Muttathara, Trivandrum maintained by Kerala Water Authority	107 MLD	80 MLD	Activated Sludge Process	Operational (pH-6.9, BOD-3 mg/l, COD-32 mg/l, SS-42 mg/l, FC-nil) Inspected on 19.07.2022. The quantity of effluent confirming to standards.
		2.STP at Medical College, Thiruvananthapuram-Phase I & II (PRS)	5 MLD	3 MLD	MBBR	Operational
2	Pathanamthitta	3.Sewage Treatment Plant at Sannidhanam (5MLD) Maintained by Travancore Devaswom Board	5 MLD	3.5 MLD	UASB and SBR	Seasonally Operated during festival season
		4.Sewage Treatment Plant at Pamba(3.5 MLD) maintained by Travancore Devaswom Board	3.5 MLD	3.5 MLD	Coagulation & settling	Seasonally Operated during festival season
3	Kottayam	5.STP for Houseboat (0.09 MLD)at Kumarakom maintained by DTPC, Kottayam	0.09MLD	0.09 MLD	ASP	Operational
4	Adimaly Grama Panchayat, Idukki	6.Sewage treatment Plant at Comfort station, Adimaly Grama Panchayat, Idukki	0.01MLD	Started functioning	Electro coagulation	Started functioning
5	Idukki	7. 6 KLD ETP for Kumali Slaughter House Kumali GP, Idukki	0.006 MLD		EKID	Slaughter House is not working.
6	Ernakulam	8.Sewage treatment unit, Kerala Water Authority, Elamkulam, (3MLD)	4.5MLD	3 MLD	ASP	Operational

		9.STP owned by Greater Cochin Development Authority, Kadavanthra, Kochi (0.45 MLD)	0.45MLD	0.45 MLD	ASP	Operational
		10.Septage Treatment Plant at Brahmapuram, Kochi Corporation, Ernakulam	0.1MLD	0.1 MLD	MBBR	Operational. The effluent collected on 15.07.2022 is not confirming to standards with respect to sulphides. Instructions being issued.
		11.Septage Treatment Plant at Wellington Island, Kochi Corporation	0.1MLD	0.1 MLD	MBBR	Operational
		12.STP at Kalamassery Market, Kalamassery Municipality(PRS)	0.01 MLD	Started operation		Operational
		13. STP at Elamkulam, Kochi (AMRUT)	5.0 MLD	No house sewer connections are envisaged. The STP will replace the existing STP.	Trial run & minor works are in progress.	Trial run is in progress
7	Thrissur	14.Sewage treatment Plant at Guruvayur, Thrissur District	3 MLD	Started functioning	ASP	Operational. The quality of effluent confirming to standards.
		15.FSTP at Mattampuram	0.01 MLD	Not started functioning	BIOLOGICAL	Completed. Not started functioning. PCB issued permission for conducting trial run
		16.Revamping of 35 KLD STP at Kuriyanchira Slaughter House Corporation , Thrissur	0.035 MLD	0.035 MLD	MBBR	Operational

	(PRS)	treatment Plant at Malappuram Municipal Bus stand	MLD		R	
		18.Sewage treatment Plant-at Tirur (fish market)	0.045 MLD	0.045 MLD	BIOLOGICAL	Operational
9	Malappuram	19.STP at Municipal Bus Stand, Tirur (PRS)	0.05 MLD	Completed and Started Functioning	Biological	Started functioning
10	Kozhikode (PRS)	20.Common Sewage Treatment Plant at Narayana nagaram, near stadium, Vatakara, Opp. New bus stand	0.1MLD	0.1MLD	MBBR	Operational
11	Kannur	21.Sewage treatment Plant at Taliparambu(0.5MLD) Taliparambu Municipality, Kannur	0.5MLD	0.5MLD	ASP	Operational
12	Wayanad	22.Sewage Treatment Plant at Taluk Hospital, SulthanBathery Wayanad	0.14 MLD	0.05 MLD	MBBR	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	66%	21358 house sewer connections are envisaged as per the new sewer work added (balance of KSUDP).	Works are in progress.	31.12.2022
2&3	STPs at Medical College with Septage Treatment, Kozhikode (AMRUT)	3.1 (2 MLD with 100 KLD septage treatment & 1MLD)	30%	Only the buildings inside the Medical College campus will be connected.	*2.1 MLD STP works are in progress. Site clearance works for 1 MLD STP has been completed.	31.12.2022
4	Decentralized sewerage network with STP in old Kannur Municipal area, Kannur (AMRUT)	1	26%	1500 house sewer connections are envisaged.	* Wet well, Office Building, Equalization Tank, Chlorine Tank & GLS Tank works are in progress.	31.12.2022

5	STP at General Hospital, Alappuzha	0.24	34%	Only the buildings inside the General Hospital campus will be connected.	* Collection Tank & Screening Chamber works are in progress.	31.12.2022
6	STP at Pambad Housing Colony Malappuram Municipality, Malappuram	0.110	95 % Completed	Civil and mechanical work completed. Pipeline connection completed.	The plumbing work needs to be completed. . An electrical connection has been applied for but not yet obtained. Directions given to complete all works by end of September	30/09/2022
7	Taluk Hospital Adimaly ,Adimaly Block Panchayath, Idukki	0.060	30%	Currently working on the construction of the store room (slab, concrete, plastering etc.)	Tank work is completed. Machines and other equipments should be installed	31/12/2022
8	Construction of 45 KLD waste water treatment plant at Kalpetta Government Ayurveda Hospital DP , Wayanad	0.045	65% work completed	Civil works are completed. Electrical and mechanical work are pending. Contractor is not continuing the work.	Directions given to initiate Actions to arrange the work.	31/12/2022
9	STP at Chitumala Old Age Home. Chitumala BP, Kollam	0.015	95% Completed	The contractor has left the work unfinished and is not attending to repeated calls. The remaining work includes installation of three pumps and trial run.	Civil, mechanical, partition, plastering, pipe connection and electrification work completed. Directions given to initiate action for arranging the work in risk and cost.	31/12/2022
10	ETP in Fish Market, Ponnundam GP , Malappuram	0.01	99% Completed	Work Completed and the Plant is working		

11	STP at CHC Cherpu BP, Thrissur	0.01	50% Completed	Civil tank construction completed. Excavation for conveyance started. Pipeline connection works ongoing.	The construction of the tanks has been completed. Work on the pipeline will begin soon	31/12/2022
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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	5 STPs are coming up under the KMRL's Integrated Water transport System project at Elaamkulam, Vennal a, Edapally, Puthukalavattom, Perandur	0 10 2+ + 4 =31	To be tendered	To be tendered	
2	STP at sewerage system in Zone A, Package A, Avikkal thodu, Kozhikode (AMRUT) (PRS)	7.0	Work started but stalled: There is public protest against the construction of STP at the location. Site clearance work was stopped by the public on 31/01/22 The work was restarted on 23/06/22 with Police protection amidst huge protest. soil testing, site clearance & fencing works completed. Soil test report was obtained on 22/07/2022. One of the protestors filed a petition in the district court	Foundation design as per the soil test report is to be submitted by the consultant. The consultant is expected to give the same by 03/09/2022. Advocate Commissioner visited the site on 04/08/2022 & collected the project details. Counter affidavit was filed by the ULB on 19/08/2022 & hearing is expected to be conducted on 01/09/2022	31.12.2023
3	STP at Division 1 - 4 under Cochin SmartCity Mission	6.5	Awarded not started	Awarded not started	
4	Sewerage system (with STP) in Zone A, Package B, Kothi, Kozhikode (AMRUT) (PRS)	6	Work started but stalled: * There is public protest against the construction of STP at the location & the ULB is trying to resolve it. * Road cutting permission for sewer pipe laying is to be obtained from PWD. Decision on MoU signing is delayed due to public protest.	* A meeting was held with the District Collector on 06/05/22. 3rd counter affidavit was filed by the ULB on 28/05/22 as reply to the submissions made by the petitioners to the Court on 19/05/22. The Hon' High Court's	31.03.2023

			* The ULB received a legal notice dated 15/03/22 regarding construction of STP as per the petition filed by protestors. As per the interim order of the Court dated 08/04/22 the preliminary works can be started without cutting mangrove trees. * Fencing works started on 27/04/22, with Police protection, had to be stopped due to public protest.	judgment is awaited by the ULB to decide the way forward.	
5	Decentralized Sewerage Scheme (with STP), Thrissur Corporation	2.5	To be retendered: * To be retendered after conversion of the category of the selected land (Paddy Land) & approval of recast estimate. * Special sanction is required from the Govt. for constructing the septage plant on the proposed land. * Application was submitted to Railways on 25/05/22. * The 30th SHPSC held on 05/07/22 approved the revision of AS from Rs.53.4 Cr. to Rs.64.20 Cr	Processing fee was paid to Southern Railways on 08/08/22. Reply to the query raised by Railways is to be given by the ULB. * A committee was constituted by LSGD vide Govt. Order dated 08/08/22 for reassessing the nature of land. 1st meeting of the committee was held on 20/08/22. The Committee is scrutinizing the details and will submit the report to the Govt. shortly	31.03.2023
6	Construction of 2.0 MLD SePT as part of Kochi Urban Agglomeration	2	Inception Report	DPR returned to LSGI	
7	STP at Ottappalam Municipality, Palakkad District (IMPACT KERALA Ltd)	1.50MLD Co- treatment	All statutory clearances obtained. KMBR exemption received (GO.No.1798/2021/LSGD dt 18.09.2021). Revised FS received dated 31.01.2022. TS accorded on 18.02.2022. Tender published on 19.03.2022. Pre bid meeting conducted on 02.04.2022. Bid opening date extended upto 13.06.2022 due to single bidder participation.. 2 bids received. Both bids rejected on Technical evaluation. Work Retendered. Last date for submission 27.8.22. One bid received.	DPR approved by KIIFB.	31.12.2022

			Technical evaluation ongoing.		
8	STP at Decentralised Sewerage System -Kochi Corporation Div-15 (AMRUT)	1.4	To be cancelled: * The Council decided to cancel the work due to non-availability of sufficient land & due to the price escalation requested by the Contractor. * The SLTC held on 03/12/21 deferred the request of the ULB to cancel the work & directed the ULB Secretary to submit an alternative proposal for liquid waste management. * The 24th SLTC held on 20/06/22 has recommended the cancellation of the project to the SHPSC subject to the condition that alternative proposals for liquid waste management will be implemented at the earliest by the ULB.	The 30th SHPSC held on 05/07/22 decided to cancel the work subject to the condition that the alternative proposals will be implemented at the earliest by the ULB. Decision on implementation of alternate proposal is awaited from the Council.	31.03.2023
9	STP at Decentralised Sewerage System - Kochi Corporation Div-16 (AMRUT)	1.4	Awarded but not started: * Soil investigation work started on 28/04/22 was stopped by the public.	* A meeting was held on 05/05/22 with the protestors and as decided the location of the STP & play ground was finalized on 09/05/22. Works could not be started due to public protest. Way forward is to be decided by the ULB.	31.03.2023
10	Decentralized Sewerage System(with STP) – Kochi Corporation Div-17, Perumpadappu (STP opposite St. Juliana Public School, Pai Road)(AMRUT)	1.4	To be cancelled: * The Council decided to cancel the work due to price escalation requested by the Contractor & due to public protest. * The SLTC held on 03/12/21 deferred the request of the ULB to cancel the work & directed the ULB Secretary to submit an alternative proposal for liquid waste management. * The 24th SLTC held on	Decision on implementation of alternate proposal is awaited from the Council	31.03.2023

			20/06/22 has recommended the cancellation of the project to the SHPSC subject to the condition that alternative proposals for liquid waste management will be implemented at the earliest by the ULB. *The 30th SHPSC held on 05/07/22 decided to cancel the work subject to the condition that the alternative proposals will be implemented at the earliest by the ULB.		
11	STP at Wadakkanchery Municipality, Thrissur (IMPACT KERALA Ltd) <i>(PRS)</i>	1.00MLD Co- treatment	Puramboke land. NOC to be obtained from district collector. Now municipality planning for decentralized plants at new location which needs to be finalized in consultation with PCB. Municipality to submit DPR accordingly. Not yet submitted	DPR to be prepared.	-
12	STP at Kunnankulam Municipality, Thrissur (IMPACT KERALA Ltd)	1.00MLD Co- treatment	Secretary informed that the present council has decided not to implement the present project and they have requested the consultant to re-design at new location. Intimation to KIIFB given. Reminder to Municipality given. Revised DPR not yet submitted. 12 th Board meeting of IMPACT Kerala held on 18/3/2022 decided to cancel the project. Intimated Municipality. Later in the review meeting held on 6/6/22 Municipality informed they want the project and had directed consultant to resubmit the DPR with scope change. Not yet submitted.	DPR approved by KIIFB	31.12.2022
13	STP at Palayad Taliparamba municipality, Kannur	1	At DPR Stage	DPR returned to LSGI	31/12/2022

14	Sewage Treatment Plant & associated network at Sundaram Colony, Palakkad (AMRUT)	0.8	<i>Selection notice issued but Agreement to be executed:</i> * The Contractor is willing to sign the Agreement only if the fine is not imposed on them. * The Council decided that O & M cost can't be borne by the ULB. * The Council held on 12/07/22 decided to cancel the project, take up an alternative project & take action against the Consultant.	Alternative project is to be formulated by the ULB.	31.03.2023
15	STP at Mayyand GP, Kollam (IMPACT KERALA Ltd)	590KLD Co-treatment	RKI issued AS on 4/3/2022. GP applied for PCB NOC, Fire NOC and Structural scrutiny. PCB NOC received on 29.7.22. Structural scrutiny received at GP	DPR approved by RKI.	-
16	DPR on STP at District Hospital, Tirur, Malappuram	0.5	At DPR Stage	DPR returned to LSGI	31/12/2022
17	STP at Vadakara Municipality, Kozhikkode (IMPACT KERALA Ltd) (PRS)	0.5 MLD Sewage TP 20KLD FSTP 20KLD Septage TP	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. Reminder to Municipality given. Not yet submitted.	DPR modification ongoing.	-
18	STP at General Hospital, Thrissur (AMRUT) (PRS)	0.36	<i>To be retendered:</i> * The Contractor did not take possession of the site even though the ULB has agreed to waive the additional performance BG on submission of an affidavit. * The Council held on 29/01/22 decided to terminate the Contract at the risk & cost of the Contractor and also to black list the Contractor. The Council also decided to retender the work (as TSP limited competitive tender). Vide Order dated 04/03/22 the ULB black listed the Contractor. * The estimate recast as per DSR-2018 is to be	*. The corrected estimate & details were submitted to CE, LSGD office on 23/08/22 and the same is under scrutiny.	31.03.2023

			approved.		
19	STP at Athani, Wadakkancher yMunicipality, Trissur (PRS)	350 KLD STP	Site identified. DPR under preparation	DPR under preparation	-
20	STP at District Hospital, Palakkad (AMRUT)	0.27	Work started but stalled: * The Contractor requested to relieve them from the work. * The Council held on 21/05/22 decided to take action as per the prevailing rules. * The available space has reduced as the Jilla Panchayath constructed an oxygen plant for the Dist. Hospital on the proposed location for the STP.	* Way forward to be decided by the ULB	31.03.2023
21	STP at Cherthala Municipality, Alappuzha (IMPACT KERALA Ltd)	250KLD Septage TP	Technical Bid opened on 15.02.2022. 3 bids received. Technical presentation done by all bidders on 24.03.2022. Technical evaluation finalised. 2 bids found technically not qualified. Financial Bid of qualified bidder opened on 11.05.2022. Negotiation done. Request sent to RKI for tender acceptance and revised approval on 8.6.22.	DPR approved by RKI.	
22	FSTP at Cherthala municipality, Alappuzha	0.25	Technical Bid opened on 15.02.2022. 3 bids received. Technical presentation done by all bidders on 24.03.2022. Technical evaluation finalised. 2 bids found technically not qualified. Financial Bid of qualified bidder opened on 11.05.2022. Negotiation done. Request sent to RKI for tender acceptance and revised approval on 8.6.22. Awaiting Cabinet approval.	DPR approved by RKI.	
23	STP for Idukki	0.205	Tendered	-	

	district hospital and district Ayurveda hospital, Thodupuzha municipality, Idukki				
24	District Hospital Perunthalmanna, District Panchayath, Malappuram	0.200	At DPR Stage	DPR returned to LSGI (Reminded LSGI to take action.)	31/12/2022
25	200 KLD Sewage Treatment Plant - Mattannur Municipality - Reg	0.2	At DPR stage	DPR returned to LSGI	
26	200KLD Wastewater treatment plant at Tata Trust Govt Hospital, Kasargod	0.2	At DPR Stage	Under technical scrutiny	
27	190 KLD STP at Pathanapuram Market and Shopping Mall	0.190	At DPR Stage	TS Issued on 17/08/2022	31/12/2022
28	General Hospital, Irinjalakuda Municipality, Thrissur (PRS)	0.150	At DPR Stage	DPR returned to LSGI	31/12/2022
29	135 KLD Capacity decentralized sullage Treatment plant at Uppala Town Mangalpadi, Kasargod	0.135	Tendering stage	-	
30	STP at hospital, Pazhayangadi, Kannur	0.120	At DPR Stage	DPR returned to LSGI	31/12/2022
31	FSTP at Chakkumkandam, Guruvayur Municipality, Thrissur (AMRUT)	0.1	To be cancelled: * The proposed land is falling under the Wet Land category. Special sanction is required from the Govt. for constructing the septage plant on the proposed land. * In the meeting held by the Chief Secretary on 26/05/22 the KWA was directed to take up the project for cotreatment of septage under RKI instead of the AMRUT. * Accordingly, KWA has taken up the project for co-treatment of septage in the existing 3 MLD STP under RKI	* Decision on implementation of alternative proposal is awaited from the Council.	

32	FSTP at Ramavarmapuram, Thrissur (AMRUT)(PRS)	0.1	To be retendered: * The Contractor had requested the ULB to relieve them from the project citing reasons like financial crisis and increase in material & labour cost due to Covid pandemic. * The Council held on 29/01/22 decided to retender the work (TSP limited competitive tender). * The estimate recast as per DSR-2018 is to be approved	* The corrected estimate & details were submitted to CE, LSGD office on 20/08/22 and the same is under scrutiny.	31.03.2023
33	FSTP at Yakkara, Palakkad Municipality	0.1	Selection notice issued but Agreement to be executed: * The Cabinet Meeting of the Govt. held on 02/02/22 decided to allow 70 Cents of land inside Palakkad Medical College Campus for the construction of the septage plant. Govt. Order, dated 04/03/22, was issued by Revenue Dept. allocating 70 Cents of land for the work. * The Contractor informed vide letter dated 31/03/22 that they are not willing to go ahead with the work due to financial crisis & increase in material & labour cost due to Covid pandemic. * Counter affidavit is to be filed by the ULB regarding the petitions (WPC-14660/ 2022 & WPC-15105/ 2022) filed in the Hon' High Court against the construction of the Septage Plant. * The Council held on 12/07/22 decided to take further action based on the judgment of the Hon' High Court.	The Hon' High Court's judgment is awaited by the ULB to decide the way forward.	31.03.2023
34	FSTP at Chellora, Kannur Corporation (AMRUT)	0.1	To be retendered: * Legacy waste dumped at the proposed location to be removed for starting physical works. The legacy waste removal work is to be started.	* Legacy waste removal work started but held up due to rain. * Recast estimate was sent from the ULB to CE, LSGD office on 04/08/22 for approval. The same is under	31.03.2023

			* The Council held on 26/04/22 decided to relieve the Contractor from the Septage Plant work as they were not willing to take up the works. * Septage Plant work is to be retendered after revision of estimate as per DSR-2018.	scrutiny at CE, LSGD office.	
35	CHC Kilimanoor, Kilimanoor Block Panchayath, Trivandrum	0.096	At DPR Stage	<i>DPR returned to LSGI.</i>	<i>31/12/2022</i>
36	Waste water Treatment(90 KLD) System for coastal housing and Tsunmai resettlement facility at karikuzhi mayyanad Grama Panchayath, Kollam	0.09	At DPR Stage	Transferred to KIIFB	30.12.2021
37	Taluk Hospital Thiruvalla, Thiruvalla Municipality, Pathanamthitta	0.09	At DPR Stage	Under technical scrutiny	<i>31/12/2022</i>
38	CHC Alathoor, Alathoor Block Panchath, Palakkad	0.090	At DPR Stage	DPR under verification at Block	<i>31/12/2022</i>
39	Taluk Hospital Pambady, PambadyBlock panchayath, Kottayam	0.085	At DPR Stage	<i>Under technical scrutiny</i>	<i>31/12/2022</i>
40	The wastewater treatment plant at Kuttiyadi government taluk hospital, Kozhikode	<i>0.080</i>	<i>Tendering stage</i>		
41	ETP at Tirur Municipality	0.060	At DPR Stage	DPR returned to LSGI	<i>31/12/2022</i>
42	Eco Friendly waste water Treatment Plant (60 KLD) for Women and ChildrenHospital Ponnani Municipality,	0.06	At DPR Stage	<i>Committee decided to hand over to KWA</i>	<i>31/12/2022</i>

43	65 KLD Sewage Treatment Plant at Taluk Head Quarters Hospital Vithiri, Kalpetta BP, Wayanad	0.065	At DPR Stage	DPR returned to LSGI	31/12/2022
44	FSTP at Varkala Municipality, Thiruvananthapuram (IMPACT KERALA Ltd)	50 KLD Septage TP	RKI issued AS on 28/2/2022. Municipality applied for PCB NOC, Fire NOC and Structural scrutiny. PCB NOC received on 21.05.22.	DPR approved by RKI.	31/12/2022
45	Sewage Treatment Plant 50KLD, Angal block Panchayath, Kollam	0.05	At DPR Stage	DPR returned to LSGI	31/12/2022
46	STP at Thottumadi Colony, Alappuzha (AMRUT)	0.05	Tendered but not awarded: * Bid received in the 4 th 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 Sewerage works for approval of the bid along with revised TS & for checking the reliability of O & M quoted by the bidder	*. The Technical Committee for SEW & SEP works held on 26/08/22 decided to approve the bid received. Selection notice is to be issued by the ULB.	31.03.2023
47	Septage Treatment Plant for Munnar Grama Panchayath, Idukki	0.05	At DPR Stage	DPR returned to LSGI	31/12/2022
48	Taluk Hospital, Neelaswaram, Kasaragod	0.040	At DPR Stage	Technical scrutiny completed	31/12/2022
49	STP for government ayurveda hospital, Kodakara GP, Thrissur	0.035	At DPR Stage	DPR returned for recasting the estimate	31/12/2022
50	CHC Konni, Konni Block Panchayath, Pathanamthitta	0.032	At DPR Stage	May be handed over to KWA	31/12/2022
51	ETP at Kodimatha, Kottayam Municipality	0.030	At DPR Stage	DPR returned to LSGI	31/12/2022
52	Sewage Treatment plant at Private Busstand, Thodupuzha Thodupuzha Municipality, Idukki	0.030	Tendering stage	Preparing Recast estimate	
53	ETP for slaughter house,	0.030	At DPR Stage	DPR returned to LSGI	31/12/2022

	Marakkadavu, Ernakulam				
54	ETP at Govt Ayurvedic Hospital, Talayad, Panangad Grama Panchayath, Kozhikode	0.03	At DPR Stage	DPR returned to LSGI	31/12/2022

- The status of compliance of remaining ETPs less than 30 KLD is attached as enclosure 1.

IV.Details of Industrial Pollution:

- Total registered industrial and non industrial units – 1,25,142
- 48490 consents issued from 2020 onwards- More industries are brought under consent purview
- 11551 effluent generating units (large and medium=298; Small scale- 11, 253) (as per dossier)
- Primary Treatment facility provided in the units.
- OCEMS facility is provided in the Red Large Industries
- OCEMS facility provided in 39 industries and the results are linked to the SPCB/CPCB servers. In case of exceedance follow up is done.
- Quantity of effluent generated from the industries in MLD: 168.768
- Quantity of Hazardous Sludge generated from the Industries in TPA : 2584.572
- For industrial units ETP is provided.
- Number of industrial units connected to CETP: As per the available data-64 nos
- Number and total capacity of CETPs (details of existing/under construction /proposed)

II. 9 nos of CETPs are functional (Total Capacity – 10.145 MLD), 1 CETP having capacity 0.25 MLD not operational due to non availability of waste water.

III. Proposed CETPs –3 nos. (Total Capacity- 4 MLD). 1 CETP having capacity 1 MLD is under construction

<i>4.1.Details of existing/under construction/proposed CETPs in the State</i>				
<i>No.</i>	<i>CETP location</i>	<i>CETP Installed capacity</i>	<i>CETP Utilisation capacity</i>	<i>Operational Status</i>
<i>OPERATIONAL</i>				
1	Kinfra Apparel Park, St. Xavier's College P.O, Thumba, Thiruvananthapuram	4.5MLD	4.5MLD	<i>Operational</i>

2	CETP, KINFRA, Elamannoor, Pathanamthitta	0.22 MLD	-	<i>Started operation (Board has issued Consent to Operate on 25.02.2022</i>
4	Sea Food Park (India) Ltd., Aroor, Alappuzha	0.3 MLD	0.3 MLD	<i>Operational.Discharge from 10 seafood units is treated in this CETP which is in operation.connected to OCEMS with 4 parameters is in operation.</i>
5	SEZ, Kakkanad, Cochin Special	1.6ML D	1.6MLD	<i>Working</i>
	Economic Zone Ernakulam			
6	Kinfra Small Industries Park Nellad, Mazhuvanoor, Ernakulam – 686 721	0.4ML D	0.4MLD	<i>Operational (Parameters complied with standards stipulated)</i>
7	Rubber Park India Private Limited, CommonEffluent Treatment Plant, 2A, Kaudileeyam, Rubber Park, Valayanchirangara, Ernakulam – 683556	0.25 MLD	0.25 MLD	<i>Operational(Parameters complied with standards stipulated)</i>
8	Kinfra Techno Industrial Park, KakkancheryChelambara P.O, Malappuram	0.675 MLD	0.675MLD	<i>Operational(Parameters complied with standards stipulated)</i>
9	Kinfra Textile Centre, Nadukani, Pallivayal P.O, Thaliparambu, Kannur – 670 142	0.2 MLD	0.2 MLD	<i>Operational(Parameters complied with standards stipulated)</i>
	NOT OPERATIONAL			
10	KSIDC, Valiyavelicham, Kuthuparamba Kannur	0.25 MLD	-	<i>Not Operational due to non availability of waste water</i>
	UNDER CONSTRUCTION			
11	CSEZ, Kakkanad, Cochin Special Economic Zone Ernakulam	1 MLD	-	<i>Under Construction</i>
	PROPOSED			
12	CETP, Chandiroor	1st phase 1.5 MLD 2 ND phase 1.5MLD	-	<i>Not started any construction activities.Only land provided by society .Rs 300Lakhs was issued by the board for the implementation.But the project not get started and the amount was also not get refunded to the Board.</i>
13	CETP, Industrial department ,Aroor	More than 100KLD		<i>Proposed CETP land not get acquired by DIC from JIS International Exports Pvt Ltd (cold store).Capacity not get finalized by Industrial department.Work allotted to KITCO.There is case in High Court regarding land acquisition .</i>

Status of major Industrial units

SL No	Name of the industry	Category	Scale	Quantity of effluent (l/d)	Date of sampling	Effluent Quality	Whether parameters conformed
1	BPCL -Kochi refinery	Red	Large	4,00,00,000	14.07.22	pH-6.72,BOD-5mg/l,COD-20mg/l SS-46.8mg/l, phosphates-0.10mg/l Oil and grease-10mg/l, ammonical nitrogen -0.11mg/l, Phenolic compounds-BDL, Oil and Grease –BDL, Sulphide-BDL, Total Kjeldahl nitrogen-0.30mg/l, (Hexavalent Chromium, total chromium, copper, nickel, lead, mercury, vanadium-BDL), Zinc-0.22mg/l	
2.	Synthite-Kolenchery	Red	Large	16,000	27.07.22	pH-7.30,BOD-26mg/l,COD-72mg/l (SS& Oil and grease –BDL)	Yes
3	Plant Lipids - Kolenchery	Orange	Large	40,000	27.07.22	pH-7.41,BOD-17mg/l,COD-16mg/l (SS& Oil and grease –BDL)	Yes
4	Herbal Isolates	Orange	Large	2,20,000	27.07.22	pH-6.99,BOD-21mg/l,COD-100mg/l (SS& Oil and grease –BDL), TDS-111.6mg/l	Yes
5	Kitex Garments (Ltd)	Red	Large	75,000	06.05.22	pH-7.51,BOD-28mg/l,COD-96mg/l (SS& Oil and grease-BDL), TDS-1791.6 mg/l, (ammonical nitrogen& sulphides Phenolic compounds, –BDL) Colour-30 Hazen	Yes
6	MOSC medical mission hospital	Red	Large	8,60,000	22.08.22	pH-7.58,BOD-17mg/l,COD-44mg/l (SS& Oil and grease –BDL), SS-3.2mg/l	Yes
7	AVT Naturals	Red	Large		06.05.22	pH-7.22,BOD-19mg/l, Oil and grease –BDL, SS-8.8mg/l	Yes
8	FACT-CD	Red	Large	41,00,000	06.04.22	pH-7.49,BOD-16mg/l,COD-96mg/l ,SS-64mg/l (Oil and grease& Phenolic Compounds –BDL),	Yes
9	HOCL -LTD	Red	Large	23,00,000	06.04.22	pH-7.50,BOD-3mg/l,COD-8mg/l ,Phosphates-0.34mg/l,	Yes

					Ammonical nitrogen-3.36mg/l (Oil and grease& SS-BDL)	
10	Cochin Minerals and Rutile Ltd.Industrial development Area,Edayar,Muppathadam.P.O	Red	Large	6,59,000	pH 6-8.5 SS-100mg/l,Hexachromium - 1 mg/l Oil and grease-10mg/l,Total Chromium -2mg/l	Yes
11	Sud Chemie India private limited,Edayar Industrial Development Area,Binanipuram P O,Pin-683502	Red	Large	4,50,000	pH 5.5-9 SS-100mg/l, Oil and grease-10mg/l,free ammonia-5mg/l,ammonical nitrogen -50mg/l,Copper-3mg/l,Nickel-3mg/l,Zinc-5mg/l,Hexavalent Chromium -0.1mg/l,Total Chromium - 2mg/l	Hexavalent Chromium exceeds the limit.Instructions being issued.
12	FACT LTD,Petrochemical Division,Eloor,Udyogamandal	Red	Large	50,40,000	pH-6.5-8,COD-250mg/l,BOD-30mg/l,Total SS-30mg/l,Oil and Grease-10mg/l,Free ammonia-5mg/l,amm.Nitrogen-50mg/l,Nitrate nitrogen - 20mg/l,TKN - 100mg/l,Phenolic compounds -1 mg/l	Yes
13	FACT LTD, Udyogamandal Division,Eloor,Udyogamandal	Red	Large	1,68,00,000	pH-6.5-8,COD-250mg/l,BOD-30mg/l,Total SS-100mg/l,Oil and Grease-10mg/l,Free ammonia-4mg/l,amm.Nitrogen-75mg/l,Nitrate nitrogen - 10mg/l,TKN - 150mg/l,Phenolic compounds -1 mg/l,Flurides- 1.5mg/l,Phosphate - 5mg/l,arsenic - 0.2mg/l, Vanadium-0.2mg/l,Cyanide-0.2mg/l,hexavalent chromium-0.1 mg/l,Total chromium - 2mg/l	Yes
14	Indian Rare Earths Ltd,Eloor, Udyogamandal .P.O	Red	Large	4,00,000		Yes
15	Travancore cochin Chemicals Ltd (ICC),Eloor, Udyogamandal	Red	Large	4,00,000		Yes
16	TMS Leathers Industrial Development Area. Edayar, Munnathadom P O	Red	Large	33,200		Hexavalent Chromium and BOD exceed permissible limit. Instructions being issued

V. Solid Waste Management:

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 :**3472 TPD (Urban local bodies- Based on population)**

- Processing Capacity : **3130 TPD**

- Gap in Municipal Solid Waste Management : **342 TPD**

(The reduction in gap is due to the inclusion of recently commissioned rendering plants for processing the chicken waste . There is no live dump sites in the state . the quantity of 342 TPD is disposed through household facilities like compost pits and however action is being taken to divert it in the proposed centralized facility)

The District wise number of units are given below;

DETAILS OF RENDERING PLANTS

<i>Sl. No.</i>	<i>District</i>	<i>No: Rendering Plants</i>	<i>Capacity (T/day)</i>
1	Thiruvananthapuram	0	0
2	Kollam	2	6
3	Pathanamthitta	1	9
4	Alappuzha	0	0
5	Ernakulam	6	99
6	Kottayam	0	0
7	Idukki	0	0
8	Thrissur	2	2.5
9	Palakkad	7	56
10	Malappuram	24	302
11	Kozhikkode	1	30
12	Wayanad	1	12
13	Kannur	2	13
14	Kasaragod	4	59.2
<i>TOTAL</i>		<i>50</i>	<i>588.7</i>

- 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)
- The Additional Chief Secretary ,Local Self Department has submitted the action taken Report on the implementation of Solid Waste Management in the state.Status report of Local self Government department is submitted herewith.

Status of proposed Waste- to- Energy Plants

<i>Status report of Waste to Energy Plant</i>				
<i>Sl. No.</i>	<i>Waste to Energyplant</i>	<i>Land Identified</i>	<i>Procured</i>	<i>Status</i>
1	Kozhikode Njaliyanparambu	Kozhikode corporation	(Govt. land)12.67acre at Njaliyanparabu	• Work awarded to Zonta Infratech 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 55% 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-Adhar Sevabhavi Sanstha. Agreement to be executed.the work will start soon after the monsoon season. • Waste characterization done on 18-4-2020. Six samples taken-10kg from upper and lower part at three locations- 50-70% inert, 15-25% recoverable- 12-18% organic compost. Cu in one sample, chromium in three and lead in four exceeded. Capping can be considered for maximum 10% residual rejects after biomining of stabilized waste.

3.	Palakkad Kanjikode	Palakkad Municipality	Land taken over from Kerala State Electricity Board Ltd. in advance possession 15 acres at Kanjikode	- 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. The products include
				4018kg/day of compressed biogas; 60TPD of RDF; 6 TPD of recyclables; 12 TPD of waste for sanitary landfills; 35.75 TPD of dry organic compost/manure To sublease the land with non concession is processing in government.
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 is 50% complete. - Financial closure is expected to be achieved by December 2022.
5	Ernakulam Brahmapuram	Kochi corporation	20 acres at Brahmapuram (Govt. land)	- Bio mining of legacy waste started on February first week by M/s Zonta Infra Tech Ltd. They have completed biomining of four sectors out of seven sectors. - For construction of Waste to Energy plant, work order was issued to M/s. Zonta Infra Tech. Based on the technical meeting held on 03.01.2022 by the Principal Secretary LSGD, representatives from M/s. Zonta Infra Tech informed that steps have been taken to transport the machineries from Delhi and Pune.

6	Idukki Munnar	Idukki Municipality	2 acres of land at Munnar	- Bio mining of legacy waste is going on and the authorities informed that it will be expected to complete before monsoon. - The committee observed that the Consortium is meeting the technical and financial eligibility Criteria. - The consortium made a detailed presentation of their technical plan before the Bid evaluation Committee. - LAC after detailed discussion resolved to accord sanction to proceed with the financial evaluation of the Bid. Consignment signed. Consortium of Organo recyclers Private ltd,Albujan,UAE.
7	Thrissur	Thrissur corporation	Identified land at Ollookkaravillage	- Thrissur Corporation identified land at Ollookkara village in Thrissur district. - Vide GO(Rt)No111/2020/LSGD dated 13/01/2020 State Government has accorded sanction to Thrissur Municipal Corporation to purchase the identified land at Ollookkara Village in Thrissur district and to hand over the same on lease basis to KSIDC for the development of the project - Secretary, Thrissur Municipal Corporation to report the status of price negotiation done with the owners of the land identified.
8	Malappuram	Malappuram munciplaity	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 forsetting 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.
9.	Thiruvananthapuram	Thiruvananthapuram Corporation		Land identification

Status Report of Bio mining in the State of Kerala

44 dumpsites were identified in different parts of the State.Out of which 13 were completed. Bio-mining of legacy waste is progressing in remaining 31 dump sites (9 large dump sitesand 22 other dumpsites). Legacy wasteclearing has been completed at 13 dump sites, namely 1. Erumakkuzhi, Thiruvananthapuram; 2.Palayam; 3. Punalur; 4. Kottarakkara; 5. Adoor; 6. Erumeli;

7. Vaikkom; 8. Guruvayur, Thrissur 9. Pattambi; 10. Thathamangalam, Palakkad. 11. Kureepuzha, Kollam, 12. Munnar, Idukki and 13. Varkkala, Thiruvananthapuram. The clearing is progressing at 1. Kozhikode; 2. Kunnamkulam; 3. Chalakkudy and 4. Ottapalam. Biomining Work has been awarded to Chelora, Kannur. At Brahmapuram, which is the largest dumpsite in the state, tendering completed, identified the bidder and action is being taken for the award of work to the successful bidder. Drone survey of the dumpsite was completed by NIT, Calicut. Two sites Kottayam and Attingal are in the tendering stage. The status of biomining of dumpsites is attached as Annexure III-b

The biomining is completed in Kureepuzha, Kollam. The work is done by Zigma Global Environ Solutions Pvt Ltd. The process included pre stabilization i.e., Inoculum spraying, deodorization, windrowing into zones and preprocessing is done to ensure environment safety and proper stabilization of waste. After weighing the pre stabilized waste, it is loaded to machineries for separation using various customized machineries. Till 31.08.2022, 30335.95 Metric Tons of legacy waste including RDF, recyclables, rejects, soil etc has been disposed. The details of the items disposed till date are as follows.

Sl No.	Item	Quantity disposed (Ton)
1.	Coarse fraction soil	10503.68
2.	Fine fraction soil	6101.65
3.	Footwear	99.2
4.	Glass	85.8
5.	HD Plastics	8.35
6.	Iron/steel material	5.32
7.	Unshredded RDF and segregated combustible fraction	2319.03
8.	Stainless steel	0.23
9.	Stones	11172.18
10.	Tyre	26.7
11.	Wood	13.81
	Total	30335.95 MT

Status of Solid waste management System

As per the Solid Waste Management Rules, 2016, 100% door to door collection from households and establishments is to be done. This includes treatment in the centralized and decentralized systems. Centralized Windrow composting system exists at Brahmapuram, Kochi and at Njaliyan parambu, Kozhikode. However household level decentralized solid waste management facilities do exist at Kochi and Kozhikode Corporation. More than 70% D2D collection of dry waste

is achieved for households in 84 urban local bodies and for establishments in 70 urban local bodies as in May, 2022. Haritha Karma Sena is working in 92 urban local bodies and 923 Grama Panchayaths for collection of dry waste . For wet wastes disposal decentralized treatment methods such as aero bins, pipe compost, compost pits, kitchen bins, biogas plants etc. are followed. Dry wastes are collected, segregated and disposed through recyclers. In Kerala there are 147 plastic recycling units, 21 Steel mills, and 7 craft paper units. Non-recyclable plastic waste is shredded in the RRFs and is used for the tarring of PWD and LSGD roads. During the period 2016-2021, Clean Kerala Company Limited (CKCL) has produced 2399.13 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. 1039 MCFs and 183 Resource recovery facilities have been provided in LSGIs (Status as on April 2022) . The status report on the progress achieved from 2019-2022 is given as Annexure III -c

Haritha Karma Sena (HKS), an enterprise group formed through the State Poverty Eradication Mission (Kudumbasree) has been engaged for the Door-to-Door collection. The enterprise group is designed to have two persons for each ward for door-to-door collection of non-biodegradable waste on a regular basis and to help in managing the household institutional-community systems for composting biodegradable waste. The user fee is fixed by the respective local government depending on the services rendered and based on the guidelines issued vide G.O(Rt)No.2420/2017/ LSGD dated 15.07.2017. In order to sustain the operation of the door-to-door collection system, Government provided a Viability Gap Fund (VGF) support initially so as to make up the shortage of user fee collection in the initial stages such that each member of the group get at least minimum wage decided by the government.

The status of the present facilities for the treatment of biodegradable waste is given below.

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:

<i>FACILITY</i>	<i>TYPE OF PLANT</i>	<i>NUMBER</i>	<i>DETAILS</i>	<i>QUANTITY</i>
Centralized plant	Windrow composting plants (large)	2	1. Emakulam(300 TPD) 2. Kozhikode(100TPD)	400 TPD

	Windrow composting plant(Small)	12	1. Attingal(13TPD) 2. NorthParavur(3TPD) 3. Chalakkudy(2TPD) 4. Kodungallur(4TPD) 5. Kothamangalam 6. Kunnamkulam 7. Guruvayoor(2TPD) 8. Chittur- Thathamangalam(4TPD) 9. Ottappalam(5TPD) 10. Palakkad(4TPD) 11. Thaliparambum 12. Payyannur	37 TPD
Community Level	Vermi composting plants(Small)	7	1. Attingal(0.25TPD) 2. Thodupuzha 3. NorthParavur(1TPD) 4. Chavakkad(1.5TPD) 5. Manjeri(0.5TPD) 6. Koothuparambu 7. Mattannur(5TPD)	8.25 TPD
	Aero bins	406(10 kg)	4060 kg (4.060 TPD)	4.060 TPD
	Biogas plants	287(2.5 kg)	717.5 kg (0.7175 TPD)	1 TPD
	Biobins in flats	500(1 ton)	Thiruvananthapuram, Kollam, Ernakulam, Trissur Kozhikode	500 TPD
	Material Collection Facility	685(0.25 ton)		171.25 TPD
	Resource recovery facility	77		50 TPD
Household Level	Pipe compost(1 Kg)	1,31,570	131570 kg	62 10 48 kg 621.048TPD (622TPD)
	Kitchen bin(1 Kg)	79,160	79160 kg	
	Biogas plant(2.5 Kg)	21,560	53900 kg	
	Bio composter, Bio bins, pot bin(1 Kg)	1,09,455	109455 kg	
	Ring compost(1 Kg)	40,050	40050 kg	
	Bucket compost(1 Kg)	6,913	6913 kg	
	Compost pit(2 Kg)	100000	200000 kg	
Institutional level	Biogas plants, aerobins, biobins	1000 (0.5 ton)		500 TPD
Rendering plant	Rendering plant	48units	588.7 TPD	588.7 TPD
Steel mills	Scrap recycling	18units		50 TPD
Plastic recycling units	Plastic recycling units	187units	189TPD	189 TPD
Road tarring	Used for road construction by PWD and LSGD		10TPD	10 TPD
TOTAL				3130 TPD

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.

Rendering plant

Kerala state has more than 16,000 poultry stalls where around 18 lakh poultry are slaughtered and sold daily and it is estimated that about 1,080 TPD of poultry waste is produced. Policy framework to deal with the issues arising out of inappropriate management of chicken waste was issued vide GO(Ms.) No. 227/2021/LSGD dated 07.10.2021. These guidelines are intended to standardize facility requirement, procedure for licensing and operation of Poultry Meat Stalls in all Local bodies, regulate the approval, licensing and operation of Poultry waste rendering plants based on the quantity of waste generated and to develop a monitoring mechanism for the implementation of these regulations. A District Level Facilitation and Monitoring Committee (DLFMC) as per guidelines by GO (Ms.) No. 227/2021/LSGD dated 07.10.2021 constituted at all the districts to regulate the approval of proposed/existing rendering plants.

In Kerala there are 50 rendering plants with a capacity of 588 TPD. These units have been commissioned during the review period with the continuous efforts from various Departments in the State. The District wise number of units are given below;

DETAILS OF RENDERING PLANTS

<i>Sl. No.</i>	<i>District</i>	<i>No: Rendering Plants</i>	<i>Capacity (T/day)</i>
1	Thiruvananthapuram	0	0
2	Kollam	2	6
3	Pathanamthitta	1	9
4	Alappuzha	0	0
5	Ernakulam	6	99
6	Kottayam	0	0
7	Idukki	0	0
8	Thrissur	2	2.5
9	Palakkad	7	56
10	Malappuram	24	302
11	Kozhikkode	1	30
12	Wayanad	1	12
13	Kannur	2	13
14	Kasaragod	4	59.2
<i>TOTAL</i>		<i>50</i>	<i>588.7</i>

GPS tracking systems

Local Self Governments (LSGs) are engaging Clean Kerala Company Limited

(CKCL) and private agencies for the collection and movement of waste to recycling/disposal facilities from collection centres/dumpsites. There was no mechanism available to track and regulate the movement of vehicles which transport such wastes. The Hon'ble National Green Tribunal in O.A.No.100/2021 'Dumping of Garbage foiled near Annamalai, trucks seized', directed on 29-7-2021 to create a mechanism for registering the vehicles which are entrusted with carrying waste to be disposed at designated dumpsites or treatment facilities, in order to supervise and to track the movement of such vehicles to find out whether the waste that is being entrusted to them is really reaching the designated treatment facility centers. Accordingly, LSGD issued Govt. Order G.O.(Rt.)No.1673/2021/LSGD dated 06/09/2021 regarding guidelines for registering vehicles transporting waste.

Accordingly, recyclable non-biodegradable waste shall be sold to the recycling agencies or their aggregators at a price not less than the rate notified by the Clean Kerala Company-Limited (CKCL). The non-recyclable waste is to be removed through Clean Kerala Company Limited (CKCL) on behalf of the Local Self Governments will be at the rate prescribed by the Government from time to time. The Local Self Governments may engage authorized agencies/ organizations for removal of non-recyclable waste provided they possess valid consent to operate from the KSPCB and valid agreement/MoU with the disposal facility such as Furnace based industries like cement kilns and secured landfill in the case of rejects.

The Local Self Governments and Clean Kerala Company Limited shall follow due process for identification of agencies/ organizations for removal of non-recyclable waste. The agencies/ organizations selected for removal and transportation of non-recyclable waste shall declare the destination where the waste is proposed to be disposed of and the hiring agencies (LSG/CKCL) shall verify and ensure whether the destination is suitable for safe disposal. All the vehicles which are entrusted with the transportation of waste to disposal/ recycling facilities shall be registered with the hiring agency from where waste is being collected. Clean Kerala Company and Local Self Governments shall keep a separate record of vehicles registered by them for this purpose. The Local Self Governments and CKCL shall incorporate specific conditions in the tender notification/ Empanelment notification and in the agreements with the transporting contractors to the effect that the transporting vehicle shall be fitted with GPS instrument and tracking systems arranged in the respective Offices. An Officer of the LSG/ CKCL shall be designated for tracking the GPS while there is movement of waste and shall

ensure that it reaches the right destination. For transporting waste from source to location of treatment/disposal, a detailed manifest has to be maintained by the agencies engaged

VI. Bio-medical Waste Management:

As per Annual Report in the whole state for the year 2020:

- Total Bio-medical generation: **40408 kg/day (Non-Covid- 27912 kg/d, Covid- 12496 kg/d)**
- 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)**
- Annual report for the year 2020-21 is attached with *Annexure III-d*

VII. Hazardous Waste Management:

As per Annual Report in the whole state for the year 2020-21:

- Total Hazardous Waste generation: **57863.065 Metric Tonne/year**
- Total hazardous waste recycled/utilized : **7362.098 Metric Tonne/year**
- No. of Industries generating Hazardous waste: **1838**
- Treatment Capacity of all TSDFs in the State: **50000 MTA**
- Total hazardous waste treated (captive and Common) : **47786.619 Tonne/year**
- Annual report for the year 2020-21 attached with *Annexure III-e*

VIII. Plastic Waste Management:

- Total Plastic Waste generation: **120063.874 TPA**(as per annual report *in the whole state* for the year 2020-21).
- **Material Collection Facility – 997 nos.; Resource Recovery Facility-178 nos.**
- Gap between collection and disposal : **11336.126 TPA**
- Annual report for the year 2020-21 is attached with *Annexure III-f*

IX. 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 *Annexure III-g*)

- Constructed wetland is also provided for the treatment of waste water from the ladies hostel of College of Engineering, Trivandrum (Photos of the same enclosed in *Annexure III-h*).

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.

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.

X. 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 5 STPs are proposed at Elamkulam, Vennala, Edapally, Puthukalavattom and Perandur for treating the water coming through drains and discharging treated water to water bodies.

XI. 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.

XII. 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. 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.

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

Stretches as per July 2022 are attached as *Annexure I*.

XIV. 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.

XV. Good Irrigation practices being adopted by the State:

Irrigation in Kerala is classified into two schemes.

1. Major Irrigation and Medium Irrigation
2. 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.

1. 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.

2. 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.

XVI. Rain 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 same is attached as Annexure II.

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.

XVII. 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:-

- (1) Cheruthuruthy check dam
- (2) Changanamkunnu regulator
- (3) Manjummel regulator
- (4) Purappallikavu regulator
- (5) Velliyankallu regulator cum bridge
- (6) 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

XVIII. 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 need to be proposed at certain locations to regulate the 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 IDRB Chief Engineers office at Vikas Bhavan. 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 IDRB 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, IDRB 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 calculation of 39 rivers has been completed and that the remaining 1 will be completed soon. E-flow calculation of 4 rivers can't be taken due to non availability of data. The DPR & cost estimation for maintaining e-flow is being prepared.

XIX. Plantation activities along the rivers:

Proposal submitted by Irrigation Department. Waiting for approval.

XX. 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, Valapattanamriver (b) Planting of Pandanus along canal banks
- Muzhakunnu Grama panchayat, Kannur – Puzhayora Oushada SughandhaUdyanam 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, VechoochiraandNaranammoozhi) 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.

XXI. Rise 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.

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

Tirur-Ponnani River, Malappuram

XXIII. 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 coliform. 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.*

XXIV. 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.

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

Notices have been issued from the Board to 51 Grama Panchayaths, 11 Urban local bodies, 127 health care facilities and directions have been issued to 2 Corporations for violation of the rules noticed. The list is submitted as *Annexure III-i*.

XXVI. 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 ofCPCB

- 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)

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MEMBER SECRETARY

Status of compliance of ETPs less than 30 KLD

1	CHC Sooranadu, Sasthancotta BlockPanchath, Kollam	0.028	At DPR Stage	DPR returned to LSGI	31/12/2022
2	CHC Kadayiruppu ,Vadavukode Block Panchayath ,Ernakulam	0.025	At DPR Stage	<i>Under technical scrutiny</i>	31/12/2022
3	STP at Community Health Centre Pazhayannoor Block Panchayath ,Thirssur	0.025	At DPR Stage	<i>Committee decided to hand over to KWA</i>	31/12/2022
4 & 5	Mobile Septage Units- 2nos, Alappuzha (AMRUT)	0.02 (0.01 *2 nos.)	<i>Tendered but not awarded:</i> * Work tendered 5 times so far. ULB's Technical Committee held on 30/06/22 decided to request the Technical Committee for Sewerage works to relax the payment terms so that bidder participation can be increased.	* The Technical Committee for SEW & SEP works held on 26/08/22 decided to call for quotations without changing the payment terms. Accordingly quotations are to be called for by the ULB.	31.12.2022
6	Sewage Treatment Plant 20 KLD at Shopping Complex cum multiplex Theatre, Kallumutti, Irutti Payam, Grama Panchayath1, Kannur	0.02	At DPR Stage	<i>Committee decided to hand over to KWA</i>	31/12/2022
7	STP for Convention Centre ,Pinarayi GramaPanchayath, Kannur	0.02	At DPR Stage	<i>TS issued</i>	31/12/2022
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 Wadakkanchery Municipality".	DPR Approved by KIIFB	-
9	STP at Shatabdhi Mandiram, Alappuzha(AMRUT) (PRS)	0.015	<i>Tendered but not awarded:</i> * Bid received in the 3rd tender to be finalized. The ULB's Technical Committee held on 30/06/22 decided to recommend the lowest bid to the Technical	* The Technical Committee for SEW & SEP works held on 26/08/22 agreed with the suggestion of ULB's Secretary & directed to obtain	31.03.2023

			Committee for Sewerage works for approval of the bid along with revised TS & for checking the reliability of O & M quoted by the bidder.	approval of the Council regarding implementation of the project	
10	CHC Mangalpadi, Manjeswar Block Panchayath, Kasaragod	0.014	At DPR Stage	<i>DPR returned to LSGI</i>	<i>31/12/2022</i>
11	STP at Athani market, Wadakkanchery Municipality, Trissur(<i>PRS</i>) (IMPACT KERALA Ltd)	13.9 KLD STP	DPR submitted to KIIFB as part of the project "Modernisation of Athani Market in Wadakkanchery Municipality". DPR Approved by KIIFB, KIIFB Proceedings awaited.	DPR Approved by KIIFB, KIIFB Proceedings awaited	-
12	11 KLD effluent Treatment plant at Kuravilangad Fish Market, Kuravilangad Grama Panchayath, Kottayam	0.011	At DPR Stage	DPR returned to LSGI	<i>31/12/2022</i>
13	ETP 10 KLD Capacity, Nedumangad Municipality, Thiruvananthapuram	0.01	At DPR Stage	<i>DPR returned to LSGI</i>	<i>31/12/2022</i>
14	ETP Karavaram Grama Panchayath, Thiruvananthapuram	0.01	At DPR Stage	DPR returned to LSGI	<i>31/12/2022</i>
15	STP at CHC Mullashery Block Panchayath, Thrissur	0.01	At DPR Stage	DPR returned to LSGI	<i>31/12/2022</i>
16	Eco Friendly waste water Treatment plant 10 KLD in vettam Community Health centre, Tirur BP	0.01	At DPR Stage	DPR returned to LSGI	<i>31/12/2022</i>
17	10 KLD Sewage Treatment Plant at EMS Memorial Municipal Town Hall, Koyilandy Municipality, Kozhikkode	0.01	At DPR Stage	Committee decided to hand over to KWA	<i>31/12/2022</i>

18	STP at Fish market, Payyannur Municipality, Kannur (<i>PRS</i>)	10 KLD STP	Technical committee verified the project. Suggested modification. DPR modification is going on	DPR modification is going on	-
19	STP at old age home, Kannur	0.010	At DPR Stage	<i>TS issued</i>	
20	DPR for perumba fish market Payyanur Municipality, Kannur	0.01	At DPR Stage	<i>Decided to handover to KWA</i>	31/12/2022
21	Waste water treatment plant at K R Narayanan memorial hall, Adat GP	0.0065	At DPR Stage	<i>TS issued</i>	
22	ETP of 2 KLD at Konnamkulam Milk Production Cooperative Society	0.002	At DPR Stage	Under technical scrutiny	
23	Construction of 300 TPD Leachate treatment plant as part of Kochi Urban Agglomeration		Inception Report	DPR returned to LSGI	