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## **KERALASTATEPOLLUTIONCONTROLBOARD**

PattomP.O.,Thiruvananthapuram-695004

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PCB/HO/EE3/MPR/10/2022

Date: 30/06/2022

From

The Member Secretary

To

The Secretary

Ministry of Jal Shakthi,

Department of Water Resources, River Development

& Ganga Rejuvenation, Shram Shakti Bhawan,

RafiMarg, New Delhi-110001

Sub:-Forwarding Monthly Progress Report for the month of May 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 May 2022 is submitted herewith.

Yours faithfully,

**MEMBER SECRETARY**

Encl: As above

**National Mission for Clean Ganga**  
**Format for submission of Monthly Progress Report 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 common STPs and 3 common FSTPs
- No. of functional common STPs in the State:19
- 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: 129.476 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: 51.314MLD

- STPs 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) STP of capacity 0.01 MLD at Kumarichantha, Thiruvananthapuram
- 4) 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. At present only 60% capacity of the 107 MLD STP is utilized. Completion of ongoing works will enhance the utilization by 20%. Full utilization can be achieved only by expanding the sewer network.
- 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. On verification of the draft DPRs of six wards received from REPL, many discrepancies and mistakes were found in the design and survey works, hence terminated the contract made with M/s REPL on 31.05.2022. And action has been taken to do the DPR preparation internally and give priority to the DPR preparation of sewerage system to 19 wards abutting Karamana river which comes under the purview of NGT OA 673/2018.
- 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.
- 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.

### 3.1. Status of CSTP/FSTP which are operational

Sl. No.	City/Town	STP location	Status	STP Installed capacity	Utilization	Process
1	Thiruvananthapuram (PRS)	1. Common Sewage Treatment Plant, Muttathara, Trivandrum maintained by Kerala Water Authority	Operational (pH-7.5, BOD-7.2 mg/l, COD-32 mg/l, SS-20.3 mg/l, FC-nil)	107 MLD	65 MLD	Activated Sludge Process
		2. STP at Kumarichanda	Operational	0.01 MLD	0.01 MLD	Bio membrane bioreactor Technology
		3. STP at Medical College, Thiruvananthapuram-Phase I & II (PRS)	Operational (pH-7.1, BOD-33 mg/l, FC-2000 cfu/100 ml)	5 MLD	2 MLD	MBBR
2	Pathanamthitta	4. Sewage Treatment Plant at Sannidhanam (5MLD) Maintained by Travancore Devaswom Board	Seasonally Operated during festival season (pH-7.6, Oil & Grease-3.68 mg/l)	5 MLD	3.5 MLD	UASB and SBR
		5. Sewage Treatment Plant at Pamba (3.5 MLD) maintained by Travancore Devaswom Board	Seasonally Operated during festival season (pH-7.7, BOD-50mg/l, COD-112 mg/l, SS-94 mg/l)	3.5 MLD	3.5 MLD	Coagulation & settling
3	Kottayam	6. STP for Houseboat (0.09 MLD) at Kumarakom maintained by DTPC, Kottayam	Operational	0.09 MLD	0.09 MLD	ASP
4	Adimaly Grama Panchayat, Idukki	7. Sewage treatment Plant at Comfort station, Adimaly Grama Panchayat, Idukki	Operational	0.01 MLD	Started functioning	Electro coagulation
5	Idukki	8. 6 KLD ETP	Operational	0.006		EKID

		for Kumali Slaughter House Kumali GP, Idukki		MLD		
6	Ernakulam	9.Sewage treatment unit, Kerala Water Authority, Elamkulam, (3MLD)	Operational (pH-7.24, SS-BDL, NH4-N-10.8 mg/l, BOD-10.2 mg/l, COD-64 mg/l, O&G-BDL, N-T- 0.55 mg/l)	4.5MLD	3 MLD	ASP
		10.STP owned by Greater Cochin Development Authority, Kadavanthra, Kochi (0.45 MLD)	Operational(pH-7.9, TSS-16 mg/l, Nh4-N-0.56 mg/l, OD-4.3 mg/l, COD-72 mg/l, O&G-BDL, N-T-37.8 mg/l)	0.45MLD	0.45 MLD	ASP
		11.Septage Treatment Plant at Brahmapuram, Kochi Corporation, Ernakulam	Operational (pH-7.29, BOD-40 mg/l, COD-120 mg/l, SS-BDL)	0.1MLD	0.1 MLD	MBBR
		12.Septage Treatment Plant at Wellington Island, Kochi Corporation	Operational	0.1MLD	0.1 MLD	MBBR
		13.STP at Kalamassery Market, Kalamassery Municipality(PRS)	Operational	0.01 MLD	Started operation	
7	Thrissur	14.Sewage treatment Plant at Guruvayur, Thrissur District	Commissioned	3 MLD	Started functioning	ASP
		15.FSTP at Mattampuram	Completed. Not started functioning. PCB issued permission for conducting trial run	0.01 MLD	Not started functioning	BIOLOGICAL
8	Thrissur	16.Revamping of 35 KLD STP at Kuriyanchira Slaughter House Corporation , Thrissur	Operational	0.035 MLD	0.035 MLD	MBBR
9	Malappuram (PRS)	17.Sewage treatment Plant at Malappuram Municipal Bus stand	Operational	0.03 MLD	0.03 MLD	MBBR

		18.Sewage treatment Plant-at Tirur (fish market)	Operational	0.045 MLD	0.045 MLD	BIOLOGICAL
10	Malappuram	19.STP at Municipal Bus Stand, Tirur (PRS)	Started functioning	0.05 MLD	Completed and Started Functioning	Biological
11	Kozhikode (PRS)	20.Common Sewage Treatment Plant at Narayana nagaram, near stadium, Vatakara, Opp. New bus stand	Operational	0.1MLD	0.1MLD	MBBR
12	Kannur	21.Sewage treatment Plant at Taliparambu(0.5MLD) Taliparambu Municipality, Kannur	Operational	0.5MLD	0.5MLD	ASP
13	Wayanad	22.Sewage Treatment Plant at Taluk Hospital, SulthanBathery Wayanad	Operational	0.14 MLD	0.05 MLD	MBBR
<b>PRS – Polluted River Stretches</b>						

### 3.2. Details of under construction 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 Pambad Housing Colony Malappuram Municipality, Malappuram	0.110	95 % Completed	Civil and mechanical work completed. Pipeline connection completed.	Electrical estimate is under preparation	30/09/2022
2	ETP in Fish Market, Ponnundam GP, Malappuram	0.01	99% Completed	Soak pit work completed. Planting of species in grow bed is completed.	Plant is working in trial basis. Waiting for Separate KSEB connection.	30/06/2022
3	STP at CHC Cherpu BP, Thrissur	0.01	50% Completed	Civil tank construction completed. Excavation for conveyance started.	Concreting and plastering work completed.	31/12/2022
4	STP at Chitumala Old Age Home. Chitumala BP,	0.015	95% Completed	DSM issued a letter to restart the work. 3 more pumps to be installed.	Civil, mechanical, partition, plastering, pipe	31/12/2022

	Kollam		ted		connection and electrification work completed.	
5	Construction of 45 KLD waste water treatment plant at Kalpetta Government Ayurveda Hospital DP , Wayanad	0.045	65% work completed	Work was delayed due to payment issues with the local body and contractor. Meeting is arranged for sorting the issue.	Tank construction, plastering and painting completed.	31/12/2022
6	STP at Kureepuzha-Phase I & II, Kollam (AMRUT)	12	58%	21358 house sewer connections are envisaged as per the new sewer work added (balance of KSUDP).	* MBBR-1,2 & 3, Clarifier-1 & 2, Equalization Tank, Septage Tank, Chlorine Room, Blower Room & Sludge Holding Tank works are in progress.	31.07.2022
7	STP at Elamkulam, Kochi (AMRUT)	5	92%	No house sewer connections are envisaged.	* Bacteria culturing in equalization tank & MBBR tanks are in progress.	30.06.2022
8 & 9	STPs at Medical College with Septage Treatment, Kozhikode (AMRUT)	3.1 (2 MLD with 100 KLD septage treatment & 1ML)	28%	Only the buildings inside the Medical College campus will be connected.	*2.1 MLD STP ollection Tank & sewer pipe laying works are in progress.	31.12.2022
10	Decentralized sewerage network with STP in old Kannur Municipal area, Kannur (AMRUT)	1	20%	1500 house sewer connections are envisaged.	* Wet well, Office Building, Equalization Tank, Chlorine Tank & GLS Tank works are in progress.	31.12.2022
11	Taluk Hospital Adimaly ,Adimaly Block Panchayath, Idukki	0.060	40%	Concreting of civil tanks completed.	Mechanical work is to be started.	31/12/2022
12	STP at General Hospital, Alappuzha	0.24	23%	Only the buildings inside the General Hospital campus will be connected.	* Collection Tank & Screening Chamber works are in progress.	31.12.2022

### 3.3.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	Taluk Hospital Thiruvalla ,Thiruvalla Municipality, Pathanamthitta	0.09	At DPR Stage	Under technical scrutiny	31/12/2022
2	Taluk Hospital Pambady, Pambady Block panchayath , Kottayam	0.085	At DPR Stage	DPR under verification at Block Panchayat	31/12/2022
3	General Hospital, Irinjalakuda Municipality , Thrissur (PRS)	0.150	At DPR Stage	DPR returned to LSGI	31/12/2022
4	District Hospital Perunthalmanna , District Panchayath, Malappuram	0.200	At DPR Stage	DPR returned to LSGI	31/12/2022
5	Taluk Hospital ,Neelaswaram, Kasaragod	0.040	At DPR Stage	under technical scrutiny	31/12/2022
6	CHC Alathoor, Alathoor Block Panchath , Palakkad	0.090	At DPR Stage	DPR under verification at Block	31/12/2022
7	CHC Kadayiruppu ,Vadavukode Block Panchayath , Ernakulam	0.025	At DPR Stage	Under technical scrutiny	31/12/2022
8	CHC Sooranadu, Sasthancotta Block Panchath, Kollam	0.028	At DPR Stage	DPR returned to LSGI	31/12/2022
9	CHC Kilimanoor, Kilimanoor Block Panchayath , Trivandrum	0.096	At DPR Stage	DPR returned to LSGI.	31/12/2022
10	CHC Mangalpadi, Manjeswar Block Panchayath, Kasaragod	0.014	At DPR Stage	DPR returned to LSGI	31/12/2022
11	CHC Konni, Konni Block Panchayath, Pathanamthitta	0.032	At DPR Stage	Committee decided to handover to KWA	31/12/2022
12	65 KLD Sewage Treatment Plant at Taluk Head Quarters Hospital	0.065	At DPR Stage	Under Technical Scrutiny	31/12/2022



	Vithiri, Kalpetta BP, Wayanad				
13	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	31/12/2022
14	11 KLD effluent Treatment plant at Kuravilangad Fish Market, Kuravilangad Grama Panchayath , Kottayam	0.011	At DPR Stage	DPR returned to LSGI	31/12/2022
15	Eco Friendly waste water Treatment Plant ( 60 KLD ) for Women and Children Hospital Ponnani Municipality, Malappuram	0.06	At DPR Stage	<i>Committee decided to hand over to KWA</i>	31/12/2022
16	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
17	STP for Convention Centre, Pinaryi Grama Panchayath , Kannur	0.02	At DPR Stage	TS issued.	
18	STP at CHC Mullashery Block Panchayath , Thrissur	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022
19	Eco Friendly waste water Treatment plant 10 KLD in vettam Community Health centre , Tirur BP	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022
20	Sewage Treatment Plant 20 KLD at Shopping Complex cum multiplex Theatre, Kallumutti, Irutti Payam, Grama Panchayath, Kannur	0.02	At DPR Stage	<i>Committee decided to hand over to KWA</i>	31/12/2022
21	Sewage Treatment Plant 50 KLD, Angal Block Panchayath , Kollam	0.05	At DPR Stage	<i>DPR returned to LSGI</i>	31/12/2022
22	ETP 10 KLD Capacity, Nedumangad Municipality, Thiruvananthapuram	0.01	At DPR Stage	<b>Under technical scrutiny</b>	31/12/2022
23	ETP Karavaram Grama Panchayath,	0.01	At DPR Stage	DPR returned to LSGI	31/12/2022

	Thiruvananthapuram				
24	STP at Community Health Centre Pazhayannoor Block Panchayath ,Thirssur	0.025	At DPR Stage	<b>Committee decided to hand over to KWA</b>	<b>31/12/2022</b>
25	STP for government ayurveda hospital, Kodakara GP, Thrissur	0.035	At DPR Stage	Under Technical Scrutiny	<b>31/12/2022</b>
26	ETP at Kodimatha, Kottayam Municipality	0.030	At DPR Stage	DPR returned to LSGI	<b>31/12/2022</b>
27	STP at hospital, Pazhayangadi, Kannur	0.120	At DPR Stage	<b>DPR returned to LSGI</b>	<b>31/12/2022</b>
28	ETP at Tirur Municipality	0.060	At DPR Stage	<b>DPR returned to LSGI</b>	<b>31/12/2022</b>
29	ETP for slaughter house, Marakkadavu, Ernakulam	0.030	At DPR Stage	DPR returned to LSGI	<b>31/12/2022</b>
30	STP at old age home, Kannur	0.010	At DPR Stage	<b>TS issued</b>	-
31	DPR for perumba fish market Payyanur Municipality, Kannur	0.01	At DPR Stage	<b>Decided to handover to KWA</b>	<b>31/12/2022</b>
32	FSTP at Cherthala municipality, Alappuzha	0.25	AS issued. TS working going on	DPR modification is going on. Transferred to Impact Kerala and RKI for funding	-
33	STP at Decentralised Sewerage Scheme - Thrissur Corporation (AMRUT) (PRS)	2.5	<b>To be retendered:</b> * To be retendered after conversion of the category of the selected land (Paddy Land) & approval of recast estimate. * 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.	* Reply is awaited from the Govt. regarding the request submitted for special sanction to construct the STP at the proposed location. * The proposal for revising the AS to Rs.64.20 has been placed in the 23 <sup>rd</sup> SLTC scheduled on 01/06/22 for approval. * Invoice for application fee received on 04/04/22 through Railway website could not be paid by the ULB before the expiry date. Hence fresh online application had to be submitted to Railways on 25/05/22.	31.03.2023
34	STP at Decentralised Sewerage System -Kochi Corporation Div-15 (AMRUT)	1.4	<b>Selection notice issued but Agreement to be executed:</b> * 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 alternative proposal for liquid waste management has been finalized by the ULB and they have placed the same in the 23 <sup>rd</sup> SLTC scheduled on 01/06/22 for approval.	31.03.2023

35	STP at Decentralised Sewerage System - Kochi Corporation Div-16 (AMRUT)	1.1	<b>Awarded but not started:</b> *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. Still the soil investigation work could not be started due to public protest.	31.03.2023
36	Decentralized Sewerage System(with STP) – Kochi Corporation Div-17,Per umpadappu(STP opposite St.Juliana Public School, Pai Road) (AMRUT)	1.4	<b>Selection notice issued but Agreement to be executed:</b> * 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 alternative proposal for liquid waste management has been finalized by the ULB and they have placed the same in the 23 <sup>rd</sup> SLTC scheduled on 01/06/22 for approval.	31.03.2023
37	STP at Division 1 - 4 under Cochin Smart City Mission	6.5	Awarded not started	Awarded not started	-
38	5 STPs are coming up under the KMRL's Integrated Water transport System project at Elaamkulam,Vennala, Edapally, Puthukalavattom, Perandur	10 + 10 + 2+ 5+ 4 =31	To be tendered	To be tendered	-
39	FSTP at Andamukkam, Kollam Corporation (AMRUT)	0.1	<b>Cancelled:</b> * The proposal put forwarded by the Kollam Corporation to cancel the septage project & use the amount available from the project as well as the unused amount till date in Sewerage Sector of Kollam under AMRUT for implementing the balance sewer network (balance of KSUDP) was approved by the SHPSC held on 20/02/21.	* Project cancelled.	-
40	FSTP at Vasoovichira, Kollam Corporation (AMRUT)	0.1	<b>Cancelled:</b> * The proposal put forwarded by the Kollam Corporation to cancel the septage project & use the amount available from the project as well as the unused amount till date in Sewerage Sector of Kollam under AMRUT for implementing the balance	* Project cancelled.	-

			sewer network (balance of KSUDP) was approved by the SHPSC held on 20/02/21.		
41	FSTP at Karikkuzhi Ela, Kollam Corporation (AMRUT)	0.1	<b>Cancelled:</b> * The proposal put forwarded by the Kollam Corporation to cancel the septage project & use the amount available from the project as well as the unused amount till date in Sewerage Sector of Kollam under AMRUT for implementing the balance sewer network (balance of KSUDP) was approved by the SHPSC held on 20/02/21.	* Project cancelled.	-
42	FSTP at Ramavarmapuram, Thrissur (AMRUT) (PRS)	0.1	<b>To be retendered:</b> * 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 is being recast as per DSR-2018.	* The Consultant corrected the estimate as per the suggestions of the ULB's Engg. Wing & submitted it to the ULB on 12/05/22. The same is under scrutiny at the ULB.	31.03.2023
43	FSTP at Yakkara, Palakkad Municipality (AMRUT)	0.1	<b>Selection notice issued but Agreement to be executed:</b> * 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.	31.12.2022
44	FSTP at Chellora, Kannur Corporation (AMRUT)	0.1	<b>To be retendered:</b> * Legacy waste dumped at the proposed location to be removed for starting physical works. The legacy waste removal work is to be started.	* A meeting was held with the Contractor on 04/05/22 & Agreement for legacy waste removal work was signed on 07/05/22. Legacy waste removal work is to be	31.12.2022

			<p>* 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.</p> <p>* Septage Plant work is to be retendered after revision of estimate as per DSR-2018.</p>	<p>started. Application was submitted to KSPCB for consent on 11/05/22.</p> <p>* The estimate for Septage Plant work is being revised as per DSR-2018.</p>	
45	FSTP at Chakkumkan dam, Guruvayur Municipality, Thrissur (AMRUT)	0.1	<p><b>Work started but stalled:</b></p> <p>*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.</p>	<p>* Decision of the Govt. on issuance of special sanction for constructing the septage plant on the proposed land (Wet Land) is awaited.</p> <p>* In the meeting held by the Chief Secretary the KWA was directed to take up the project for co-treatment of septage under RKI instead of the AMRUT.</p>	31.12.2022
46 & 47	Mobile Septage Units- 2 nos, Alappuzha (AMRUT)	0.02 (0.01 *2 nos.)	<p><b>Tendered but not awarded:</b></p> <p>* Work tendered 5 times so far.</p>	<p>* The Technical Committee meeting held on 05/05/22 decided to retender the work without changing tender conditions. The work was retendered on 11/05/22 (5th) with 20/05/22 as the last date of submission. One bid received &amp; the same is to be placed in the Technical Committee meeting scheduled on 03/06/22 for finalization.</p>	30.09.2022
48	STP at Shatabdhi Mandiram, Alappuzha (AMRUT) (PRS)	0.015	<p><b>Tendered but not awarded:</b></p> <p>* Work tendered 3 times so far.</p>	<p>* Two bids were received in the 2<sup>nd</sup> tender but EMD was not paid. The Technical Committee meeting held on 05/05/22 decided to retender. The work was retendered on 11/05/22 (3rd) with 21/05/22 as the last date of submission. Three bids received &amp; the same is to be placed in the Technical Committee meeting scheduled on 03/06/22 for finalization.</p>	31.12.2022
49	STP at Thottumadi Colony, Alappuzha (AMRUT)	0.05	<p><b>Tendered but not awarded:</b></p> <p>* Work tendered 4 times so far.</p>	<p>* Two bids received in the 2<sup>nd</sup> tender didn't qualify technically. Hence the Technical Committee meeting held on 05/05/22 decided to</p>	31.12.2022

				retender. The work was retendered on 11/05/22 (3rd) with 21/05/22 as the last date of submission. Three bids received but to be retendered due to error in bid documents. 4th tender was floated on 24/05/22 with 04/06/22 as last date of submission.	
50	STP at General Hospital, Thrissur (AMRUT) (PRS)	0.36	<p><b>To be retendered:</b></p> <ul style="list-style-type: none"> <li>* 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.</li> <li>* The Council held on 29/01/22 decided to terminate the Contract at the risk &amp; 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.</li> <li>* Estimate is being recast as per DSR-2018.</li> </ul>	<ul style="list-style-type: none"> <li>* The Consultant corrected the estimate as per the suggestions of the ULB's Engg. Wing &amp; submitted it to the ULB on 12/05/22. The same is under scrutiny at the ULB.</li> </ul>	31.12.2022
51	STP at District Hospital, Palakkad (AMRUT)	0.27	<p><b>Work started but stalled:</b></p> <ul style="list-style-type: none"> <li>* The Contractor requested vide letter dated 19/02/22 to relieve them from the work due to the delay in finalization of changes in design &amp; estimate.</li> <li>* The Core Committee held on 22/02/22 decided to retender the work at the risk &amp; cost of the Contractor &amp; not to accept the Contractor's request to return the SD. The same was informed to the Contractor on 19/03/22.</li> </ul>	<ul style="list-style-type: none"> <li>* Way forward to be decided by the Municipal Council.</li> <li>* The JillaPanchayath has started constructing an oxygen plant for the Dist. Hospital at the proposed location for the STP without informing the ULB. The matter is to be taken up by the ULB with the JillaPanchayath &amp; Dist. Hospital authorities.</li> </ul>	31.12.2022
52	Sewage Treatment Plant & associated network at Sundaram Colony, Palakkad (AMRUT)	0.8	<p><b>Selection notice issued but Agreement to be executed:</b></p> <ul style="list-style-type: none"> <li>* The Contractor is willing to sign the Agreement only if the fine is not imposed on them.</li> <li>* Way forward as well as decision regarding the O &amp; M cost to be borne are to be taken by the ULB.</li> </ul>	<ul style="list-style-type: none"> <li>* Way forward to be decided by the Municipal Council.</li> </ul>	31.12.2022
53	STP at Sewerage system in	7.0	<b>Work started but</b>		31.03.2023

	Zone A, Package A, Avikkal Thodu, Kozhikode (AMRUT) (PRS)		<p><b>stalled:</b></p> <p>* There is public protest against the construction of STP at the location &amp; the ULB is trying to resolve it.</p> <p>* Site clearance work was stopped by the public on 31/01/22.</p> <p>* Road cutting permission for sewer pipe laying is to be obtained from PWD. Decision on MoU signing is delayed due to public protest.</p>	<p>* A meeting was held with the District Collector on 06/05/22 &amp; as decided the Contractor was intimated on 09/05/22 to be ready for restarting the works. The Contractor replied on 10/05/22 to inform at least 6 days in advance. Canal near the STP location is being cleaned by the ULB and the STP works are expected to be restarted after the same is completed.</p>	
54	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.	DPR approved by KIIFB.	31.12.2022
55	STP at Kunnamkulam 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 <sup>th</sup> Board meeting of IMPACT Kerala held on 18/3/2022 decided to cancel the project. Intimated Municipality.	DPR approved by KIIFB	31.12.2022
56	STP at Vadakara Municipality, Kozhikkode (IMPACT KERALA Ltd) (PRS)	0.5 MLD Sewage TP 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.	-
57	STP at Cherthala Municipality ,	250KLD Septage TP	Technical Bid opened on 15.02.2022. 3 bids	DPR approved by RKI.	-

	Alappuzha (IMPACT KERALA Ltd)		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.		
58	STP at Wadakkanchery Municipality, Thrissur (IMPACT KERALA Ltd) (PRS)	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.	DPR to be prepared.	-
59	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.	-
60	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.	DPR approved by RKI.	-
61	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	-
62	STP at Athani market, Wadakkanchery Municipality, Trissur (PRS) (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	-
63	STP at Fish market, Payyannur Municipality, Kannur (PRS)	10 KLD STP	Technical committee verified the project. Suggested modification. DPR modification is going on	DPR modification is going on	-
64	STP at Athani, Wadakkanchery Municipality, Trissur (PRS)	350 KLD STP	Site identified. DPR under preparation	DPR under preparation	-



65	Sewerage system (with STP) in Zone A, Package B, Kothi, Kozhikode (AMRUT) (PRS)	6	<b>Work started but stalled:</b> * 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. * 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.	* 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 judgment is awaited by the ULB to decide the way forward.	31.03.2023
66	STP at Palayad Taliparamba municipality, Kannur	1	At DPR Stage	DPR returned to LSGI	31/12/2022
67	Waste water treatment plant at K R Narayanan memorial hall, Adat GP	0.0065	At DPR Stage	Under technical scrutiny	
68	ETP of 2 KLD at Konnamkulam Milk Production Cooperative Society	0.002	At DPR Stage	Under technical scrutiny	
69	200 KLD Wastewater treatment plant at Tata Trust Govt Hospital, Kasargod	0.2	At DPR Stage	Under technical scrutiny	
70	135 KLD Capacity decentralized sullage Treatment plant at Uppala Town Mangalpadi, Kasaragod	0.135	Tendering stage	Delayed due to land dispute. Now settled	
71	Sewage Treatment plant at Private Bus stand, Thodupuzha Thodupuzha Municipality, Idukki	0.030	Tendering stage	Tendering stage	
72	STP for Idukki district Hospital and District Ayurveda hospital, Thodupuzha	0.205	Tendering Stage		
73	The wastewater treatment plant at Kuttiyadi government	0.080	Tendering stage		

taluk hospital, Kozhikode				
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#### **IV. Details of Industrial Pollution:**

- Total registered industrial and non industrial units – 1,46,112
- 47554 consents issued from 2020 onwards- More industries are brought under consent purview
- 14422 effluent generating units (large and medium=298; Small scale- 11, 253) (as per dossier)
- 1918 sewage/sullage generating units (large and medium=1000; Small scale -918) (as per dossier)
- Primary Treatment facility provided in all 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: 168.7684
- Quantity of Hazardous Sludge generated from the Industries in TPA : 2584.572
- Number of industrial units having ETPs:
- 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)

**8 nos of CETPs are functional (Total Capacity – 8.145 MLD), 1 CETP having capacity 0.25 MLD not operational due to non availability of waste water.**

**Proposed CETPs – 3 nos. (Total Capacity- 5.5 MLD). 1 CETP having capacity 1 MLD is under construction ( 12 CETPs- capacity- 14.425 MLD)**

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

2	Sea Food Park (India) Ltd., Aroor, Alappuzha	0.3 MLD	0.3 MLD	<i>Operational(Parameters complied with standards stipulated)</i>
3	SEZ, Kakkanad, Cochin Special Economic Zone Ernakulam	1.6ML D	1.6MLD	<b>Working</b>
4	Kinfra Small Industries Park Nellad, Mazhuvanoor, Ernakulam – 686 721	0.4ML D	0.4MLD	<i>Operational (Parameters complied with standards stipulated)</i>
5	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>
6	Kinfra Techno Industrial Park, KakkancheryChelambara P.O, Malappuram	0.675 MLD	0.675MLD	<i>Operational(Parameters complied with standards stipulated)</i>
7	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>
8	KSIDC, Valiyavelicham, Kuthuparamba Kannur	0.25 MLD	-	<b>Not Operational due to non availability of waste water</b>
9	CETP, Chandiroor	1.5 MLD	-	<b>Proposed</b>
10	CETP, Food Park, Cherthala	2.5 MLD	-	<b>Proposed</b>
11	CSEZ, Kakkanad, Cochin Special Economic Zone Ernakulam	1 MLD	-	<b>Under Construction</b>
12	CETP, KINFRA, Elamannoor, Pathanamthitta	0.22 MLD	-	<b>Started operation ( Board has issued Consent to Operate on 25.02.2022</b>

#### **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 : **2557 TPD**
- Gap in Municipal Solid Waste Management: **915 TPD**

- 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)
- Report from Local Self Government Department and Annual report for the year 2020-21 is attached with **Annexure III-a**

### 5.1. Status of proposed Waste- to- Energy Plants

Status report of Waste to Energy Plant				
Sl. No.	Waste to Energyplant	Land Identified	Procured	Status
1	Kozhikode Njaliyanparambu	Kozhikode corporation	(Govt. land)12.67acre at Njaliyanparabu	<ul style="list-style-type: none"> <li>• Work awarded to Zonta Infratech Private Limited for the construction of Waste to Energy Plant.</li> <li>• 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.</li> <li>• Biomining of legacy waste is 50% complete. The total area for biomining is 1.8 acres.</li> <li>• All licenses from the corresponding departments were obtained for the construction of waste to energy plant. Work will be started only after monsoon.</li> </ul>
2	Kannur Chelora	Kannur Corporation	(Govt. Land) 9.7 acres at Chelora	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Tendering completed and DPR prepared by Blue planet. Consent application is yet to be received.</li> <li>• 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</li> <li>• 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</li> </ul>

				waste.
3.	Palakkad Kanjikode	Palakkad Municipality	Land taken over from Kerala State Electricity Board Ltd. in advance possession 15 acres at Kanjikode	<ul style="list-style-type: none"> <li>• Blue Planet Palakkad Waste Solutions Private Limited was formed to take up the development of the project.</li> <li>• Consent to establish was issued on 21-12-2021 to the project with a validity upto 30-11-2023.</li> <li>• 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</li> </ul>
4	Kollam Kureepuzha	Kollam Corporation	7.05 acres at Kureepuzha (Govt. land)	<ul style="list-style-type: none"> <li>• The SPV constituted for setting up of the Waste to Energy Plant of Kollam Corporation,</li> <li>• 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.</li> <li>• 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</li> <li>• Biomining of legacy waste is 50% complete.</li> </ul>
5	Ernakulam Brahmapuram	Kochi corporation	20 acres at Brahmapuram (Govt. land)	<ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> </ul>
6	Idukki Munnar	Idukki Municipality	2 acres of land at Munnar	<ul style="list-style-type: none"> <li>• Bio mining of legacy waste is going on and the authorities informed that it will be expected to complete before monsoon.</li> </ul>

				<ul style="list-style-type: none"> <li>• he committee observed that the Consortium is meeting the technical and financial eligibility Criteria.</li> <li>• he consortium made a detailed presentation of their technical plan before the Bid evaluation Committee.</li> <li>• LAC after detailed discussion resolved to accord sanction to proceed with the financial evaluation of the Bid</li> </ul>
7	Thrissur	Thrissur corporation	Identified land at Ollookkaravillage	<ul style="list-style-type: none"> <li>• Thrissur Corporation identified land at Ollookkara village in Thrissur district.</li> <li>• 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</li> <li>• Secretary, Thrissur Municipal Corporation to report the status of price negotiation done with the owners of the land identified.</li> </ul>
8	Malappuram	Malappuram Municipal Corporation	8.09 acres of land at Kurumbathoor village in Tirur Taluk	<ul style="list-style-type: none"> <li>• 8.09 acres of land identified by District Administration at Kurumbathur village. Tirur taluk for setting up of WtE plant. The land is under possession of KSIDC. Details of this are reported to be submitted to Government already by LR Deputy Collector. Not submitted any application to the Board.</li> </ul>
9.	Thiruvananthapuram	Thiruvananthapuram Corporation		<ul style="list-style-type: none"> <li>• Land identification</li> </ul>

## 5.2. Status Report of Bio mining in the State of Kerala

41 dumpsites were identified in different parts of the State. Bio-mining of legacy waste is at various stages in 41 dump sites ( 10 large dump sites and 31 other dumpsites). Legacy waste clearing has been completed at ten dump sites, namely 1. Erumakkuzhi, Thiruvananthapuram; 2. Palayam; 3. Punalur; 4. Kottarakkara; 5. Adoor; 6. Erumeli; 7. Vaikom; 8. Guruvayur, Thrissur 9. Pattambi; 10. Thathamangalam, Palakkad. The clearing is progressing at 1. Kozhikode; 2. Kunnankulam; 3. Chalakkudy; 4. Iringalakkuda; 5. Munnar; 6. Kureepuzha and 7. Varkala.

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 in an advanced stage at Kureepuzha, Kollam. The work is done by Zigma Global Environ Solutions Pvt Ltd. The process includes prestabilization 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 24-01-2022, 5045 Metric Tons of legacy waste has been processed; the segregated materials like RDF, recyclables, rejects, soil etc. from the plant are stored safely without harming the environment. After attaining the required quantity the materials will get transported to various facilities for further reuse/processing. On,24-01-2022 85 Tons of RDF has been send to cement factories. It is expected to complete the bio mining process by July 2022.The Gantt chart showing the stages of Bio mining process is given below. Kollam Corporation guarantees that we will provide all support needed for the completion of the project by following the orders from the Hon’ble National Green Tribunal.

### Gantt Chart

<b>Kollam Municipal Corporation</b>												
Name Of the Project : <b>Bio-Mining and Scientific Closure of Legacy wastes at the dumpsite in Kureepuzha, Kollam</b>							Project Cost Rs.in Cr : <b>11.3 Cr</b>					
Date Of Commencement : 02.08.2021							<b>9.07.2022</b>					
Legacy waste Qty - 1,04,906.88		<b>2021</b>			<b>2022</b>							
<b>Month</b>		Aug - Dec			JAN	FEB	MAR	APR	MAY	JUN	JUL	
<b>Monsoons</b>		LOA Date :28.06.2021 Work Order date: 12.07.2021 Agreement Signing Date : 10.07.2021 Date of Hand Over Site : 12.07.2021 Site Preparation and Erection Work Obtaining Power Supply Obtaining CPE, CPO from KPCB Pre Stabilisation										
<b>Cumulative Processed Waste</b>												
Required in M3 - 10,000						10,000						
Processed -												
Required in M3 - 28,000						18,000						
Processed -												
Required in M3 - 46,000						18,000						
Processed -												
Required in M3 - 64,000								18,000				
Processed -												
Required in M3 - 82,000										18,000		
Processed -												
Required in M3 - 1,00,000										18,000		
Processed -												
Required in M3 - 1,05,000												5,000
Processed -												

### **5.3.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. 700 TPD treated is processed at source as reported by local bodies. 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 (Annual report 2020-21).



### 5.3.1. Status of facility for treatment of Biodegradable waste

(Annual report 2020-21)

FACILITY	TYPE OF PLANT	NUMBER	DETAILS
Centralized plant	Windrow composting plants (large)	2	Ernakulam Kozhikode (100TPD)
	Windrow composting plant (Small)	12	Attingal(13TPD) North Paravur(3TPD) Chalakkudy (2TPD) Kodungallur (4TPD) Kothamangalam Kunnamkulam Guruvayoor (2TPD) Chittur-Thathamangalam (4TPD) Ottappalam (5TPD) Palakkad (4TPD) Thaliparambu Payyannur
Community Level	Vermicomposting plants (Small)	7	Attingal(0.25TPD) Thodupuzha North Paravur(1TPD) Chavakkad(1.5TPD) Manjeri(0.5TPD) Koothuparambu Mattannur(5 TPD)
	Aerobins	369	
	Biogas plants	287	
	Biobins in flats	500+	Thiruvananthapuram, Ernakulam, Trissur
	Material Collection Facility	685	
	Resource recovery facility	77	
Household Level	Pipe compost	1,31,559	Total-4,32,559
	Kitchen bin	79,146	
	Bio gas plant	21,550	
	Bio composter, Bio bins, pot bin	1,09,441	
	Ring compost	40,036	
	Bucket compost	6,903	
	Compost pit	43,924	
Institutional level	Biogas plants, aero bins, biobins		

### **5.3.2.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.

### **5.3.3. 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.

Rendering plant of capacity of about 40 TPD for treating the chicken waste in Kozhikode Corporation is in operation. Chicken stall owner is to enter into agreement with the rendering plant and such plants are given license from Corporation and Pollution Control Board. This prevents wayside dumping and pollution of water bodies due to chicken wastes. There are other rendering plants in large and small scales in other parts of Kerala. Six units in Palakkad, three units in Kasargode, two units in Ernakulam, Kollam each, one unit in Pathnamthitta, Thrissur, Kozhikode, Wayanad each fourteen units in Malappuram and two units in Kannur are working. 5 large rendering plants and 30 small rendering plants (>80TPD) are in the State. The large rendering plants are in Kozhikode, Ernakulam, Kannur, Palakkad and Thrissur.

### **5.3.4.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 **AnnexureIII-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 remodeled.

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.

#### **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 officers 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. Review meetings

were convened by Chief Secretary on 31.03.2022, 19.04.2022, 26.5.2022 & 21.6.2022.

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

Latest Monthly Progress Report and Analysis report of 21 Polluted River Stretches as per April 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 24<sup>th</sup> 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, SWECBs, 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 14<sup>th</sup> 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 12<sup>th</sup> plan period. In the 13<sup>th</sup> 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 km<sup>2</sup>. 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 considered for maintaining e- flow during lean season. Storage structures/diversion structures needs to proposed at certain locations to regulate thee-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 status , 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 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 6 rivers, Kadalundi, Anjarakandy, Meenachil, Manimala, Periyar & Bharathapuzha has been completed. Direction has been given to complete the e-flow calculation of remaining rivers without dam by 30.04.2022.*

#### **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 13<sup>th</sup> 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 Vanimelriverbank
- 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.**

**MEMBER SECRETARY**

