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BEFORE THE HON'BLE NATIONAL GREEN TRIUNAL

PRINCIPAL BENCH NEW DELHI

IN THE MATTER:

O.A.NO. 606/2018

COMPLIANCE OF MUNCIPAL SOLID WASTE MANAGEMENT RULES, 2016 (STATE OF KERALA)

QUARTERLY REPORT ON THE COMPLIANCE BY THE (STATE OF KERACA)

INDEX

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List of Acronyms

Acronym	Expansion
AMC	Annual Maintenance Contract
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy
BMWM	Bio-Medical Waste Management Rules
CAAQMS	Continuous Ambient Air Quality Monitoring Station
CBMWTF	Common Biomedical Waste Treatment Facility
CC	Closed Circuit
CEPI	Comprehensive Environmental Pollution Index
CETP	Common Effluent Treatment Plant
CPA	Critically Polluted Area
CPCB	Central Pollution Control Board
D2D	Door to Door
DG	Diesel Generator
EPR	Extended Producer Responsibility
ETP	Effluent Treatment Plant
GKA	Greater Kochi Area
GO	Government Order
HCI	Health Care Institutions
HKS	Haritha Karma Sena
IEC	Information Education and Communication
IMAGE	Indian Medical Association Goes Eco-friendly
KIFB	Kerala Infrastructure Investment Fund Board
KINFRA	Kerala Industrial Infrastructure Development Corporation
KSIDC	Kerala State Industrial Development Corporation
KWA	Kerala Water Authority
KWIL	Kerala Waterways and Infrastructure Development Ltd
MCF	Material Collection Facilities
MGNREGA	Mahatma Gandhi National Rurai Employment Guarantee Act, 2005
MLD	Million litre Per Day
MoEF&CC	Union Ministry of Environment, Forests and Climate Change
MRF	Material Recovery Facility
MT	Metric Tons
NAMP	National Ambient Air Quality Monitoring Programme
NCAP	National Clean Air Program
NGT	National Green Tribunal
NWMP	National Water Quality Monitoring Programme
OA	Original Application
PET	Polyethylene Terephthalate

PPP	Public-Private Partnership
RRC	Resource Recovery Centre
RRF	Resource Recovery Facility
SAMP	State Ambient Air Quality Monitoring Programme
SLAC	State Level Advisory Committee
STP	Sewage Treatment Plant
SWM 2016	Solid Waste Management Rules, 2016
SWMP	State Water Monitoring Programme
TPA	Tonnes per Annum
TPD	Tonnes Per Day
TVM	Thiruvananthapuram Municipal Corporation
VGF	Viability Gap Funding

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1. The Context and Background

It is estimated that 62 million tonnes of waste is generated annually in India at present, out of which 5.6 million tonnes is plastic waste, 0.17 million tonnes is biomedical waste, hazardous waste generation is 7.90 million tonnes per annum and 15 lakh tonnes is e-waste. Only about 75-80% of the municipal waste gets collected and only 22-28% of this waste is processed and treated[1]. Establishing effective systems and processes for scientific disposal and management of these wastes is imperative for avoiding health and environmental implications. In 2016, the Union Ministry of Environment, Forests and Climate Change (MoEF&CC) released the Solid Waste Management (SWM) Rules, 2016; these rules replaced the Municipal Solid Wastes (Management and Handling) Rules, 2000 which had been in place for 16 years. The highlights of the SWM 2016 are[2]:-

- Waste segregation at source is mandatory. Waste generators have to segregate waste into three streams - Organic or Biodegradable waste, Dry waste (Plastic, Paper, Metal, Wood, etc.) and Domestic Hazardous waste (diapers, napkins, mosquito repellants, cleaning agents etc.). Further, bulk waste generators such as hotels, hospitals etc. are expected to treat organic waste either onsite or by collaborating with the urban local body.

- Municipalities and urban local bodies have been directed to include informal waste pickers and rag pickers into their waste management process. Thus, this is the first time that national policy has acknowledged and included the informal sector into the waste management process.

- FMCG product manufacturers that use non-biodegradable packaging for their products must put in place a system to collect the packaging waste generated due to their production.

- Urban local bodies have been given a provision to charge bulk generators a user fee to collect and process their waste, additionally spot fines may be levied on user's burning garbage or throwing it in a public place.

- No non-recyclable waste having a calorific value of 1,500 Kcal/kg or more should be disposed in the landfills. It should either be utilized for generating energy or can be used for preparing refuse derived fuel or it can be used for co-processing in cement or thermal power plants.

It is estimated that Kerala generates 3.7 million tonnes of municipal solid wastes annually[3]. 45% is generated by the Municipalities, 41% by the GPs, and 14% by the City Corporations. 77% of the

[1] Remarks made by the Union Minister of State for Environment, Forests and Climate Change in September 2018
[2] SWM Rules, 2016
[3] Sectoral status study on solid waste management sponsored by the Water and Sanitation Project - South Asia (World Bank)

wastes are biodegradable, 18% are non-biodegradable, and 5% are inerts[4].To facilitate effective solutions for scientific management of wastes and to reiterate its commitment towards realizing the goals of the SWM Rules 2016, the Government of Kerala notified the State Policy on Solid Waste Management in 2016, with an overall goal of transformation of Kerala into a garbage-free and environmentally healthy State. The key strategies prescribed were:-

- Mandatory segregation of waste at source, based on primary characteristics.
- Aerobic or anaerobic composting of biodegradable waste at source (household and institutions) as far as possible.
- Ensure decentralized community facilities for biodegradable waste that overflows from source'.
- Establish door to door collection of non-biodegradable waste.
- Establish procedure for handling domestic hazardous waste and promote its implementation.
- Promote usage of storage bins for dumping wet and dry waste by all vendors and institutions.
- Enforce captive waste management systems for the bulk waste generators.
- Promote modern centralized waste processing facilities in major cities using state-of-the-art technologies.
- Make use of the enabling environment created under the Haritha Keralam Mission to integrate the use of treated waste products, enhance organic agriculture and upkeep of fragile ecosystems.
- Develop regional sanitary landfill facility to dispose of ultimately unusable materials.
- Undertake appropriate IEC campaigns.
- Implement appropriate capacity building programmes for stakeholders.
- Network with academic and research & development institutions for upgrading of technologies and application protocols.

The NGT Order O.A. No. 606/2018 highlighted serious deficiencies in the implementation of waste management initiatives, as reported by various States in their annual reports[5]. The NGT conducted discussions with the relevant officials of the States and UTs on the following matters:- (i) Preparation of State-wise Action Plan with timelines and budgetary support/provision for management of MSW, (ii) Coverage of each city/town/urban local body under the said Plan and individual Action Plan with timelines and budgetary provisions, (iii) Time fixed to completely comply with the provisions of the Rules, 2016, and (iv) Main constraints leading to non-compliance of Rules, 2016. During the discussions by NGT, it was realized that, with few exceptions, most of the States and Union Territories, including Kerala, are lagging behind in compliance of the Rules, 2016. In many cases, Action plans have yet not been prepared even after more than 2 years after the Rules, 2016 have been in operation and in spite of binding directions in the Judgment of the Tribunal vide order dated 22.12.2016.

[4] Presentation of the Local Self Government Department, Government of Kerala (http://sanitation.kerala.gov.in/wp-content/uploads/2019/01/NGT-Regional-Monitoring-Committee-review-kochi-25.01.19.pdf

[5] http://www.greentribunal.gov.in

The actions taken by the Government of Kerala to abide by the Order dated 16-1-2019 in O.A. 606/2018(para.40), and order in O.A. 593/2017 dated 19-2-2019 were submitted before the NGT on 25-4-2019.

The Hon'ble National Green Tribunal issued directions on 25-4-2019 in O.A. No. 606/2018 to the State on waste management. The directions include:

1. At least three cities and three towns in the State and at least three villages in every district of the State may be identified within two weeks and earnest and demonstratable endeavor be made to make them fully compliance in respect of environmental norms within six months. Remaining State may be made fully compliant within one year

2. A quarterly report is to be furnished by the Chief Secretary, every three months. First such report shall be furnished by July 30, 2019. The Chief Secretary may personally monitor the progress at least once in a month, with all the District Magistrates.

3. The District Magistrates may monitor the status of compliance of environmental norms, at least once in two weeks.

The first quarterly report summarizes the actions taken by the Government of Kerala to abide by the Order dated 16-1-2019 in O.A. 606/2018(para.40), order in O.A. 593/2017 dated 19-2-2019 and order dated 25-4-2019 in O.A. 606/2018. It outlines the status of different interventions, the timelines set for meeting the targets, and the estimated budget.

2.The Status of Implementation of Interventions

A snapshot of the status of interventions is provided in the table given below, while the detailed status is outlined in the subsequent sections.

The colour coding for the cases is presented below:

Colour	Status
Green	Complete
Yellow	In Progress
Red	Yet to be initiated
Blue	Not Applicable to State Context

Sl. No.	Cases		Order	Status	Page No.
2.1.	Order dated 25-4-2019 of the Hon'ble NGT in O.A.No.606/2018 on waste management	Para 48 (a)	At least three cities and three towns in the State and at least three Villages in every District of the State may be identified within two weeks and earnest and demonstrable endeavor be made to make them fully compliant in respect of environmental norms within six months. Remaining State may be made fully compliant within one year.	The State has identified three cities, three towns, and three villages in each district (42 villages). Earnest and demonstrable endeavor has been taken to bring those model city/town/villages fully compliant in respect of environmental norms.	11
2.2	Order dated 16-1-2019 in O.A.No.606/2018 on waste management	Para 40 (a)	Status of compliance of Solid Waste Management Rules, 2016 in the respective areas.	The State is ensuring compliance to Rules 11, 22, 23 and 24. **The State requires two years for achieving full compliance.**	12
2.3	Order dated 16-1-2019 in O.A.No.606/2018 on waste management		Status of compliance of Plastic Waste Management Rules, 2016 in the respective areas.	The State has ensured compliance to Rules 16 and 17, and has set up monitoring committee and regulatory mechanisms. **The State requires one year for achieving full compliance.**	25
2.4	Order dated 16-1-2019 in		Status of compliance of Bio-Medical Waste Management	The State has complied with Rule 13. **The**	29

	O.A.No.606/2018 on waste management		Rules, 2016 in the respective areas.	**State requires two years to complete 3 nos common Biomedical Waste Treatment Plants.**	
2.5	Order dated 25-4-2019 of the Hon'ble NGT in O.A.No.606/2018 on waste management	Para 48 (a)	Status of compliance of E-Waste Management Rules, 2016 in the respective areas	The State has complied with Rule 18, and **is setting up a waste processing unit which will become operational in 2020.**	34
2.6	Order dated 25-4-2019 of the Hon'ble NGT in O.A.No.606/2018 on waste management		Status of compliance of Hazardous Management Rules, 2016 in the respective areas	The State has complied with Rule 20(3).	35
2.7	Order dated 25-4-2019 of the Hon'ble NGT in O.A.No.606/2018 on waste management		Status of Batteries Waste Management and Handling Rules, 2001	The State has complied with Rule.	36
2.8	Order dated 16-1-2019 in O.A.No.606/2018 on waste management	Para 40 (b)	Status of functioning of Committees constituted by this order.	The State has complied with the order, and formed a State Level Monitoring Committee. Field visits have been undertaken.	37

2.9.	Order dated 16-1-2019 in O.A.No.606/2018 Order dated 20-9-2018 and 8-4-2019 in O.A.No.673/2018 on polluted stretches. Order dated 25-1-2019 in O.A.No.581/2018 on river Karamana. Order dated 25-1-2019 in O.A.No.582/2018 on river Tirur-Ponnani.		Item (c) of para 40 of the order dated 16-1-2019 in O.A.No.606/2018 on polluted stretches. As per order dated 20-9-2018 in O.A.No.673/2018 action plan is to be submitted for 21 polluted stretches As per order dated 25-1-2019 in O.A.No.581/2018 directing the State to take remedial action on action plan. As per order dated 8-4-2019 in O.A.No.673/2018 Karamana action plan was approved. As per order dated 25-1-2019 in O.A.No.582/2018 directing the State to prepare the action plan of Tirur-Ponnani within one month.	The implementation of Karamana river action plan has been reviewed by RRC. Action plans for 20 Priority IV & V Polluted stretches were submitted in December 2018. Macroplans for 13 stretches were submitted in June 2019. The remaining exempted category is an advanced state. **The State requires three years for compliance.**	37
2.10.	Order dated 16-1-2019 in O.A.No.606/2018	Para 40 (d)	All the states with non-attainment cities must prepare appropriate action plans within 2 months aimed at bringing the standards of air quality within the prescribed norms within 6 months from the date of finalization of action plans.	None of the cities in Kerala is included in the Non-attainment cities. However, the action plan to expand the ambient air-quality monitoring network was submitted to CPCB. Continuous Real-Time **Monitoring has been initiated in 5 locations.**	38
	Order dated 8-10-2018-Non-attainment cities (OA No.681/2018)	Para 15 (i)			
2.11.	Order dated 16-1-2019 in O.A.No.606/2018	Para 40 (e)	As per order dated 13-12-2018 in O.A.No.1038/2018 SPCB is to finalize the time bound action plan with regard to identification of industrial clusters in accordance with the revised norms laid down by the CPCB. To restore environmental qualities within norms.	Greater Kochi was identified as critically polluted in 2009. The score was again calculated in 2011 and the Moratorium imposed on developmental activities in the Greater Kochi Area as CPA was lifted vide office	45

	Order dated 13-12-2018 in O.A.No.1038/2018			memorandum No. J-11013/5/2010-1A II (I) dated 23.05.2011 by Ministry of Environment and Forest.	
2.12.	Order dated 16-1-2019 in O.A.No.606/2018 Order dated 4-9-2018 in O.A.No.173/2018 by Sudarsan Das Vs. State of West Bengal and others	Para 40 (f)	Item (f) of para 40 of order dated 16-1-2019 in O.A. No.606/2018	Not Applicable	45
2.13.	Order dated 16-1-2019 in O.A.No.606/2018	Para 40 (g)	Total amount collected from erring industries on the basis of "Polluter Pays Principle" "Precautionary Principle and details of utilization of funds collected.	15 Industries have been fined, INR 7.25 Crores have been collected.	46
2.14.	Order dated 16-1-2019 in O.A.No.606/2018	Para 40 (h)	Identification and development of Model Cities and Towns in the State in the first phase which can be replicated late for other cities and towns of the State	As in Sl. No. 2.1 above	47
2.15.	Order dated 16-1-2019 in O.A.No.606/2018 Order dated 19-2-2019 in O.A.No.593/2017		As per order dated 19-2-2019 in O.A.No.593/2017, Chief Secretaries may specially look into the subject of setting up and proper functioning of STPs/CETPs/ETPs in their respective jurisdiction.	Non-functioning ETPs have been identified and further action has been initiated. **The reports for the term up to March 2019 have been submitted.**	47

2.1. Status of compliance of order dated 25-4-2019 of the Hon'ble NGT in O.A.No. 606/2018 on model city/town/village

- The Government of Kerala vide G.O. (Rt.) No. 45/2019/Envt. dated 31-5-2019 selected three model cities, three model towns and 42 model villages (3 each in 14 districts) in the State. The model cities are Thiruvananthapuram, Thrissur and Kozhikode and three model towns are Attingal, Punalur and Kunnamkulam. The order is submitted within **Annexure 1**.
- A workshop was convened on 1st June 2019 by the Kerala State Pollution Control Board in association with Suchitwa Mission and Clean Kerala Company for giving training to President /Secretary/ Health officer/ Health Standing Committee of Model city to make the local bodies fully complied with environmental norms. The presentations were made on the orders of the Hon'ble NGT and on environmental rules.155 representatives participated in the workshop. Statutory requirement on authorization and annual report, specific action to be taken on solid and liquid waste management, and action plan submission have been brought to their notice. Minutes of the workshop is submitted within **Annexure 2.**
- The guidelines on the "Criteria for siting guidelines for solid waste processing facilities" and "Sullage and sewage treatment options for model panchayath and municipalities" have been issued to the model cities/towns/villages for compliance. Guidelines are submitted within Annexure **3 & 4**.
- National seminar on extended producer responsibility conducted on 12th June 2019 and the programme was inaugurated by the Hon'ble Chief Minister of Kerala and presided over by the Hon'ble Mayor of Thiruvananthapuram city, one of the Model cities. The Chief Secretary, Additional Chief Secretary, Local Self Government Department and the Principal Secretary, Environment Department addressed the gathering. 281 different stakeholders including representatives from model/city/town attended the meeting. The sessions include EPR Global Experience, Success stories on EPR implementation in various States, Sector wise EPR Implementation – Electronic, expired medicines, Sector wise EPR Implementation –Plastic, mattress and concluding session. MOEFCC is preparing draft Guidelines for EPR implementation. It is understood that a credit scheme is under consideration. The main outcome of the meeting is Consent fee under Air & Water Act calculation is proposed to include costs for collection and disposal of packaging waste. Proceedings of the workshop is submitted within **Annexure 5**.
- A technical presentation by Paques Environmental Technology India Pvt. Ltd on Biopaq® UBOX - an advanced technology for decentralized sewage treatment in smart cities/remote communities for all key stakeholders in the Kerala Government/Bureaucracy/Implementers/End User Departments was held on 26.06.2019 Suchitwa Mission, Kerala Water Authority, DHS, Secretary, Attingal Municipality and senior officials of Kerala State Pollution Control Board attended the meeting. Communication is submitted within **Annexure 6**.
- A mobile application "ENVICLEAN" was developed for surveying industrial units & solid waste treatment facilities in the local bodies. The model cities/town/villages were requested to conduct

the survey using this application.

- In the three model cities of Thiruvananthapuram, Thrissur and Kozhikode, lies the polluted stretches of River Karamana, River Puzhakkal and River Kallai respectively. The action plan for the Karamana river was approved by the NGT. The progress on the implementation of the Action plan has been reviewed by the River Rejuvenation Committee on 6-6-2019. Minutes of the review is submitted as **Annexure 7**. The action plans of polluted stretches of Puzhakkal river and Kallai river were submitted to the NGT.
- A meeting was conducted on 1-7-2019 with the Chief Environmental Engineers and Environmental Engineers of the Board on seriousness of the order on full compliance of environmental norms. Instructions were given for inventorisation, submission of annual reports, progress reports and compliance status reports promptly by the Regional and District Offices. It was also decided to engage staff for the purpose. Minutes of the meeting is submitted as **Annexure 8**. A review of the progress was done through video conferencing on 10-7-2019.

2.2 Status of implementation of Solid Waste Management Rules, 2016

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. 3831.6 TPD of solid waste is generated from the cities and towns.

The Government of Kerala constituted a State Level Advisory Committee on Waste Management chaired by the Chief Secretary; this Committee has conducted 27 meetings, till date, for monitoring solid waste management on monthly basis.

2.2.1 Compliance of the Rules

- **Submission of annual report for the year 2018-19 (Rule 24) -** Annual report for the year 2018-19 has been submitted to the Central Pollution Control Board.
- **State Level Advisory Body (SLAB)(Rule 23) -** SLAB was constituted in the State vide order G.O. (RT). No.140/2018/LSGD dtd 16/01/2018.
- **Compliance of Rule 22 -** The detailed action taken report furnished by the Local Self Government Department was submitted as Annexure 3.1 in the first report.

2.2.2 Activities and Action Taken

(a) Activity - Identification of suitable **sites for setting up soli**d waste processing facilities

Action taken - Government identified the following sites in all census towns in Kerala for setting up solid waste processing facilities.

Sl. No	Corporation/ Municipality	Identified site	Area (acre)	Status	Completion date
a)	Kollam	Kureepuzha (Govt. land)	7.05	• Retendered the waste to energy project through e-tendering portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project. • SLAC directed to clear the site and to do the biomining.	2 years from the date of obtaining environmental clearance.
b)	Ernakulam	Brahmapuram (Govt. land)	20	• Work awarded to M/s G.J Eco Power Pvt. Ltd. • Public hearing held on 10-6-2019 • Draft EIA report is modified based on the minutes of the public hearing and will be submitted to SEIAA soon. • KSREC has accorded sanction and the power purchase agreement between G.J. Eco Power Pvt Ltd and KSEB was executed on 19-6-2019.	2 years from the date of obtaining environmental clearance.
c)	Palakkad	Kanjikode (Land taken over from Kerala State Electricity Board Ltd. in advance possession)	15	• Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender	2 years from the date of obtaining environmental clearance.

				documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project	
Sl. No	**Corporation/ Municipality**	**Identified site**	**Area (acre)**	**Status**	**Completion date**
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	• After the completion of tendering process, the work awarded to Zonta Infratech Private Limited. • Letter of intent issued to Zonta Infratech Pvt Limited on 27-5-2019 as per the tender procedure detailed in the RFP. • M/s. Zonta Infratech Pvt Limited communicated the acceptance of LOI vide their letter dated 10-6-2019. • M/s.Zonta Infratech Pvt Limited filed documents before Registrar of Companies (RoC) and the RoC allotted the name "Zonta Malabar Waste Management Pvt Limited" to the SPV, which is a fully owned subsidiary of the lead bidder, Zonta Infratech Pvt Limited with an initial share capital of Rs. 10 crores and it is expected that SPV could be incorporated before 10-7-2019.	2 years from the date of obtaining environmental clearance.
e)	Kannur	Chelora (Govt. Land)	9.7	• Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. •Further follow-ups were being done to evince their interest in the project	2 years from the date of obtaining environmental clearance.

f)	Wayanad	Sulthan Bathery (Govt. Land)	0.5	Construction of the plant is going on.	Expected to be commissioned by August 2019
g)	Thiruvanantha puram	Peringamala (Govt. Land)	15	Alternate land is being identified for the solid waste processing plant. The feasibility for setting up the plant at Valiyathura is being explored.	2 years from the date of obtaining environmental clearance.
h)	Thrissur	Laloor (Govt. Land)	15	Stakeholder meetings have been conducted. Further action to tender the work will be initiated soon.	2 years from the date of obtaining environmental clearance.
i)	Malappuram	Panakkad (Land in possession with Kerala State Industrial Development Corporation)	10	Further action is being taken	2 years from the date of obtaining environmental clearance.
j)	Idukki	Munnar (Land handed over by M/s Kannan Devan Hills Plantations Pvt. Ltd)	2	• Decided to award the work to M/s AG Dauters Waste Processing Pvt. Ltd. • Decision taken by State Level Advisory Committee to issue final notice to M/s AG Dauters Waste Processing Pvt. Ltd to take action as per the agreement executed and to submit applications with sufficient details to the concerned departments and also if they fails to adhere to directions and statutory provisions within thirty days,action is to be taken to terminate concession agreement and tender the project to find a private partner for setting up processing plant. • Sanction was given to Munnar Grama Panchayath to clear the legacy waste from the site.	2 years from the date of obtaining environmental clearance.

(b) Activity - Identification of suitable sites for setting up common regional sanitary landfill facilities for suitable clusters of local authorities under 0.5 million population and for setting up common regional sanitary landfill facilities or stand-alone sanitary landfill facilities by all local authorities having a population of 0.5 million or more.

(c)Action Taken - 6 Regional Sanitary landfill sites were identified by Suchitwa Mission based on the criteria for locating landfills, using satellite imagery.

- For Palakkad, detailed study was conducted to establish a pilot sanitary landfill but the Committee appointed by the District Collector found the land to be unsuitable.
- At Thiruvananthapuram and Kollam, work was started at Vilappilsala and Kureepuzha but had to be abandoned due to public protest.

(d) Activity - Procurement of suitable sites for setting up solid waste processing facility and sanitary landfill facilities

Action Taken - Government has identified appropriate land for establishing centralized Waste to Energy Plants in Kannur, Kozhikode, Malappuram, Palakkad, Thrissur, Kollam and Thiruvananthapuram and permitted the handing over of the land for the purpose vide G. O (Ms) no.82/2018/LSGD dated 11/06/18.These projects are planned in Design, Build, Finance, Operate and Transfer (DBFOT) basis through Public-Private Partnership (PPP) mode. In addition, suitable land has been identified and handed over for establishing Centralized Waste Management Plant in Ernakulam,Idukki and Wayanad districts. Efforts to establish sanitary landfills in Thiruvananthapuram and Kollam City Corporations, respectively at Vilappilsala and Kureeppuzha, were abandoned due to public protest and judicial intervention. The Perumbavoor Municipality purchased 158 cents of land in Corporation Ward 26 at Parappuram for similar objectives.

(e) Activity - Enforcing waste generators to practice segregation of bio degradable, recyclable, combustible, sanitary waste domestic hazardous and inert solid wastes at source.

Action Taken –

- Overflow waste management system operational in the State; thus the priority is to treat the biodegradable waste at the source itself.
- About 4 lakh households, 30,000 institutions and 2000 community locations have facilities for treating biodegradable waste and, thus, practice segregation of waste at source
- 62 Urban Local Governments and 484 Grama Panchayats implement door-to-door collection of segregated non-biodegradable waste through Haritha Karma Sena*.
- The details submitted by the LSGD are given in Annexure 3.1. The summary is given below:
    - 79.6% of Urban local bodies have source level composting facilities for the processing of biodegradable waste at household, institutional and at community level.
    - 82.8% of Urban local bodies have door to door collection of non-biodegradable waste
    - 54% of Urban local bodies where captive waste management system is enforced for the

bulk waste generator.

- 66.7% of Urban local bodies have formed, trained and started functioning of Haritha Karma Sena.
- 66.7% of Urban local bodies have Material Collection Facility is available.
- 57%of local bodies have Resource Recovery Facility is available. 121 RRFs are available. Bailing machine and shredding machines are available in RRF.
- The Government company, Clean Kerala Company supplied 162 T to PWD and 211T to LSGI so far for road tarring.

*Haritha Karma Sena (HKS), an enterprise group formed through the State Poverty Eradication Mission (Kudumbasree). 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 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 for 6 months so as to make up the shortage of user fee collection in the initial stages such that each member of the group get atleast minimum wage decided by the government.
- The VGF support is extended for 6 more months at half the rate of that provided during the first six months in order to ensure that the HKS operation is sustainable in financial terms. In order to improve the sustainability of HKS, actions are also being taken to include more value-added household level services in the functioning of HKS.
- The HKS is to be trained and their operation ensured through a technical support mechanism namely Haritha Sahaya Sthapanam (HSS),a Green Support Organization mostly drawn from non-governmental organizations having experience in waste management services.
- There are 36 HSS deployed in the State at the ULB and Block Panchayat level. All the 941 Gram Panchayats (GP) have taken actions to form HKS. HKS is now functional in 484 GPs for door to door collection of segregated non-biodegradable waste.

(f) Activity - Ensure door-to-door collection of segregated waste and its transportation in covered vehicles to processing or disposal facilities

Action Taken

- Door-to-door collection system is widely operational for biodegradable waste. D2D will be implemented* in wards having decentralized organic waste composting facilities, and will be undertaken by the Haritha Karma Sena (HKS)
- 82.8% of Urban local bodies have door to door collection of non-biodegradable waste*
- Full D2D is to be implemented on commissioning of Waste to Energy(WtE) plants in all 7 census towns in Kerala*.

(g) Activity - Ensure separate storage, collection and transportation of construction and demolition wastes

Action Taken

- Local Self Government Institutions have received directions to identify suitable sites for the storage of Construction & Demolishing Waste.
- There is no treatment facility in the State for processing C&D waste at present.
- All the projects that generate construction and demolition waste and that require environmental clearance are directed to store the C&D waste separately and reuse or recycle it during the construction phase.
- Government proposes to establish a C&D waste management facility for which fund is earmarked under the budget provision for 2019-20.
- It is proposed to establish the facility in collaboration with major stakeholders for management of construction and demolition waste such as building materials, debris, rubbles resulting from construction, re-modelling, repair and demolition of any civil structure of individual or organisation or authority.
- Preliminary discussions have been held with Swachch Bharat Mission (Urban) in the Ministry of Housing and Urban Affairs, Govt. of India for technical support.

(h) Activity - Setting up solid waste processing facilities by all local bodies having 1 Lakh or more population

Action Taken - Government has accorded sanction for establishing Waste to Energy plants in the following 8 cites identified on cluster basis of local bodies having 1 Lakh or more population:

Sl. No	Corporation/ Municipality	Identified site	Area in acre	Status	Completion date
a)	Kollam	Kureepuzha (Govt land)	7.05	• Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE	2 years from the date of obtaining environmental clearance

				plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project. • SLAC directed to clear the site and to do the bio mining.	
b)	Ernakulam	Brahmapuram (Govt land)	20	• Work awarded to M/s G.J Eco Power Pvt. Ltd. Public hearing held on 10-6-2019. • Draft EIA report is modified based on the minutes of the public hearing and will be submitted to SEIAA soon. • KSREC has accorded sanction and the power purchase agreement between G.J. Eco Power Pvt Ltd and KSEB was executed on 19-6-2019.	2 years from the date of obtaining environmental clearance
c)	Palakkad	Kanjikode (Land taken over form Kerala StateElectricity Borad Ltd. in advance possession)	15	• Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Prebid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to	2 years from the date of obtaining environmental clearance

				evince their interest in the project	
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	• After the completion of tendering process, the work awarded to Zonta Infratech Private Limited. • Letter of intent issued to Zonta Infratech Pvt Limited on 27-5-2019 as per the tender procedure detailed in the RFP. • M/s. Zonta Infratech Pvt Limited communicated the acceptance of LOI vide their letter dated 10-6-2019. • M/s.Zonta Infratech Pvt Limited filed documents before Registrar of Companies(RoC) and the RoC allotted the name "Zonta Malabar Waste Management Pvt Limited" to the SPV, which is a fully owned subsidiary of the lead bidder, Zonta Infratech Pvt Limited with an initial share capital of Rs. 10 crores and it is expected that SPV could be incorporated before 10-7-2019.	2 years from the date of obtaining environmental clearance
e)	Kannur	Chelora (Govt. Land)	9.7	• Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Prebid meeting held on 21-6-2019 and representatives from 15 firms attended the meeting. • Details of successful	2 years from the date of obtaining environmental clearance

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				bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project	
f)	Thiruvananthapuram	Peringamala (Govt. Land)	15	Alternate land is being identified for the solid waste processing plant. The feasibility for setting up the plant at Valiyathura is being explored.	2 years from the date of obtaining
g)	Thrissur	Laloor (Govt. Land)	15	Stakeholder meetings have been conducted. Further action to tender the work will be initiated soon.	2 years from the date of obtaining environmental clearance
h)	Malappuram	Panakkad (Land in possession with Kerala State Industrial Development Corporation)	10	Further action is being taken	2 years from the date of obtaining environmental clearance

(i) Activity – Setting up solid waste processing facilities by local bodies and census towns below 100,000 population.

Action Taken

Local Body	Nature of Plant	Status/Time of completion
SulthanBathery Municipality in Wayanad District	5 TPD modern bio gas plant	Construction of plant is going on. Expected to be commissioned by August 2019.
Munnar and Devikulam Grama Panchayat in Idukki District	Modern Waste to Energy Plant	• Decided to award the work to M/s AG Dauters Waste Processing Pvt. Ltd. • Decision taken by State Level Advisory Committee to issue final notice to M/s AG Dauters Waste Processing Pvt. Ltd to take action as per the agreement executed and to submit applications with sufficient details to the concerned departments and also if they fails to adher to directions and statutory provisions within thirty days,actin is to be taken to terminate concession agreement and tender the project to find a private partner for setting up processing plant. • Sanction was given to Munnar Grama Panchayath to clear the legacy waste from the

		site.
Perinthalmanna Municipality.	Modern Waste to Energy bio gas plant of two tone/day capacity.	Work awarded to GPS Renewables, Bangalore.Expected to be completed within 12 monthsfrom April, 2019.

(j) Activity – Setting up common or stand-alone sanitary landfills by or for all local bodies having 0.5 million or more population for the disposal of only such residual wastes from the processing facilities as well as untreatable inert wastes as permitted under the Rules.

Action Taken - Even though suitable land had been identified to establish sanitary landfill in Urban Local Bodies having 0.5 million or more population such as Thiruvananthapuram and Kollam City Corporations respectively at Vilappilsala and Kureeppuzha, plans were abandoned due to public protest and judicial intervention.

(k) Activity- Setting up common or regional sanitary landfills by all local bodies and census towns under 0.5 million population for the disposal of permitted waste under the rules.

Action Taken

- A study has been conducted with the support of the World Bank and it has been recommended that there is a requirement of 6 regional sanitary landfill facility in the State.
- Based on the criteria for locating sanitary landfill sites, the study proposed 6 probable sites, one each for Kasaragod and Kannur District, Kozhikode and Wayanad district, Malappuram and Palakkad district, Thrissur and Ernakulum district, Kottayam, Idukki and Pathanamthitta districtand Alappuzha, Kollam and Thiruvananthapuram districts.
- A Committee appointed by the District Collector had conducted a detailed study in Palakkad district to establish a pilot sanitary landfill.
- The findings of the Committee are not favorable and hence an alternate site will be found.

(l) Activity – Bio-remediation or capping of old and abandoned dump sites

Action Taken:

Sl. No	Census town	Site	Status	Completion date
a)	Thiruvananthapuram	Vilapilsala	Capped	Capped
b)	Kollam	Kureepuzha	Tendering	Expected to be completed within the next 6 months
c)	Ernakulum	Brahmapuram	Commenced	Expected to be completed within the next 6 months
d)	Thrissur	Laloor	The site is proposed for the setting up of Waste to Energy Plant.	

e)	Kozhikode	Njeliyamparamab	Since the site is proposed for the setting up of Waste to Energy Plant, capping of waste at the site is not practicable. Action has been initiated to store the accumulated waste to another suitable place till commissioning of Waste to Energy Plant.	Expected to be completed within the next 6 months
f)	Kannur	Chelora	The site is proposed for the setting up of Waste to Energy Plant.	

2.2.2 Compliance to Rule 11 (Secretary Urban Development)

- State level policy for the State was published and the action is taken on the basis of the policy.
- State level strategy of solid waste management has been developed.

2.2.3 Proposed Kerala Waste Management Authority

The Government of Kerala has amended the Panchayath Raj Act to take over the powers of local bodies in waste disposal and is working on the proposal to set up Kerala Waste Management Authority in the State especially for the setting up of modern solid waste treatment plants, rendering plant, slaughter house, sanitary landfills, and common biomedical waste treatment facilities. This Authority shall take care of the wastes that are not presently handled by the local bodies and the Kerala Water Authority (KWA). Real-time monitoring of water quality of water bodies shall be made available to the authority.

2.2.4 Project Green Grass in Forest Area

Following the NGT Order in OA No. 585/2018, 126 waste dumping sites in forest areas were mapped in the State (Project "Green Grass"). Rs. 51 lakh was the project outlay and waste from Thalekkod to Valara in NH 85 passing through Munnar was successfully removed by DFO with the help of Ex-service men Trust. Following this, Chief Wildlife Warden has initiated action for bringing all 11 WL Division, 17 WL Sanctuaries, 5 National Parks under the project.

2.2.5 Tourism department has implemented the following three projects

No.	Project	Amount in Rs.	Remarks
1.	Nilakurinji Waste Management	89,66,600	Waste disposal-35km road from Adimali to Munnar
2.	Save Road-Save Tourism	48,41,760	Waste removal twice
3.	Solid waste management in Idukki district	70,20,000	Waste removal twice in a week from eight destinations

2.2.6 Removal of garbage on road sides

Public Works Department is in the process of mapping the garbage dumped on the sides of all PWD roads. The garbage will be kept in the material recovery centers till its proper disposal.

2.2.7 Removal of waste has been declared as a priority activity of all departments; by earmarking 5% of the departmental budget for waste reduction, collection and treatment. Power Department is mapping waste in hydal tourism sites and dams; Irrigation department is mapping wastes in dam sites; Devaswom Department is mapping waste disposal from pilgrim centers and Health department from hospitals.

2.2.8 Direction issued to Malabar Cements, Palakkad to provide co-incineration facilities

Kerala State Pollution Control Board issued directions to Malabar Cements, Palakkad to install co-incineration facilities. Notice is submitted in **Annexure 9**. Reply has been received from the Company regarding the engaging of firm for studying its feasibility. The matter is being followed up.

2.2.9 Notice for Environmental Compensation issued to local bodies

Kerala State Pollution Control Board issued notice to 87 local bodies for the non-compliance to Solid Waste Management Rules, 2016.

2.3. Status of implementation of Plastic Waste Management Rules, 2016

Compliance of the Rules

2.2.1 Submission of annual report (Rule 17)

The Annual Report on Plastic Waste Management Rules 2017-18 was submitted to CPCB vide letter number PCB/HO/PLA/AR/20/2017-18 dated 30/11/2018 and the same was uploaded in E-Samyojan. The Annual Report for the year 2018-19 is being compiled and the same will be submitted before the statutory time limit of 30th July 2019.

2.2.2 State Level Monitoring Committee (Rule 16)

State Level Monitoring Committee was constituted vide order G.O. (Rt). No.2732/2016/LSGD dtd 24/09/2016. The meeting of the State Level Monitoring Committee on Plastic Waste Management Rules was conducted in April 2018.

2.2.3 Manufacturers of Plastic products

Kerala State Pollution Control Board issued registration to 1005 plastic units. The Board inspected the units and verified the thickness of carry bags. The Board also verified whether the Conditions of Consent were complied with.

3.4 Registered recycling units

There are 101 registered recycling units in the State. The list is available to Local bodies, Suchitwa Mission, Clean Kerala Company. It is also available in the Board's website.

3.5 Registration to producers, brand owners

The concept of Extended Producer Responsibility was brought to the notice of producers, and brand owners through several workshops. National Seminar on Extended producer responsibility was held on 12-6-2019 and discussion was done with Reliance on 25-6-2019, Proctor and Gamble and Johnson and Johnson on 27-6-2019 on the implementation of Rules and also with the units in Kerala on 27-6-2019. The details are given below:

a) National Seminar on Extended Producer Responsibility on 12-6-2019

National Seminar on Extended Producer Responsibility was held at Thiruvnanthapuram on 12-6-2019. The Hon'ble Chief Minister of Kerala, Sri Pinaryi Vijayan, inaugurated the National Seminar. In his inaugural speech, he said that Kerala is a consumer State. A large quantity of products from other states are consumed in our State, all of which generates packaging and end-of-life waste. He pointed out that it is essential but costly to manage and treat the wastes generated after use. As per Extended Producer Responsibility, the producer/brand owner/ manufacturers have either take back the packaging or to take

steps to meet the expense involved in treating the waste in the public waste treatment facility. The Chief Minister welcomed investors to set-up recycling facilities in the State. Land for recycling units can be made available in Industrial Estates. The Hon'ble Mayor, Sri. Prashanth, Thiruvananthapuram Corporation presided over the function. The Principal Secretary, Environment Department, Dr. Usha Titus IAS, welcomed the gathering. She emphasized the responsibility of the producers/brand owners/manufacturers to take initiatives for the management of wastes as per the environmental statutes. There were different sessions on EPR Global Experience, Success stories on EPR implementation in various States, Sector wise EPR Implementation – Electronic, expired medicines, Sector wise EPR Implementation –Plastic, mattress and concluding session. Road map for the implementation of EPR was finalized. The proceeding of the National Seminar is submitted as **Annexure 5**. The main outcome of the meeting is as follows:

1. KSPCB submitted that the rag-picker model used by PROs for collection of value components of packaging wastes does not comprehensively address plastic wastes. Therefore, bulk of the plastic wastes must be addressed by local bodies through regular door-to-door waste collection and treatment. EPR for Producers/Importers/Brand-Owners (PIBO) shall primarily be a financial responsibility while the physical responsibility shall be that of Urban Local Bodies.

2. In order to implement the EPR financial responsibility of PIBOs, KSPCB proposed bringing all Producers, Brand Owners, and Importers under **consent and generating EPR fund from consent fee**. The EPR fund can be distributed to the local bodies for the strengthening of their collection system which they are to be submitted periodically the annual report. The Plastic Waste Management Rules, 2016 Rule 9.2 provides requires consent for PIB who introduce multi-layered plastic packaging into the market. Solid Waste Management Rules, 17.1 requires all manufacturers and brand-owners who introduce disposable packaging to provide financial assistance to local authorities. Consent is given under the Water Act and Air Act. PIB are bought under consent with the formation of negative Environmental impact by introduction of products, cause air and water pollution when improperly disposed off.

3. PIB may implement a Return Deposit Scheme for collection and recycling of bottles and containers. In this case, PIB shall be give consent fee credit for effective collection for recycling. Schemes for recycling of plastics are practical only when economically feasible.

4. PIB/PRO representatives mentioned that under PWM 2016 Rule 13.2, national brand-owners are already registered with CPCB. Therefore, it is burdensome for PIBs to take consent from KSPCB.

5. Producers as defined in E-waste Rules 2016, should implement EPR through Return-Deposit-Scheme or Buy-back scheme for e-waste so as to improve collection. Collection through own sales distribution network is preferred. When EPR plan uses PROs, Sufficient collection points must be provided for effective collection of e-waste.

6. Inventorization of plastic, e-goods is to be prepared with the support of producer/brand owner/ manufacturers.
7. ULB need to strengthen door-to-door collection for plastic wastes. Doubts on the capability of ULB for collection was raised by Directorate of Urban Affairs, Government of Kerala. The Corporation of Thiruvananthapuram and Clean Kerala Company mentioned that collection can be effectively managed if greater financial resources are provided through EPR.
8. For plastic and other products, recycling units shall be set up in the industrial estate and the land is to be given by the Industries department.
9. For the e-wastes, support is to be given for setting up e-waste dismantling/recycling facility in the State. The land in industrial estates/parks is to be given by the Industries department.
10. Financial support is to be given by the manufacturers/producers/brand owners for the taking back of unused medicine by PROUD programme launched by Drugs Controller, Kerala.

b) Meeting with RELIANCE on 25-6-2019

The discussion was held with RELIANCE on EPR on 25-6-2019. The minutes of the meeting is submitted as **Annexure 10**.The outcomes of the meeting are as follows:

1. In order to strengthen collection, they proposed a pilot project for collection of PET bottles by providing a reverse vending machine at a suitable place in Thiruvananthapuram. After ensuring its proper working they will provide more in the State.
2. A proposal for setting up recycling unit in the State after studying its feasibility and the same shall be submitted by RIL or by another agency recommended by RIL to the Pollution Control Board so that it will be brought to the notice of the Government for land allocation in a industrial park.
3. The other sections of their company dealing with plastic other than PET may also be informed to discuss with Kerala State Pollution Control Board on strengthening of collection mechanism of plastic in Kerala.
4. RIL shall submit date on supply of PET resin and manufacturers consuming PET in Kerala. A Extended Producer Responsibility plan for recycling of the PET products shall be submitted.

c) Meeting with Proctor &Gamble; Johnson &Johnson and Pricewaterhouse Coopers Pvt., Ltd.,

The discussion was held with Proctor &Gamble; Johnson &Johnson and Pricewaterhouse Coopers Pvt., Ltd., on EPR on 27-6-2019. The minutes of the meeting is submitted as **Annexure 11.** The outcome of the meeting is as follows:

1. The copy of the proposal submitted to the Ministry of Environment and Forests is to be furnished to the Kerala State Pollution Control Board.
2. Kerala State Pollution Control Board proposes to bring producers/Importers/Brand Owners (PIB) under consent. Consent fee will include financial support to local bodies for the collection and disposal of wastes and packaging due to their product. PIBs may send their responses

3. Inventory of all products (name and quantity per annum) to the State is to be submitted to the Kerala State Pollution Control Board.

d) **Meeting with industrial units in the State**

The discussion was held with MILMA, Beverages Corporation Ltd., Clean Kerala Company, KERA, KELTRO, HLL Life Care Limited on EPR on 27-6-2019. The minutes of the meeting is submitted as **Annexure 12**. The outcome of the meeting is as follows:

1. Inventory of all products (name and quantity per annum)in the State is to be submitted to the Kerala State Pollution Control Board by all industrial units in the State
2. Kerala State Beverages Limited is to introduce deposit return fund for both the glass and plastic bottles. The quantum of glass and plastic bottles used per annum is to be reported separately.
3. Action plan shall be provided by producers/brand owners on waste collection system based on Extended Producers Responsibility and involving State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned. Financial and technical support to the local self-government in the collection, and disposal of all waste shall be included in the action plan.
4. Credit will be given to producers/brand owners who have appointed PRO for the collection of waste.

3.6 Technical Committee Report on Regulation of Single use plastic

The Government has constituted an Expert Committee vide Order No. G.O (Rt) No.134/2018/Envt dated 12/12/2018 to list the plastic products/items that need to be bought into the ambit of complete ban. The Committee submitted their report April 2019 before the Government. The Committee recommended the introduction of a 'return-and-earn' scheme ("Return-Deposit- Refund" scheme) for carry-bags and bottles to prevent littering. The Committee recommended a ban on plastic flags, plastic decorative festoons/ buntings, single use food plates, cups made of multi-laminated board / aseptic liquid paperboard, also known as 'Tetra pack' paperboard. A decision on the same is being taken by the Environment Department.

2.4 Status on compliance of Biomedical Waste Management Rules, 2016

2.4.1 General

Kerala has numerous healthcare institutions (HCIs) such as Medical colleges, hospitals, specialty hospitals, clinics, clinical laboratories, bio-research institute etc. Health care facilities in the Government sector comprising primary and community health centers and having only out patients facilities are counted as clinics. Veterinary hospitals and AYUSH centers fall under the purview of the Biomedical Waste Management Rules.

2.4.2 Status of health care institutions in Kerala

In Kerala, there are 9,331 HCIs: 2,011 are hospitals, 1,335 are clinics, 3,222 are clinical laboratories, and 2,732 are dental institutions. Of the 9,331 HCIs identified, 759 are in Government sector and 8,572 in private sector. There are 2,967 institutions with in-patient facilities with 118,649 beds. All others except clinical laboratories and dental institutions are considered clinics. Thus, this category includes nursing homes, dispensaries, primary health centers without inpatient facilities, sub centers under primary health centers etc. There are 28 hospitals (2%) with capacity of 500 beds and more, of which 17 are in the private sector and 11 in the Government sector.108 hospitals (5%) have capacities between 200 and 499. 76 of them are in the private sector and 32 in the Government sector. The majority of hospitals (79%) have less than 50 beds and majority of them are in private sector.

2.4.3 Compliance of the Rules

Submission of annual report(Rule 24)

Annual report for the year 2017-18 was submitted to the Central Pollution Control Board on 26-9-2018 (Rule13).

Sl. No.	Type*	No
a)	Bedded hospitals and nursing homes	**2130**
b)	Clinics and dispensaries	5280
c)	**Veterinary institutions**	**150**
d)	**Animal houses**	**1**
e)	Pathological laboratories	882
f)	Blood banks	14
g)	Clinical establishments	955
h)	Research institutions	0
i)	AYUSH	216
	Total	9,628

2.4.4State Level Advisory Committee for Biomedical Waste Management

SLAC was constituted in the State vide vide order G.O. (Ms). No.02/0/Envt. dated 6-3-2010 and again re-constituted vide G.O. No. (Rt) No. 15/1/Envt dated 24-10-2011. Meeting of the SLAC was conducted.

In pursuance to the order of Hon'ble NGT dated 25.04.2019 in OA No.606/2018 and in compliance of the Rule 11 of the BMW Rules,2016, a State Level Monitoring /Advisory Committee was constituted by the Health & Family Welfare (M) Department, Kerala vide G.O.No.1354/2019/H&FWD dated 05.06.2019 and also a District Level Monitoring Committee was constituted vide G.O.No.1353/2019/H&FWD dated 05.06.2019.

2.4.5 Category-wise biomedical waste generated in Kerala

In Kerala, 13,771.4 tonnes of biomedical wastes is generated annually. Details are as follows:

Category	Production
Red*	6,364 tonnes
Yellow	4,705.8 tonnes
White	1,613 tonnes
Blue	1,088 tonnes

**red category wastes are recyclable after treatment such as autoclaving.*

The maximum quantity is produced in Ernakulum district (4277 tonne/annum) followed by Thrissur(1669 tonne/annum), Kozhikode (1164 tonne/annum), Kottayam(50 tonne/annum), Thiruvananthapuram(1122 tonne/annum) and Malappuram(977 tonne/annum). The minimum quantity is produced in Wayanad (120 tonne/annum) and Idukki(137 tonne/annum).

The total quantity of biomedical wastes generated is 13,771 tonne per annum of bio-medical waste. Around 11,361 tonne per annum of bio-medical wastes in generated in hospitals. 82.5% of biomedical waste is generated in hospitals.

2.4.6 Common biomedical Waste treatment facility in the State (CBMWTF)

Existing facility

The common biomedical waste treatment facility is located at Kanjikode, Palakkad. It has a capacity of 37TPD. There are 5 incinerators, and 5 autoclaves in the plant. Around 13,000 institutions are disposing the biomedical wastes into the common biomedical treatment facility.

a) IMAGE started Bar-code based biomedical waste collection as per the directions of Central & State Pollution Control Boards as well as the Biomedical Waste Management Rules 2016; from 5th January 2018 onwards

b) Tracking of bar-codes will be started right from receiving the order for purchase of colour coded bar-coded bags from the Healthcare Institutions. As bar-code will be printed against each bags

supplying; the monitoring will be continuously carried out from the collection point till disposal at IMAGE Plant.

c) IMA PEPS has developed the software for Bar-coding and has authorized four Regional Dealers to implement and to supply the colour coded bar-coded bags to all Health Care Institutions affiliated with IMAGE

d) Kerala State Pollution Control Board can monitor the movement of all the bar-coded bags & containers from each Health Care Institution to the Bio-medical Waste Treatment Plant of IMAGE with the help of online link provided to them.

e) IMAGE runs 53 GPS installed covered vehicles for collection of biomedical waste within 24 hours

f) All these vehicles are monitored through GPS Satellite Monitoring using AVL View Software Application. The movement of waste collection vehicles is monitored through GPS system and the waste collection is monitored through the mobile application system

g) Phasing out of plastic bags has been implemented

h) The affiliation process for joining IMAGE by Healthcare establishments has been made online through www.imageima.org

i) Online Continuous Stack Emission Monitoring System (CSEMS) are being installed in IMAGE plant as per the request of Pollution Control Board authorities for the measurement of pollutants within the stack emission. Monitoring within the stack presents a number of problems due to extreme of temperature, velocity of sample and pressure. CSEMS is used for continuous emissions monitoring in waste incinerators. Typically, concentrations of CO2, CO, NO, NO_2, O_2, primary temperature and secondary temperatures are continuously measured.

2.4.7 Facilities proposed

The Government proposes to set-up Common Biomedical Waste Treatment Plants in

- Ambalamedu, Ernakulum,
- Kinalur, Kozhikode
- Unidentified site, Thiruvananthapuram

A) CBMWTF facility at Kinalur, Kozhikode

- Integrated Consent to Establish having validity upto 31-12-2016 was issued to Sri. P. S. Deepthikumar, Director, Malabar Enviro Vision Private Limited, on 4-4-2014 for setting a Common Biomedical Waste Treatment Facility (Incinerator – 100kg/hr; autoclave -1000l; shredder of100kg/hr) in the industrial estate of Kerala State Industrial Development Corporation (KSIDC)in Re-survey No. 95/1, Kinalur village, Koyilandy taluk, Kozhikode district. Consent was renewed on 5-9-2017 for a term upto 31-12-2020.
- Environmental Clearance was issued on 26th June 2015 for CBMWTF with two numbers of incinerators 200 and 300kg/hr.; two numbers of autoclave (2Nos) of 400kg/hr. each and a shredder of 700kg/hr.

- Due to public resistance to construction, several meetings were conducted at the level of District Collector and the level of Minister. In the meeting conducted by Hon'ble Excise Minister, relocating the location CBWMTF to a location within the KSIDC Industrial estate was suggested. The Board was directed to identify a new location for Common Biomedical Treatment plant within the Kinalur Industrial Estate.
- Based on the direction received from office of the District Collector on 21-5-208, inspection was conducted on 22-5-2018 by Tahasildar, Thamarassery Taluk, Assistant Manager, KSIDC and a new location was identified by KSIDC officials.
- The proposed new location is 1 km away from the previous approved location for which Integrated to Establish was issued. This land is being surveyed by KSIDC.
- The applicant will have to apply for consent Variation order for the new location and to amend the Survey no in the EC.

B) CBMWTF facility by Kerala Enviro Infrastructure Limited, Ambalamedu, Ernakulum

- Consent was issued vide consent No. PCB/HO/EKM/ICE/08/204 dated 10-3-2014 to Kerala Enviro Infrastructure Limited for setting up CBMWTF in 3.5 acres of land within 50 acres of land owned by KEIL. The waste handling capacity for which consent issued was for 14-16TPD with two incinerators, two autoclaves and a shredder. It was renewed for a term upto 30-6-2019 vide Consent No. PCB/HO/EKM-II/ICE-R/02/2017 dated 5-10-2017.
- Public hearing was conducted on 7-11-2016 at District Collectorate, Ernakulum and there was strong public protest at that time and report was submitted to MoEF on 14-1-2016.Environment Clearance was issued in 2017.
- Loan facility from KSIDC/banks will be availed and the project execution will start immediately on financial closure.

C) CBMWTF facility by Indian Medical Association at Peringamala, Thiruvananthapuram

- Consent was issued vide consent No. PCB/HO/PLKD/ICO/2009 dated 4-4-2009 with validity upto 30-6-2012 for setting up CBWTDF to manage ad handle biomedical wastes for an incinerator of 200kg/hour.
- Two public hearings were conducted in February 2017. The minutes of the public hearing submitted to SEIAA. There is public resistance to the project at Peringamala.

2.4.8 Authorization from the Board

7314 Health care institutions have obtained authorization from the Board.

2.4.9 Hon'ble NGT Order dated 12.03.2019 in the matter of O.A No.710 of 2017

The Central Pollution Control Board vide letter dated 22.03.2019 directed to submit Action Plan for compliance of BMWM rules, 2016 within one month. The Action plan by Kerala State Pollution control Board for the compliance of Bio-Medical Waste Management Rules, 2016 was submitted to CPCB on 29.04.2019.

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2.4.10 Others

Sl No:	Action Points	Action taken
a)	Inventory of healthcare facilities	The Inventory of healthcare facilities for the year 2017 was submitted to CPCB vide letter No.PCB/HO/RULES/BMW-INVENTORY/2017/48/2017 dated 5.01.2019.
b)	Submission of Annual Reports to CPCB	The annual report for the period 2017 was submitted to CPCB vide Letter No.PCB/HO/BMW/EE-1/AR-2017/10/2018 dated 26.12.2018.Annual report for the year 2018 is under preparation.
c)	Constitution of State Advisory Monitoring Committee and District Level Monitoring Committee	A State Level Monitoring /Advisory Committee was constituted by the Health & Family Welfare (M) Department, Kerala vide G.O.No.1354/2019/H&FWD dated 05.06.2019 and also a District Level Monitoring Committee was constituted vide G.O.No.1353/2019/H&FWD dated 05.06.2019.
d)	Authorization to all Healthcare facilities including non-bedded HCFs.	As per the Bio Medical Waste Inventory,2017, there are 9,331 Health Care Facilities operating in Kerala out of which Board has issued authorisation to 7,314 HCFs including non-bedded HCFs. Action is being taken to bring all the HCFs under the purview of Authorisation.
e)	Implementation status of Barcode system	Barcode system has been implemented.
f)	Monitoring of compliance to BMWM Rules 2016 by Healthcare facilities including Veterinary Hospitals, AnimalHouses, AYUSH Hospitals	Authorization has been issued to 150 Veterinary hospitals and one Animal House. Direction has been issued to Department of Animal Husbandry to bring all these institutions to manage Bio Medical Waste as per BMW Rules 2016 and to obtain authorisation. 216 AYUSH hospitals have been brought under the authorisation of the Board.
g)	Coverage of Common Biomedical Waste Treatment Facilities(CBWTFs)in the entire State/UT.	One CBMWTF operational at Palakkad, having a capacity of 37 Tonnes/day. The total quantity of biomedical waste generated in the state is 13771 TPA. Three more CBMWTFs have been have been proposed in order to comply with distance norms from source to plant.
h)	Compliance of CBWTFs to new emission standards prescribed BMWM Rules 2016.	Periodical inspection is being carried out by the Board officials for compliance verification at IMAGE. Show Cause Notice has been served to IMAGE for not upgrading their existing incinerators to the emission standards prescribed under the BMW Rules 2016.
i)	Capacity Building programmes/training programmes to SPCBs/PCCs officials and HCFs.	18 trainings on Bio Medical Waste have been conducted by the Board. More training will be conducted in this regard.
j.	Notice for Environmental Compensation issued to health care institutions in Idukki	Notice for environmental compensation has been issued to 70 Health Care Institutions in Idukki.
k.	Antimicrobial resistance	State Level Action Plan for Antimicrobial resistance has been published. National level seminars conducted. Kerala State Pollution Control Board initiated action on establishing an Antibiotic Residue Laboratory.

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2.5. E-Waste Management Rules, 2016

2.5.1 Submission of Annual Report (Rule 18)

Annual report for 2017-18 was submitted to the Central Pollution Control Board on 26-9-2018 (Rule 18)

2.5.2 Collection Centres

Brand owners: As per E-Waste Management Rules 2016, about 112 brand owners/producers have obtained EPR Authorisation after submitting action plan. In the said action plan, address of collection centres were reported by the manufacturers/producers. The E-waste collection centers in Thiruvananthapuram district were inspected by the District Office and report was submitted to Head Office, which was forwarded to CPCB vide letter dated 2.02.2019.

CPCB has informed that the EPR authorisations of producers namely M/s Apple India Private Limited,M/s Samsung India Electronics Private Limited, M.s Canon India Private Limited, M/s H.P India Sales Private Limited, M/s VivoMobile India Private Ltd and M/s Motorola Mobility India Pvt Ltd were suspended due to non adherence of EPR plans. These producers have filed an affidavit with CPCB and submitted their revised EPR plans. CPCB directed to monitor the collection points of producers / brand owners based on the check list and inspection format provided by CPCB on or before 15.05.2019.The same was submitted to CPCB on 15.05.2019.

Recyclers: There are no recyclers. In the absence, materials are going to registered recyclers in other States.

2.5.3 Registered Recycler

The Government has established the Clean Kerala Company for the collection of plastic and e-waste and channelization of e-waste to Registered recyclers. They had collected 736 TPA of e-waste in the year 2017-18, and 1,229 MT during 2016-19. The Company has a proposal to set up E- Waste management facility and Integrated Plastic waste management facility at Kerala Industrial Infrastructure Development Corporation -KINFRA – park at Kuttippuram, Malappuram District. The KINFRA Management has allotted two plots of 1.50 acres for this purpose. The plant will be commissioned by March 2020.In addition, 40 tonnes of e-hazardous waste from different Local Bodies of the State was collected and handed over to Kerala Enviro Infrastructure Limited for safe disposal.

2.5.4 Earmarking or allocation of industrial space or shed for e-waste dismantling and recycling

The Department of Industries has agreed to allocate space in the Industrial park. They have identified land at two places and the matter is being pursued.

2.5.5 Hon'ble NGT Order dated 12.02.2019 in O.A No. 512/2018

Central Pollution Control Board vide e-mail dated 09.04.2019 directed to submit the action taken report on e-waste as per the Hon'ble NGT Order dated 12.02.2019 in O.A No 512/2018. The action taken report was submitted to CPCB on 28.05.2019.

2.6. Hazardous Waste Management Rules, 2016

2.6.1 Submission of Annual Inventory

Annual Inventory 2017-18 was submitted to the Central Pollution Control Board on 21.11.2018 and gap identified by Central Pollution Control Board was clarified and submitted to CPCB on 08.05.2019.

As per the inventory of Hazardous Waste, in Kerala we have a Common Hazardous Waste Treatment and Storage Disposal Facility(TSDF) at KEIL,Ambalamedu. The total quantity of Hazardous Waste generated in the State is 59637.38 metric tons from 1222 industrial units as per the Hazardous Waste Annual Inventory 2017-18. The hazardous waste generated is disposed through Landfill, incineration or by recycling.

Majority of the hazardous waste generated is disposed through the common landfill facility at KEIL, Ambalamedu.

The following recycling/rerefiners obtained registration for Used oil/waste oil/lead wastes generated from automobile workshops or service centers or other industrial units.

- Cee Jee Lubricants,B inanipuram,Aluva
- Excel Petrochemicals,Kochi
- Best smelters,Kanjikode,Palakkad
- K.J Lubes,Athani,Thrissur
- T.S Lead Refineries,Kazargode
- Peejay Enterprises,Thiruvalla
- APJ Refineries ,Kanjikode,Palakkad
- Aaron International,Anakkara,Palakkad
- Petroliv Petroliums,Nileswaram,Kasaragod

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2.6.2 Hon'ble NGT Order dated 30.07.2018 in O.A No. 804/2017

The Central Pollution Control Board vide letter dated 08.04.2019 directed to submit the action taken report for the compliance of OA No. 804/2017. The action taken report was submitted to CPCB on 17.05.2019.

2.7 Batteries(Management & Handling) Rules,2001

2.7.1 Submission of annual report Rule 2001

The Annual Report for the year 2017-18 on Batteries(Management & Handling) Rules,2001 was submitted to CPCB dated 14/02/2019 .

As per the annual report -2017-18, the following details are given below:

(a) Manufacturers of Plastic products

Kerala State Pollution Control Board issued registration to 17 manufacturing units. 14 manufacturing units have submitted annual returns. The quantities of batteries sold are 38497 numbers and are having weight of 433604kg. Quantity of used batteries sent to Authorized Recyclers was12680.1kg. In Kerala, there are 22 collection centers and 45 dealers. Out of 45 dealers 12 dealers registered.

Assembler

Based on the available data in Kerala state, there are 4 Assemblers and they had submitted annual returns. The quantity of batteries assembled and sold are 37947 (939920kg). The quantity of used batteries sent to authorize recyclers is 9655 no's (227560kg).

Importers

Based on the available data in Kerala state, there are 4 Importers and they had submitted annual returns.

Bulk Consumers

Bulk consumers in Kerala are 40 numbers and 23 of them have given annual returns. The quantity of batteries sold are 147no's (6604.03kg). The quantity of used batteries sent to authorized recyclers are1094nos (10955kg).

Dealers

A total of I 64 dealers are in Kerala. Three of them have submitted annual reports.

Recyclers

There are 4 authorized recycling units in Kerala and the capacity of recyclers per year was 1399.7MT.

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2.8Compliance of NGT order dated 16-1-2019 in OA 606/2018

In compliance with the Order dated 16/01/2019 of the Hon'ble NGT on in O.A. no. 606/2018, the State Level Monitoring Committee was constituted under the Chairmanship of Hon'ble Justice A.V. Ramakrishna Pillai, Former Judge, High Court of Kerala, and Member Secretary, Kerala State Pollution Control Board as the Member Secretary of the Committee.

Other members are Additional Chief Secretary - Local Self-Government Department; Additional Chief Secretary - Health, Family Welfare Department; and the Principal Secretary - Environment Department.

The Committee held six meetings from February to July2019. Field visits were conducted in April 2019 to study the Brahmapuram plant at Ernakulum and Karamana river and in Tirur to study the pollution of River Tirur.

The Chairman and the Member Secretary of the State Level Monitoring Committee inspected all the 14 districts in the State for streamlining the action of newly formed District Level Monitoring Committees headed by the District Collector.

2.9. Polluted river stretches in O.A. No. 673/2018

There are 21 polluted river stretches in Kerala. Critically Polluted (Priority 1) is the Karamanariver stretch from Melekadu to Moonnattumukku. The other rivers fall in Priority 4 and 5. For the river Karamana, Action Plan was approved by the NGT vide order dated 8-4-2019 in OA673/2018. The action plan is being implemented by the concerned departments. The progress report is submitted as **Annexure 7**. In the remaining 20 polluted stretches, action plan for 13 stretches have been submitted to NGT 27-6-2019. Though the remaining seven stretches come under exemption category, action plan for the same is being prepared.

Other Projects

2.9.1National Hydrology Project

Under the National Hydrology Project, a study is planned on 5 major rivers, namely Meenachil, Periyar, Bharathapuzha, Kallai and Valapatnam.

2.9.2 Urban Regeneration and Integrated Water Transport System in Cochin

A project titled Urban Regeneration and Integrated Water Transport System in Cochin with a project outlay of Rs 1365.16 crores has been appraised by KIIFB for funding. It is intended to regenerate the

urban area in and around the 5 canals in Kochi, rehabilitate the slum dwellers and make use of the commercial area near the canal along with creation of tourism destinations and navigation through the canals. In principle, approval has been given for KIIFB funding for Rs 566.51 crores for land acquisition and building compensation in 2 Phases, namely Phase 1 for Rs 340.69 crores and Phase 2 for Rs 225.82 crores. Kochi Metro Limited is the Special Purpose Vehicle for this project.

2.9.3 Akkulam Lake Rejuvenation

A project titled Akkulam Lake Rejuvenation with a project outlay of Rs 126 crores has been appraised by KIIFB for funding. In principle, sanction has been accorded for conducting bathymetric and other studies for Rs 4 crores, as the 1st step. Translational Engineering Centre at Barton Hill Engineering College is the project consultant. WAPCOS is the Special Purpose Vehicle for the project.

2.10 Ambient Air Quality (681/2018)

2.10.1 Online Continuous Real Time Monitoring Data Of Industries/Public Places

Sl. No.	Site Name	Industry	City	District	Status
a)	Adani Vizhinjam Port Private Limited	Power Plant	Vizhinjam	Ernakulum	Active
b)	Amrita Institute of Medical Sciences andResearch Centre	Public Location	Ernakulum	Ernakulum	In Active
c)	Apollo Tyres Limited	Manufacturing	Kalamassery	Ernakulum	Active
d)	Brahmapuram Diesel Power Plant	Power Plant	Kakkanad	Ernakulum	In Active
e)	Canara Paper Mills Pvt. Ltd	Pulp And Paper	Changanacherry	Kottayam	Active
f)	Cochin Cements Ltd	Cement	Kottayam	Kottayam	In Active
g)	Cochin Special Economic Zone Authority	CBMWTF	Cochin	Ernakulum	In Active
h)	Fertilisers And Chemicals Travancore Ltd (FACT) Cochin Division	Fertilizer	Ambalamedu	Ernakulum	In Active
i)	Fertilisers And Chemicals Travancore Ltd (FACT) Udyogamandal Complex-Fertiliser Plants	Fertilizer	Eloor	Ernakulum	Active
j)	Fertilisers And Chemicals Travancore Ltd (FACT)Udyogamandal Complex-Petrochemical Plants	Petrochemical	Ernakulum	Ernakulum	Active

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k)	Gramox Paper and Boards Ltd	Pulp And Paper	Muvattupuzha	Ernakulum	In Active
l)	Greenland Paper Mills Ltd	Pulp And Paper	Kollam	Ernakulum	Partial
m)	Hindustan Insecticides Limited	Pesticide	Eloor	Ernakulum	Active
n)	Hindustan Newsprint Ltd	Pulp And Paper	Kottayam	Kottayam	Active
o)	Hindustan Organic Chemicals Limited	Petrochemical	Ernakulum	Ernakulum	Active
p)	Indian Medical Association Goes Ecofriendly	CBMWTF	Palakkad	Palakkad	Partial
q)	Kairali Steels And Alloys Private Limited	Iron And Steel	Kanjikode	Palakkad	Active

Sl. No.	Site Name	Industry	City	District	Status
r)	Kerala Minerals And Metals Ltd	Iron And Steel	Kollam	Ernakulum	Active
s)	Kozhikode Diesel Power Project Kerala State Electricity Board Limited	Power Plant	Kozhikode	Ernakulum	Active
t)	Kspcb Calicut Palayam Station	Public Location	Calicut	Ernakulum	Active
u)	Kspcb Eloor Station	Public Location	Eloor	Ernakulum	Partial
v)	Kspcb Ernakulum Mg Road Station	Public Location	MG Road Cochin	Ernakulum	Active
w)	Kspcb Ernakulum Vyttila Station	Public Location	Ernakulum	Ernakulum	Active
x)	Kspcb Trivandrum Plamood Station	Public Location	Trivandrum	Ernakulam	Active
y)	Kunnath Paper Mills Ltd	Pulp And Paper	Meenkaradam	Palakkad	Active
z)	Malabar Cements Ltd	Cement	Pallakad	Palakkad	In Active
aa)	NTPC Limited; Rajiv Gandhi Combined Cycle Power Project	Power Plant	Allapuzha	Ernakulum	In Active
bb)	P P S Steels Pvt Ltd	Iron And Steel	Kanjikode	Palakkad	In Active
cc)	Prince Rollings Private Limited	Iron And Steel	Ottapalam	Palakkad	In Active
dd)	Prodair Air Products India Pvt Ltd	Chemical	Ernakulum	Ernakulum	In Active
ee)	RPC Paper Mills	Pulp And Paper	Punalur	Ernakulum	Active
ff)	Rubber Park India Private Limited	CETP	Ernakulum	Ernakulum	In Active
gg)	Southern Ispat& Energy Ltd	Iron And Steel	Palakkad	Palakkad	In Active
hh)	TMS Leathers	Tannery	Edayar	Ernakulum	Active
ii)	Travancore Cement Ltd	Cement	Nattacom	Kottayam	Active
jj)	Travancore Cochin Chemicals Limited	Chlor Alkali	Eloor	Ernakulum	Active

2.10.2 Ambient air quality data map is available in the website

https://keralapcb.glensserver.com/public/graph.html is the link on which the data map can be accessed.

2.10.3 Ambient air quality data of public places

Ambient air quality data of 5 real time ambient monitoring stations in the State located at Plamoodu (Thiruvananthapuram-State Capital), Eloor (Industrial Hub of the State), MG Road (Ernakulum-Central City), Vytila Bus Stand (Ernakulum- Commercial Area), Palayam Bus Stand(Kozhikode-Commercial Area) are also included in 6.1 and 6.2.

2.10.4 Ambient air quality stations:

Apart from the real time ambient air quality monitoring stations, the Board monitors the ambient air quality at prominent stations under the NAMP (National Ambient Air Quality Monitoring Programme) and SAMP (State Ambient Air Quality Monitoring Programme).

Ambient air quality stations under National Ambient Air Quality Programme

Sl. No.	Location	District	
a)	COSMO Politian Hospital, Pattom	Thiruvananthapuram	NAMP
b)	SMV Govt. Model High School over bridge	Thiruvananthapuram	NAMP
c)	Filatex, Veli	Thiruvananthapuram	NAMP
d)	Kerala State Pollution Control Board, District Office, Plamood, Thiruvananthapuram	Thiruvananthapuram	NAMP
e)	Krishna Leela Tower Kadapakkada Kollam	Kollam	NAMP
f)	Chavra KMML Guest House,Chavara, Kollam	Kollam	NAMP
g)	Kerala State Pollution Control Board District Office Pathanamthitta	Pathanamthitta	NAMP
h)	D C Mills Pvt Ltd Pathirapilly Alappuzha	Alappuzha	NAMP
i)	Kerala State Pollution Control Board District Office Thondankualgara, Alappuzha	Alappuzha	NAMP
j)	Kerala State Pollution Control Board V-Publishers Building Kottayam	Kottayam	NAMP
k)	MRF Ltd, Vadavathoor,Kottayam	Kottayam	NAMP
l)	Ernakulum (South Over Bridge)	Ernakulum	NAMP
m)	Ernakulum MG Road	Ernakulum	NAMP
n)	Vytila FCI-OEN ConnectersErnakulam	Ernakulum	NAMP
o)	Irumbanam, Thripunithara	Ernakulum	NAMP
p)	Womens Apparel Park Industrial Area Kalamassery	Ernakulum	NAMP
q)	Travancore Kochin Chemical Udyogamandal	Ernakulum	NAMP
r)	Building No.EP.III-348 Methanam, North Eloor,	Ernakulum	NAMP
s)	Poonkunnam Thrissur	Thrissur	NAMP
t)	SEPR Refractories India Pvt Ltd Kanchikode West Palakkad	Palakkad	NAMP
u)	Synthite Industries Ltd, Kakkenchery, Malappuram	Malappuram	NAMP
v)	Nallalam Diesel Power Project Nallalam Kozhikode	Kozhikode	NAMP
w)	Women and Children Hospital Complex Kottaparamb Kozhikode	Kozhikode	NAMP
x)	SulthanBatheryNearGramaPanchayath Office Wayanad	Wayanad	NAMP

Ambient air quality stations under State Ambient Air Quality Programme

Sl. No.	Location	District	
a)	Kannur	Kannur	SWMP
b)	Mangattuparambu	Kannur	SWMP
c)	Kasargod	Kasargod	SWMP
d)	Kanjangad	Kasargod	SWMP
e)	Thodupuzha	Idukki	SWMP
f)	St.Jacobs Church,Kuttipadam, Perumbavoor.	Ernakulum	SWMP

Air quality index falls within acceptable levels except some parameters occasionally exceeded in certain stations. These exceeding values may be due to some construction activities and heavy vehicle traffic. The results are available in the Board's website and the copies sent to concerned departments. Generally, air quality in the State is generally found good as per monitoring results.

2.10.5 Water and Air quality directory

Kerala State Pollution Control Board published Water and Air Quality Directory, 2018 on 5th June 2019.

2.10.6 Air quality seminar

Kerala State Pollution Control Board conducted the Air quality seminar on 5th June 2019.

2.10.7 Electric vehicle policy

Electric vehicle policy was developed for the State. The first charging station for electric vehicle is in operation in the Secretariat.

2.10.7 Proposal for strengthening of the air quality stations

The proposal submitted by the Kerala State Pollution Control Board to the Central Pollution Control Board on strengthening of the air quality stations is as follows:

Draft format for status of CAAQMS / NAMP Monitoring station under SPCB's /PCC's –reg.									
Sl. No.	**Populatio n as per census 2011**	**Name of the State**	**Number of Towns/ cities**	**Name of Towns/ cities**	**Manual ambient air quality monitoring stations**		**Continuous ambient air quality monitoring stations**		**Remarks**
					Existing Stations	Required Stations	Existin g Station s	Required Stations	
1.	1,00,000-<5,00,000	Kerala	5	Kozhikode	Commercial /Residential-2	1- Background	1-Commercial	1- Residential	Supply Order issued for setting up CAAQMS, one each at Kollam and Thrissur. Action initiated for setting up CAAQMS at Palakkad with financial support from industries. One CAAQMS will be installed in Alapuzha during 2019-20
				Kollam	Commercial /Residential-2	1- Background	Nil	1- Residential (Proposed 2019-20)	
				Trissur	Residential-1	1- Background 1- Residential / Commercial	Nil	1- Residential (Proposed 2019-20	
				Alappuzha	Commercial /Residential-2	1- Background	Nil	1- Residential (Proposed 2019-20	
				Palakad	Industrial-2	1- Background 2- Residential / Commercial	Nil	1- Residential (Proposed 2019-20	
2.	5,00,000-<10,00,000	Kerala	2	Thiruvananthapuram	Residential /Commercial-3 Industrial-1	1- Background	1- Traffic	1- Residential (proposed) 1- Commercial	Supply Order Issued for setting Up one CAAQMS at Thiruvananthapuram with 50% fund from the CPCB under project setting up of CAAQMS in million plus cities and State and Capitals
				Kochi	Residential-5 Industrial-3	1- Background	1-Traffic 1Commercia l1-Industrial	1- Residential	CAAQMS installed at Eloor, MG Road and Vyttila

2.11 Industrially Polluted clusters (OA 1038 of 2018)

- The order dated 13.12.2018 in O.A.No. 1038 of 2018 by the Hon'ble NGT is based on the CEPI score of Greater Cochin Area done in 2009. The CEPI assessment was done in 2009 by the Central Pollution Control Board (CPCB) in collaboration with IIT Delhi as part of their comprehensive environmental assessment of 88 industrial clusters in the Country.
- Out of these 88 industrial clusters, 32 industrial clusters having CEPI score in between 60 and 70 were categorized as severely polluted area (SPA). Further, 43 industrial clusters in 16 states having CEPI score of 70 & above were identified as Critically Polluted Area(CPA). Greater Kochi Area (GKA) was identified in Kerala. The CEPI score for the area as reported by Central Pollution Control Board was 75.08, and the GKA subsequently termed as CPA.
- During 2011, CPCB again estimated CEPI score as per the monitoring data of 2011 with same criteria pollutants as considered by IIT Delhi and the score was 57.39 and the moratorium imposed for developmental activities in the Greater Kochi Area as CPA was lifted vide office memorandum No. J-11013/5/2010-1A II (I) dated 23.05.2011 by Ministry of Environment and Forest.
- After lifting the moratorium, monitoring was conducted in the year 2013 by CPCB but not published. The CEPI score using the third party monitoring data was 45.29 in the year 2013.
- While CPCB had conducted monitoring in 2018, the Board also had engaged an accredited agency as third party for the monitoring and the score obtained was 44.68. The monitoring by KSPCB indicates that the current score is well within the limit of 60, above which the area is confirmed as severely polluted area (CPA).

2.12 Order dated 4-9-2018 in OA o. 173/2018 by Sudarsa Das Vs State of West Bengal and others

Not applicable

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2.13 Total amount collected from erring industries on the basis of Polluter Pay's principle 'Precautionary principle and details of utilization of funds collected

S No	Company	Amount Collected (INR Crore)	Utilization of fund	Remarks
a)	Binani Zinc Ltd, Ernakulum	0.5	Drinking water supply to nearby residents Edyar area in Kadungalloor Grama Panchayath	As per the order of Supreme Court Monitoring Committee
b)	FACT Ltd., Ernakulum	1.25	Kuzhikandom cleaning	Kuzhikandom
c)	FACT Ltd., Ernakulum	0.35	Drinking water supply to nearby residents(Eloor Municipality)	As per the order of Supreme Court Monitoring Committee
d)	Hindustan Insecticide Limited, Ernakulum	1.24	Kuzhikandom cleaning	Kuzhikandom
e)	Hindustan Insecticide Limited, Ernakulum	0.35	Drinking water supply to nearby residents(Eloor Municipality)	As per the order of Supreme Court Monitoring Committee
f)	Indian Rare Earths Limited	1.25	Kuzhikandom cleaning	Kuzhikandom
g)	Indian Rare Earths Limited, Ernakulum	0.35	Drinking water supply to nearby residents(Eloor Municipality)	As per the order of Supreme Court Monitoring Committee
h)	Kerala Minerals and Rutiles Limited, Kollam	1	Remediation and/or distribution to affected persons either as per the direction of Tribunal or as per the decision of State Govt.	As per NGT order dated 31-8-2017 in Application No.142,290, 453 of 2013
i)	Marthoma Granites,Thodupuzha	0.258516	Protection of environment	Environment Protection Fund
j)	Merchem Limited, Ernakulum	0.0875	Drinking water supply to nearby residents(Eloor Municipality)	As per the order of Supreme Court Monitoring Committee
k)	New Hotel/Lodging House,Idukki	0.01	Environment protection in Idukki	Environment Protection Fund
l)	Organo fertilizersErnakulum	0.025	Board's account	Forfeiting of bank guarantee
m)	Sree Sakthi Limited, Ernakulum	0.24	Removal of plastic waste in thei premises	Forfeiting of bank guarantee
n)	Vijay Construction, Ernakulam	0.02	Board's account	Forfeiting of bank guarantee

2.14 Identification and development of Model cities and towns in the STte in the first phase which can be replicated late for other cities and towns of the State

As in 2.1 above

2.15 Primary Effluent Treatment Plant as per order dated 19-2-2019 in O.A. No. 593/2017

The report for the month upto March2019 was submitted to Central Pollution Control Board. As per the reports upto March 2019, 4,017units requiring ETP were inspected. Of these, 3,996 units have provided functional ETP. 18 units were found to be operating without ETP. Closure direction was issued to four units, and show cause notice was issued to eleven. 3,930 units complied with the effluent standards. For the remaining 66 units, the Board has taken action for its compliance.

Around 2,267 STP units were inspected. Of these, 2,263 units have provided functional STP. Four STPs were found to be non-complying. Show cause notice was issued to three units and action is under processing against one unit.

Regarding CETP, six units were inspected and found compliant and one CETP is under construction.

Notice for environmental compensation was issued to Thiruvananthapuram Dairy and to Thiruvananthapuram corporation on the working of their treatment plant.

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Annexure 1

File No.ENVT-B2/48/2019-ENVT

GOVERNMENT OF KERALA

Abstract

Environment Department – NGT case no OA 606/2018 (suomotu)--Judgment dt 25.4.2019 of National Green Tribunal-List of Panchayaths/Municipalities/Corporations to pilot the Model Waste Management Practices -Notified- Orders - issued.

ENVIRONMENT(B)DEPARTMENT

G.O.(Rt)No.45/2019/ENVT Dated,Thiruvananthapuram, 31/05/2019

Read NGT order dt 25.4.2019 in OA 606/2018 (Suomotu)

ORDER

Pollution and waste management have been burning issues all over the country. The lack of proper waste management plans has resulted in environmental damage and outbreak of serious diseases which resulted in National Green Tribunal (NGT) taking a suomotu case No OA 606/2018. Following the Chief Secretary's appearance before NGT to present the status of waste management in the State, NGT pronounced the order on 25.4.2019, directing the State to identify at least three cities and three towns in the State and at least three villages in every District within two weeks and to make them fully compliant in respect of environmental norms within six months and the remaining State to be made fully compliant within one year and to furnish quarterly reports every three months, of which the first report is to be furnished by **July 30, 2019**. Further, Chief Secretary has to be present before NGT on 6.11.2019 to report on the status of compliance of the order.

The Environment Department has examined the matter in detail in consultation with LSGD and Water Resources Department. The following directions are hereby issued:

1. The following local bodies shall pilot the full compliance of environmental regulations and norms by October 24, 2019.

Corporations	Municipalities	Panchayaths(Districts Concerned)
Thiruvananthapuram	Attingal	Karakulam, Poovachal, Parassala(Thiruvananthapuram)
Thrissur	Punalur	Kadakkal, Chavara, Perinad(Kollam)
Kozhikode	Kunnumkulam	Kulanada, Aranmula, Thumpamon(Pathanamthitta)

Annexure 1

		Aaryad, Mararikkulam North, Thamarakulam(Alappuzha)
		Moonilavu, Kadaplamatom, Poonjar(Kottayam)
		Adimali, Nedumkandam, Kumali(Idukki)
		Pampakuda, Chottanikkara, Kalady(Ernakulam)
		Manalur, Parappukkara, Peringanam,(Thrissur)
		Muthuthala, Sreekrishnapuram, Vellinezhi(Palakkad)
		Maranchery,Chaliyar, Thuvur(Malappuram)
		Kunnumel, Kuttiadi, Meppayur(Kozhikode)
		Meenangadi, Muttil, Vythiri(Wayanad)
		Pariyaram, Padiyur, Udayagiri(Kannur)
		Kinanoor-Karinthalam, Bedadukka, Madikkai(Kasaragod)

2. Kerala State Pollution Control Board shall impart necessary training to the representatives of the local bodies including the Secretaries and provide technical knowhow to the local bodies regarding the implementation of Solid Waste Management Rules 2016, Plastic Waste Management Rules 2016 and Biomedical Waste Management Rules 2016. Suchitwa Mission and Clean Kerala Company Ltd shall help the Board in this regard.

3. Local Bodies shall utilise their Plan allocation/own sources and raise revenues for managing pollution and treating waste using the "Polluter Pays Principle"

5. A Core Committee with the Principal Secretary (Environment) as Chairperson and Chairman PCB, Director Suchitwa Mission, Director Clean Kerala Company, CE Irrigation, MD KWA, Director Panchayats, Director Urban Development and Director (Environment) as members shall monitor the progress made by these Panchayaths/Municipalities/Corporations towards making them fully compliant before 24.10.2019. The Committee shall also prepare the quarterly statements to be filed before NGT on 30.7.2019, 30.10.2019, 30.1.2020 & 25.4.2020.

6. Steps shall be parallely taken to make the remaining local bodies fully compliant by 25.4.2020.

(By order of the Governor)
DR. USHA TITUS
PRINCIPAL SECRETARY

To:

The Registrar, National Green Tribunal(SZ), Chennai

The Advocate General , Kerala, Ernakulam.

The Director, Department of Urban Affairs , Thiruvananthapuram.

The Director, Panchayath Department, Thiruvananthapuram.

Chairman, Kerala State Pollution Control Board

Executive Director, Suchitwa Mission ,Thiruvananthapuram.

Chairman, Central Pollution Control Board

Local Self Government Department

Stock File/Office copy ,to CA to ACS LSGD,CA to Prl Secy ENVT

Forwarded /By order

Section Officer

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Annexure 2

MINUTES OF THE WORK SHOP CONDUCTED ON 01-06-2019 AS PER THE ORDER DATED 25-4-2019 OF THE HON'BLE NATIONAL GREEN TRIBUNAL IN OA 606/2018

Background

The Hon'ble National Green Tribunal issued directions on 25-4-2019 in O.A. No. 606/2018 to the State on the waste management. The directions include:

1. At least three cities and three towns in the State and at least three villages in every district of the State may be identified within two weeks and earnest and demonstrable endeavor be made to make them fully compliant in respect of environmental norms within six months. Remaining State may be made fully compliant within one year.
2. A quarterly report is to be furnished by the Chief Secretary, every three months. First such report shall be furnished July 30, 2019. The Chief Secretary may personally monitor the progress at least once in a month, with all the District Magistrates
3. The District Magistrates may monitor the status of compliance of environmental norms, at least once in two weeks.

Accordingly the following city/town/villages were selected as models as per G.O. (Rt.) No. 45/2019/Envt. dated 31/05/2019 of the Department of Environment, Govt. of Kerala.

Model city	Model town	District	Panachayath
Thiruvananthapuram	Attingal	Thiruvananthapuram	Parassala
Thrissur	Punalur		Poovachal
Kozhikode	Kunnamkulam		Karakulam
		Kollam	Chavara
			Perinad
			Kadakkal
		Pathanmthitta	Aranmulla
			Kulanada

Annexure 2

			Thumpamon
		Alappuzha	Aryad
			Mararikulam North
			Thamarakulam
		Idukki	Adimali
			Kumali
			Nedumkandam
		Kottayam	Kadapalamattom
			Moonnilavu
			Poonjar
		Ernakulam	Chottanikkara
			Kalady
			Pampakuda
		Thrissur	Manalur
			Parappukkara
			Perinjanam
		Palakkad	Muthuthala
			Sreekrishnapuram
			Vellinezhi
		Malappuram	Chaliyar
			Marancherry
			Thuvur
		Kozhikode	Kunnummal
			Kuttiyadi
			Meppayur
		Wayanad	Meenangadi
			Muttil
			Vythiri
		Kannur	Padiyur
			Pariyaram
			Udayagiri
		Kasargod	Bedadukka
			Medakkai
			Kinanoor-Karinnthalam

Annexure 2

Workshop on 1-6-2019

The Chairman, Pollution Control Board in his welcome speech stressed the need to comply with all the environmental Rules. The Additional Chief Secretary, Local Self Government Department congratulated all the selected local bodies who were selected as model city/town/villages and requested the local bodies to take sincere efforts to provide the facilities for waste management. The Hon'ble Mayor of Kozhikode Corporation made a felicitation and assured all support for making the Corporation as a Model City fully complying with environmental laws. The Director, Clean Kerala Company informed about their activities for waste management. District collector Kasargode also made a speech on the activities in the district of Kasargode. The Member Secretary, Kerala State Pollution Control Board assured all technical support to the model cities/towns/villages for the implementation of proper management of solid waste. 155 Officers attended the workshop. The list of participants is enclosed as Annexure - 1.

Sri.Thrideepkumar M.P., Environmental Engineer of Kerala State Pollution Control Board made presentation on the orders of the Hon'ble National Green Tribunal. A copy of the presentation is enclosed as Annexure- 2. Dr. Sheela A.M., Senior Environmental Engineer, Kerala State Pollution Control Board made a presentation on the environmental rules. A copy of presentation is enclosed as Annexure- 3

The Board has developed a mobile application for locating the storage, treatment, disposal facilities provided by the local bodies. The link of mobile application will be forwarded to the model local bodies so that the facilities provided by them can be documented for further action. The mode of funding for the model city/town/village was enquired in the meeting.

Best practices followed

The best practices followed by the different panchayaths have been presented by the representatives of the local body. ~~The details are given in Annexure 2.~~ The main observations are as follows:

1. Rendering plant has been provided by the Kozhikode Corporation.
2. Bio mining and sanitary landfill activities are being taken up by Attingal Municipality. Door to door collection is practiced by Attingal Municipality.

3. Online booking for septage removal to Muttathara sewage treatment plant is done by Thiruvananthapuram Corporation.
4. In Punalur, for door to door collection, 1 person is allotted for 50 houses. Rexin and lady bags are degraded using termite. Jungle park using waste and swap shops were established. Steps are also taken for establishing facility for construction and demolition wastes.
5. Alappuzha has carried out a drive for cleaning of canals. Joint venture is taken by Pollution Control Board and NSS volunteers for various pollution control activities.
6. Thuvur panchayth made agreement with ACC Cement and transported leather, slipper, lays cover, and thermocol to ACC cement factory.
7. Door to door collection by Harithakarmasena is done by Pariyarampanchayath and collecting an user fee of Rs. 40.
8. Adimaly panchayath has collected fine for illegal disposal of wastes.

Actions to be taken

The main actions to be taken by the local bodies are given below:

A. Solid waste management

1. **As per Rule 15 (b)** ,arrange Door to Door collection of segregated waste fro, all households including slums and informal settlements , commercial and other non residential premises. Guidelines for Door to Door collection are provided by Kerala State Pollution Control Board
2. **As per Rule 15 (f)** ,Prescribe and collect user fee from waste generators.
3. Construct, operate and maintain Solid waste processing facilities **(Rule 15(v))** adhering to the Municipal Solid Waste Management Manual 2016 of Ministry of Urban Department. The capacity must be adequate for entire quantum of waste generated in the ULB.
4. **Make adequate provision of funds for capital investments** as well as operation and maintenance of solid waste management services in the **annual budget** ensuring that funds for discretionary functions of the local body have been

allocated only after meeting the requirement of necessary funds for solid waste management and other obligatory functions of the local body as per Rule 15(x).

A2 Statutory requirements on Authorisation and Annual report

5. **Annual report** in **Form IV** as per Rule 24 of the Solid Waste Management Rules, 2016 is to be submitted by **30th day of June** every year by the local body to the State Pollution Control Board and to the Secretary-in charge of the Department of Urban Development of the concerned State.
6. **Annual report** in Form V as per Rule 17 of the **Plastic Waste Management Rules,** 2016 is to be submitted by **30th June** by every local body to the Kerala State Pollution Control Board.
7. Submit application in Form-I for grant of **authorization** for setting up waste processing, treatment or disposal facility, if the volume of waste is exceeding five metric tones per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee. Authorization is required if the waste generated in the ULB exceeds 5 metric tonnes per day

A3. Action plan

6. **Action plan** for the above are to be submitted on before July 12th of 2019. The provision of fund is to be given by Suchitwa Mission.
7. **Revenue authority shall provide land** for Sanitary landfills, septage treatment plant, solid waste processing facilities.
8. **Industries department, KINFRA, KSIDC**, etc shall provide land in industrial estate/industrial park for rendering plants, e-waste dismantling and recycling facility, plastic recycling facilities.
9. All dump sites are to be marked on map (ENVICLEAN – 117.232.111.146). Action plan for **bio mining of dump sites a**s per Rule 15(zj) is to be prepared.

B. Liquid waste management

10. All installed Septic tanks to be as per IS 2470 Part 1 and soak pit as per IS 2470 Part 2.

Annexure 2

11. Soak pits shall be permitted only in sparsely populated areas. Municipalities shall provide collection and treatment of overflow of septic tank and sullage using closed conduit with intermediate pumping station to convey the waste water to STP before discharge. Guidelines are provided by Kerala state Pollution Control Board.

The workshop came to an end at 3.30pm.

Dated : 10-6-2019

CHAIRMAN

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Annexure 3

SITING GUIDELINES FOR SOLID WASTE PROCESSING FACILITY

KERALA STATE POLLUTION CONTROL BOARD

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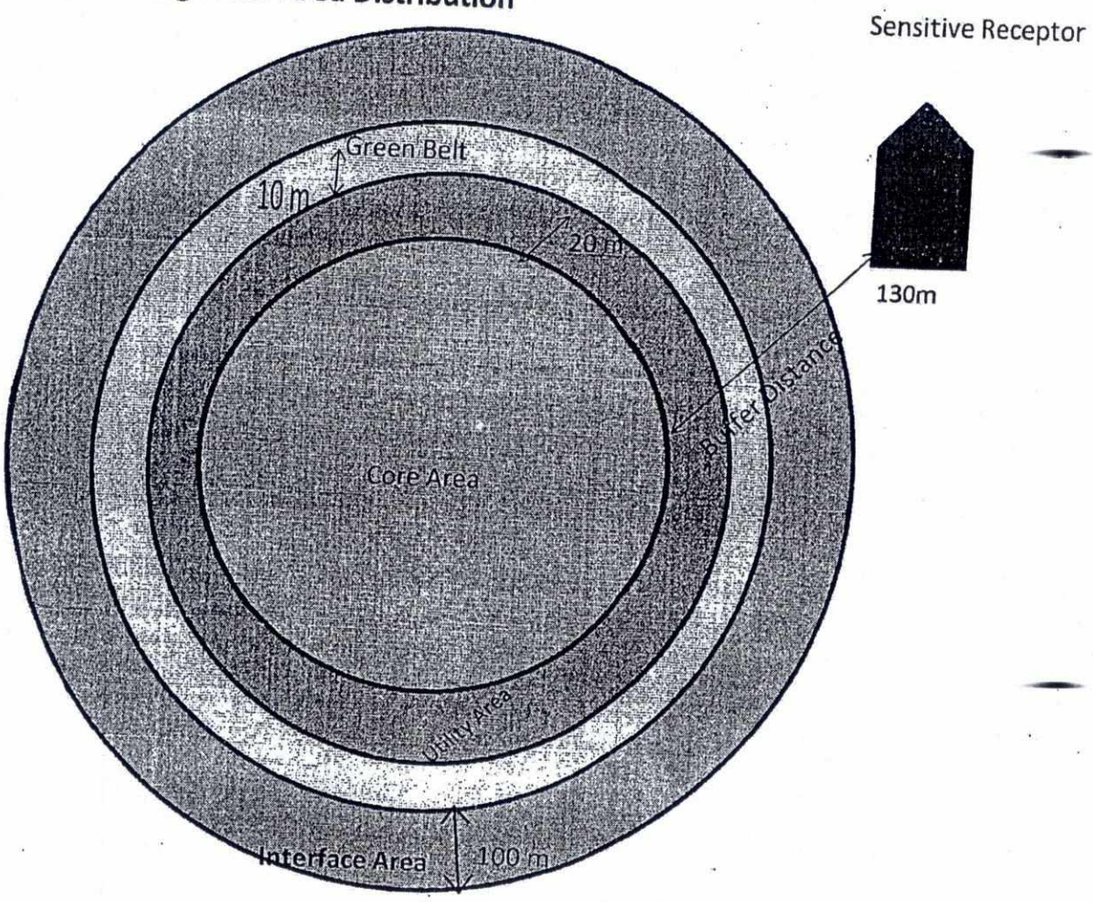
SITING GUIDELINES FOR SOLID WASTE PROCESSING FACILITY

Sl. No.	Activity	Area/Distance
1	Core Activity Area	The area required for Core Activity depends on the Technology adopted for Solid Waste processing
2	Utility Area	Width of 20 m around the source of emission- boundary of core activity
3	Green belt	Width of 10 m around the utility Area
4	Interface Area	Width of 100m around the utility area
5	Buffer Distance	Minimum 130m from the source of emission to the boundary of the property of the Sensitive Receptor

The land to be acquired for processing plant shall include the Core Waste Processing Area, Utility area and Green belt.

Interface Land Use: The permissible activities in the interface land use are limited to the following viz, vehicle showrooms, service stations, warehouses, display homes, emergency services facilities, funeral, veterinary clinic, playground, markets, Industrial Parks, Shopping Centres, Lorry Parking Area etc. If any residences/Public Buildings falls within the Interface area , the same shall be removed.

Waste Processing Plant Area Distribution



Land requirement for 300 TPD of segregated /pre-sorted MSW

Criteria	Integrated System (Composting + RDF)	RDF Incineration
Land Requirement	**6** ha. of land + **0.2** ha of land for providing odour control facilities	**1.5** ha. land area is required for RDF incinerator in addition to the area required for Composting + RDF facility.

General information:

The Solid Waste Processing Facility requires the following specifically demarked areas for various activities.

- ***Core Waste Processing Area*** *typically requires space for receiving storing and segregation of waste along with treatment units within the facility.*
- ***Utility Area*** *within the facility is the designated area for the facility operations other than the core activities like. Weigh bridge, parking, vehicle cleaning, laboratory, emergency services etc.*
- ***Green Belt*** *for the purpose of these guidelines shall refer to an area that is kept in reserve within the alloted land for setting up facility, around the core SWM processing area, for the purpose of plantation and landscaping to reduce the adverse effects from air ,noise and Ground Water pollution soil erosion etc. Vegetation, shrubs, trees, and berms with high density greenery can be incorporated into green belt within facility limits to serve as visual barriers and to reduce noise levels. Depending on the monitoring of level of pollutants in ambient air after the boundary of facility, on case to case basis, suitable technological measures/ barriers to check pollutants need to be resorted. It also works as a natural shield to protect people around the facility from these pollution.*
- ***Interface Land Use****: The buffer zone could be further augmented with interface land use area, where this area can be beneficially and feasibly used as an additional optional measure, after due approval of the concerned authorities.*

  The activities in the interface land use are limited to the following viz, vehicle showrooms, service stations, warehouses, display homes, emergency services facilities, funeral, veterinary clinic and playground, markets, Industrial Parks, Shopping Centres, Lorry Parking Area etc. If any residences/Public Buildings falls within the Interface area , the same shall be acquired
- ***Buffer Distance or Separation distance*** *is measured as the areal distance between the source of emission and sensitive receptors. For the purpose of these guidelines and addressing the required protection from adverse impacts, separation distance is measured from the tip of core SWM facility processing boundary, as the source of emission, to the nearest boundary of the property of sensitive receptors .(* ***Sensitive receptors*** *are people or other organisms that may have a significantly increased*

sensitivity or exposure to contaminants by virtue of their age and health. Eg: Schools, day care centres, hospitals, nursing homes, elderly housing etc)

- The Coastal Zone Regulation notified by Ministry of Environment Forest and Climate Change also prohibits setting up and expansion of units or mechanism for disposal of wastes in High Tide Line (hereinafter referred to as the HTL) to 500 m on the landward side along the sea front. Also dumping of city or town wastes including construction debris, industrial solid wastes, fly ash for the purpose of land filling and the like with high tide line shall be regulated by the concerned authority, where shall implement schemes for phasing out any existing practice, if any.

Locational Criteria

Sl.No.	Location	Distance
1	**Lake or Pond**	>200m
2	**Navigable River or Stream**	>100m
3.	**Flood Plain**	No facility should be constructed within a 100 year flood plain
4	**Highway**	>200 m of the right of way of any state or national highway
5	**Habitation**	>130 m from a notified habited area
6	**Wetlands**	No facility should be constructed within wetlands
7	**Ground Water Table**	Facility should not be constructed in areas where table is less than 2 m below ground water surface
8	**Airport**	As per the limits prescribed by regulatory agencies (MoEF/CPCB/Aviation Authorities)
9	**Water Supply Well**	No facility should be constructed within 500 m of any water supply well
10	**Coastal regulation Zone**	Facility should not be sited in a CRZ
11	**Unstable Zone**	Facility should not be located in potentially unstable zones such as landslide prone areas, fault zone etc.
12	**Public parks**	>300 m
13	**Earthquake zone**	>500m from fault line fracture (urban local bodies in seismic zone 4 &5 consult seismic map)

The siting criteria shall further be reviewed based on the technology adopted in the treatment process viz, Composting (Mechanical Biological Treatment/Vermi Composting), Anaerobic Digestion, Waste to Energy process etc.

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Annexure 4

SULLAGE AND SEWAGE TREATMENT OPTIONS FOR MODEL PANCHAYATS AND MUNICIPALITIES

The method of Sewage and Sullage treatment from household depends on the nature of the terrain, population density, depth of water table, availability of space requirement, one time cost and operation and maintenance costs of the system. It is high time to develop Centralized managed sanitation systems focusing on scientific Solid & Liquid Waste Management systems for overall cleanliness in the State.

Ministry of Drinking water and Sanitation has also recommended Soakpits as an onsite treatment option for sullage from house holds.

WASTEWATER GENERATION & CHARACTERIZATION

The wastewater from various household activities can be classified into;

1. Grey water:- Wastewater generated from bathing, kitchen and other household activities except toilet.
2. Blackwater:- Wastewater generated from toilets.
3. Combined wastewater: It can be either mix of grey water and effluent of septic tank treating black water or effluent of septic tank treating black and grey water.
4. Sewage:- Combined grey and black water generated from household in the absence or presence of septic tank.

The characteristics of the above mentioned types of wastewater depends on water supply and per capita pollution load. The level of water supply plays a major role in deciding the concentration of pollutants. Other significant factors are settlement and decomposition in drains, sewers under warm weather conditions, partially treated sewage from septic tanks, lifestyle of the population. The best way to ascertain the characteristics is to conduct the sampling and analysis of various water quality parameters of the outfall or drain.

Parameters	Grey water	Black water	Septic Tank Effluent*	Septic Tank Effluent**	Mixed Wastewater***	Sewage
BOD (mg/L)	100-300	600-1000	300-600	80-160	150-400	250-400
COD (mg/L)	200-500	1000-2000	600-1000	200-400	300-600	500-800
TSS (mg/L)	100-300	800-1200	300-500	200-400	150-350	600-1000
FecalColiforms (MPN/100 ml)	10^2-10^3	10^6-10^7	10^5-10^6	10^3-10^5	10^4-10^5	10^5-10^7
Total Coliforms (MPN/100 ml)	10^2-10^3	10^7-10^8	10^6-10^7	10^4-10^6	10^5-10^6	10^5-10^7

*(Treated Black water only)

** (Treated Grey water + Black water)

***Septic Tank Effluent & Grey water

Note: *These concentrations are analysed on-site, the values could be 20-40 % lower at the STP site due to settling, biodegradation etc., process in the wastewater collection system depending on the climatic conditions, type and length of the collection system etc.,*

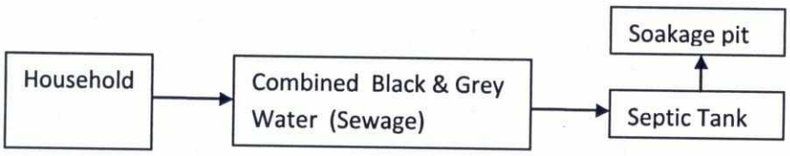
WASTEWATER COLLECTION & TREATMENT SYSTEM

As per the prevailing conditions, different options are suggested for safe wastewater (Grey water, Black water, combined wastewater & sewage) collection, treatment and disposal/reuse as per the end user requirement. These options are either on-site solutions, or decentralised or mixed solutions. Most suitable option should be elaborated in a thorough feasibility study that takes into account the above mentioned criteria for technology selection. The configurations could be any one of the following options depending on the standard of living, water availability, fund constraints, soil and topographical conditions, density of population etc.,

The Ministry of Drinking Water and Sanitation has recommended some combination of treatment technologies depending on nature of soil, water supply, ground water level and population.

Option 1. Sanitation System using Soak pits (Sandy soil and deep groundwater table, piped water supply sparse population)

This system can be adopted in Panchayat/ Village areas having the above characteristics.

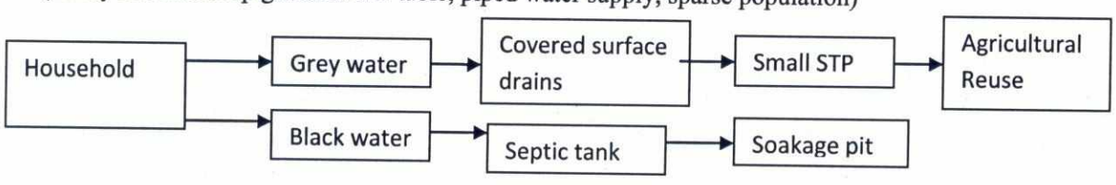


Option 2. Sanitation System with different methods.

All the Municipalities shall adopt one or the other following option for comprehensive management of Sullage and Sewage and shall take effective steps for providing and maintaining covered surface drains and STP for the treatment of Sullage/ Sewage.

This system can be adopted in municipal areas having the above characteristics.

a) Sanitation System using Soak pits and Covered surface drains
(Sandy soil and deep groundwater table, piped water supply, sparse population)



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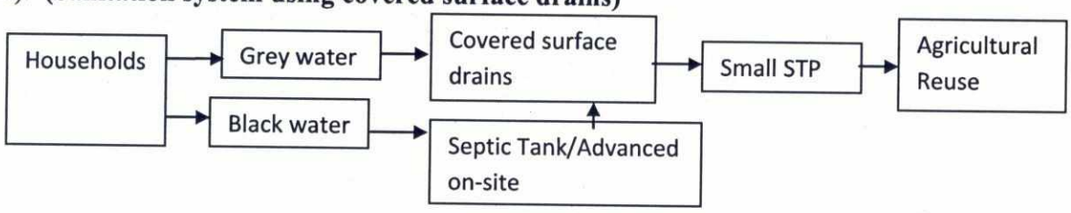
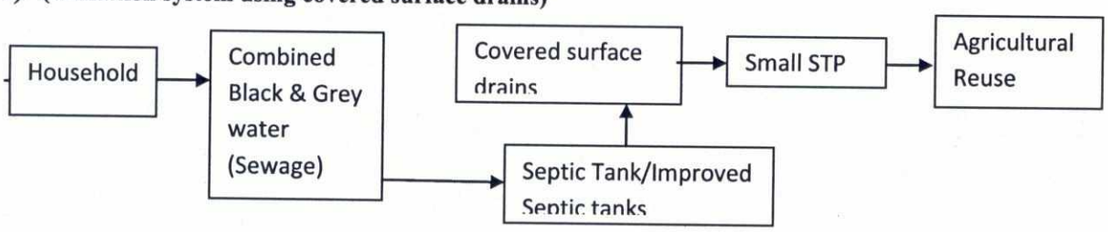
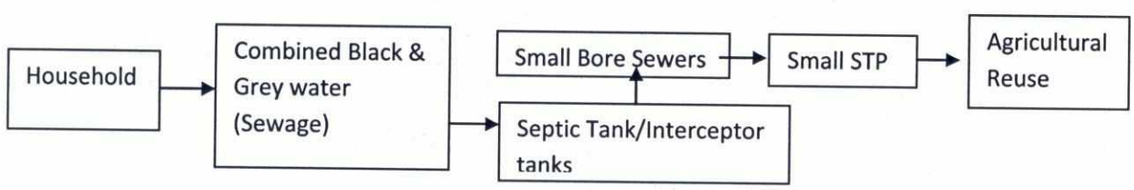
b). (Sanitation system using covered surface drains)



c). (Sanitation system using covered surface drains)



d). (Partly Sewered sanitation using small bore sewer)



Note:

- ***The Septic tank mentioned here in shall be in accordance with the specifications and dimensions as per IS 2470 Part 1-1985 and the Soakage pit shall be in accordance with the specifications and dimensions as per IS 2470 Part 2-1985***
- ***Small STP –The STP that is suggested for treatment of combined Black and Grey Water. This shall consists of the following treatment units viz, equalization tank (aerobic suspension), aeration tank(ASP, EA, MBBR , fixed film or any other advanced technology), secondary settling, pressure sand filter, disinfection tank, activated carbon filter. (Source: Guidelines of Kerala SPCB)***

WASTEWATER COLLECTION SYSTEM

Removing wastewater of any form i.e., greywater, combined grey water and septic tank effluent or sewage and storm water is an important environmental health intervention for reducing disease. Poorly drained wastewater and stormwater forms stagnant pools that provide breeding sites for disease vectors. Hence there should be proper systems for the collection of wastewater.

There are three common types of collection systems of wastewater;

i. Covered surface drains
ii. Small bore sewers
iii. Conventional sewers

i. Covered Surface drains

One of the cheapest and interim options for disposal of grey water, grey water + septic tank effluent is the covered surface drains. Further, open channels often exist in rural areas and hence can be upgraded to covered drains with little efforts.

The objective of covered surface / storm water drain is to remove waste water/ rain water from the households/ premises in a controlled and hygienic manner in order to minimize public health and environmental risks, inconvenience to residents and the deterioration of other infrastructure. This requires:

a) Removal of grey water and/or septic tank effluent generated from various household activities
b) Removal of storm water, that is, water which runs off the land and houses as a result of infall.

The recommended section of covered surface drain is shown in the figure (Fig 1).The half rounded central channel for the peak dry weather wastewater flow, while the outer channel facilitates storm water discharge. The outer channel floor should preferably gently down to the central channel. Since, open drain/channel have a higher friction than a pipe. In relatively flat areas, pipe flow could be better, an alternative option would be laying the pipe into the open channel and cover it.

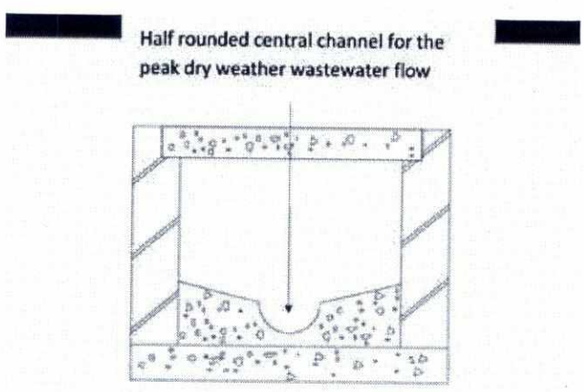
The important design considerations are as follows:

- The raising of road surfaces above the plinth level of nearby houses should always be avoided.
- In the absence of rainfall data, drainage schemes should normally be designed for a return period of 1 year or less. Rainfall intensity in the range of 50-100 mm per house can be assumed.
- Both opened and covered drains give rise to maintenance problem and their total length
- should be minimized.
- Covered drains should not be smaller than about 500 mm in square cross section

Applicability:

It is an interim and fast solution of wastewater collection and can be applied at reasonable cost. However, to prevent clogging, regular cleaning service for the removal of sludge is necessary. Further, if existing open channels (Nallas) are upgraded it has to be taken care of providing sufficient slope of the drains for dry weather flow as existing drains often lead to stagnant dry weather flow which causes unhygienic conditions and may infiltrate in the ground.

Fig.1. Half rounded central channel



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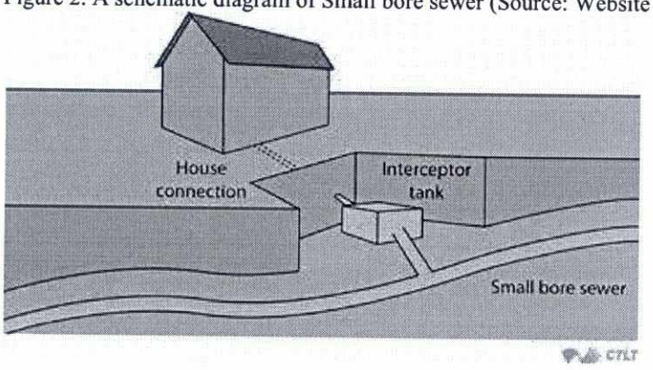
For grey water, surface drain is the cheapest ption for collecting such waste water. For black water, mixed with grey water, small bore / swallow sewer is the appropriate and sustainable options for collecting waste water in rural areas. Small bore sewer systems are designed to receive only the liquid portion of household wastewater for off-site treatment and disposal. Grit, grease and floating materials are separated from the waste flow in interceptor tanks similar to septic tanks. Such interceptor tanks are installed after each household or group of households as per the site conditions. Depending upon the size of interceptor tanks and inflow of waste water, settled solids should be removed periodically from the interceptor tanks. It is suitable where per capita waste water generation is very low. It is more suited in rural areas where per capita water supply is low, making conventional sewer system technically unfeasible.

Figure 2. A schematic diagram of Small bore sewer (Source: Website Jhsphopen Courseware, 2013)



Ref:- 1. Technological Options for Solid and Liquid Waste Management in Rural Areas-MINISTRY OF DRINKING WATER AND SANITATION,SWACHH BHARAT MISSION (GRAMIN)
2. Indian Standard Code of Practice for Installation of Septic tanks Part I and Part II (IS:2470- 1985)
3. Siting Criteria and Consent Conditions Notification- Kerala State Pollution Control Board

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Annexure 5

PROCEEDINGS OF NATIONAL SEMINAR ON EXTENDED PRODUCER RESPONSIBILITY ON 12TH JUNE 2019

DEPARTMENT OF ENVIRONMENT
&
KERALA STATE POLLUTION CONTROL BOARD
JUNE 2019

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PROCEEDINGS OF NATIONAL SEMINAR ON EXTENDED PRODUCER RESPONSIBILITY ON 12TH JUNE 2019

National Seminar on Extended Producer Responsibility was held in Hotel Hilton, Thiruvananthapuram on 12th June 2019. 281 different stakeholders attended the meeting,

The Principal Secretary, Environment Department, Dr. Usha Titus IAS, welcomed the gathering. She emphasized the responsibility of the producers/brand owners/manufacturers to take initiatives for the management of wastes as per the environmental statutes. The Hon'ble Mayor, Sri. Prashanth, Thiruvananthapuram Corporation presided over the function.

The Hon'ble Chief Minister of Kerala, Sri Pinaryi Vijayan, inaugurated the National Seminar. In his inaugural speech, he said that Kerala is a consumer State. A large quantity of products from other states are consumed in our State, all of which generates packaging and end-of-life waste. He pointed out that it is essential but costly to manage and treat the wastes generated after use. As per Extended Producer Responsibility, the producer/brand owner/ manufacturers have either take back the packaging or to take steps to meet the expense involved in treating the waste in the public waste treatment facility. The Chief Minister welcomed investors to set-up recycling facilities in the State. Land for recycling units can be made available in Industrial Estates. Sri. Tom Jose IAS, Chief Secretary made the key note address. Sri. T.K. Jose, IAS, Additional Chief Secretary made the felicitation. Dr. Ajit Haridas, Chairman. Kerala State Pollution Control Board thanked the gathering.

Annexure 5

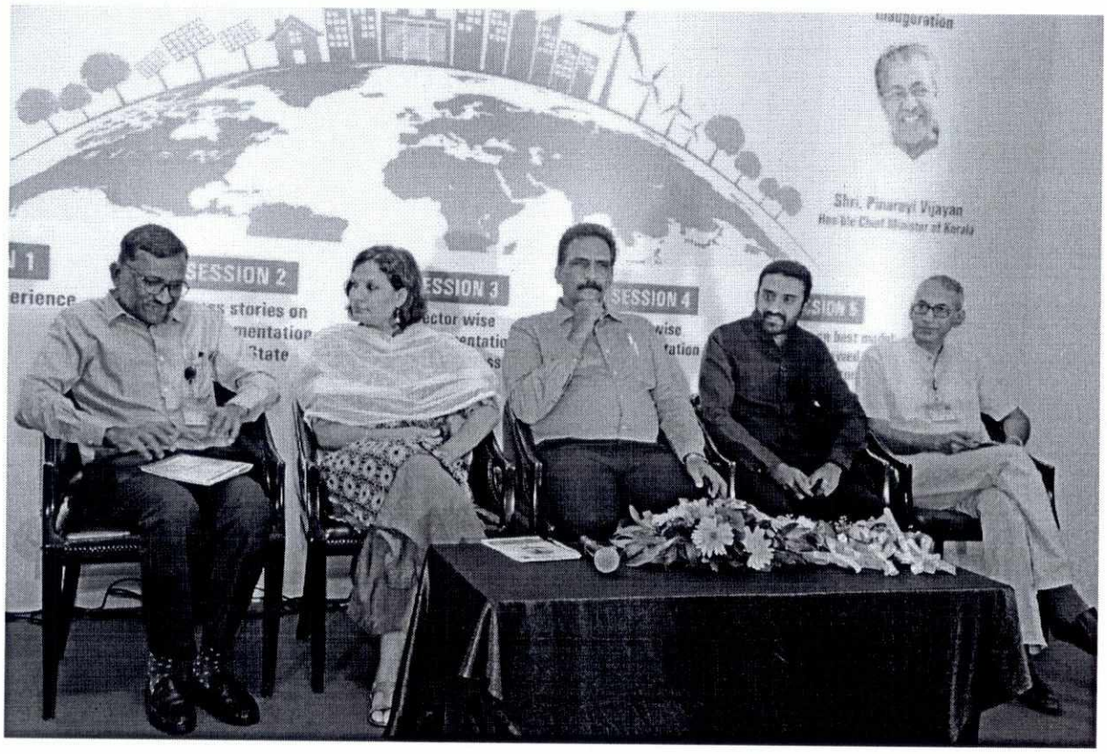
First Session- EPR Global Experience

The first session was on the sharing of global experience of Extended Producer Responsibility. The copy of all presentations is enclosed. The success stories on EPR implementation in various States were presented in the second session. The implementation of EPR in the sectors of plastics was presented in the third session. The implementation of EPR in

Annexure 5

electronic, pharmaceuticals was presented in the fourth session. The fifth session covered the concluding session.

The first session on sharing of global experience was moderated by Dr. Selvan, Deputy Chief Environmental Engineer of Tamil Nadu Pollution Control Board.



The first presentation was made by Sri. Srikrishna Balachandran, Programme Manager- Plastic Waste Management, United Nations Development Programme and by Sri. Ajayakumar, Associate Vice President - Plastic Recycling & Water Initiatives at Hindustan Coca-cola Beverages Pvt Ltd. Sri. Srikrishna Balachandran explained the EPR followed in different countries. While formulating EPR frame work, the factors namely product category, household segregation, municipal collection, material recyclability, different statutes, informal sector, recycling landscape, consumption patterns and consumer attitude to recycled product are to be considered. Sri. Ajayakumar explained the initiatives done by Hindustan Coca cola with UNDP. Infrastructure building, value chain coordination, integration of formal and informal sectors, awareness programmes are done in their programme.

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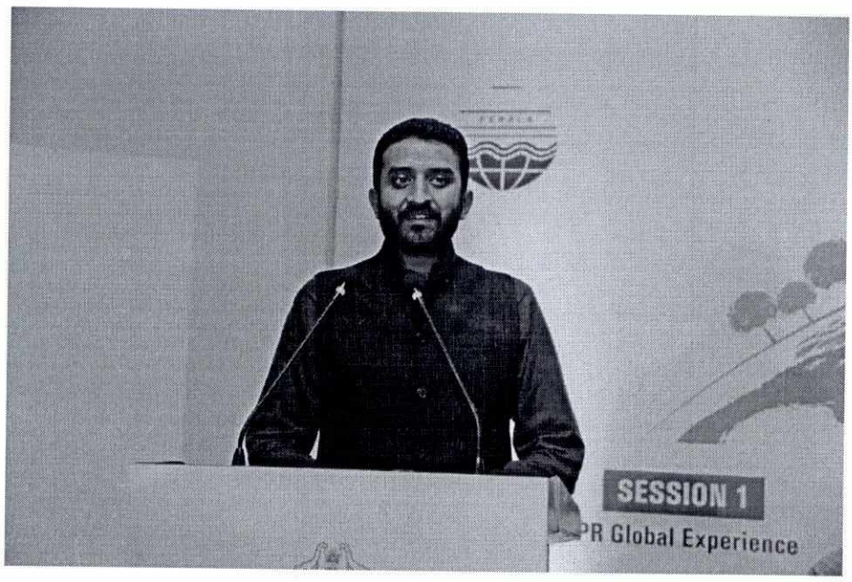

Smt. Swati Singh Sambyal, Programme Manager, Centre for Science Environment, New Delhi, India also explained the EPR in different countries especially in Sweden. Strengthening municipal systems, national framework on EPR credits, independent third party audited reports of the offset mechanism, development of a national registry of plastic packaging and details of financial flow, material flow and credit earned in public domain, inclusion of informal sector are presented as workable in India. The financing options are advance recycling fee, disposal fee, recycling subsidy and deposit refund model.

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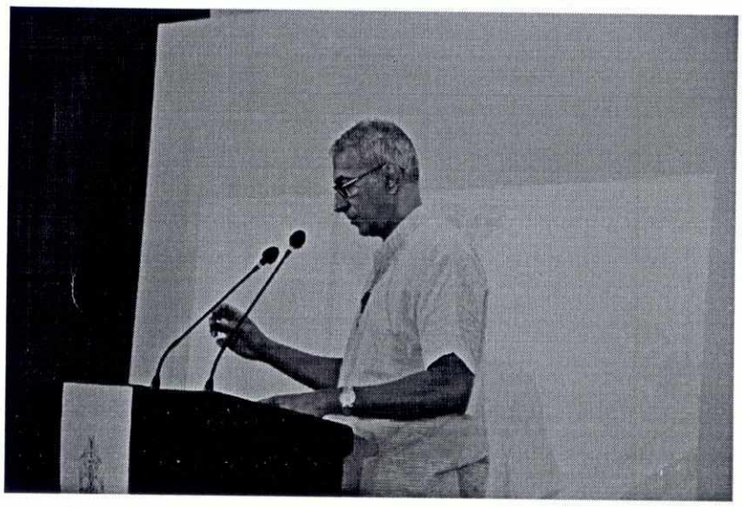
Prof. (Dr.) Sudhir Chella Rajan, IIT Madras explained the status of EPR implementation in Tamil Nadu. He reiterated the need to show responsibility for waste minimization by producers and consumers. The different social theories of consumption were also explained.



Dr. Shalini Sharma, Founder & CEO Sanshodhan An E-Waste Exchange & Founding Director, ICE&SDGs, Global Institute for Circular Economy & SDGsinformed about the challenges faced by SPCBs and municipalities i.e E-waste inventorisation, annual reporting. The advantages of the software, i.e Industry 4.0 based Innovative Tech EWX for the inventorisation and monitoring were explained.

Annexure 5

Second Session- Success stories on EPR implementation in various States

The second session was moderated by Prof. (Dr.) Sudhir Chella Rajan, IIT, Madras. Er. Poornima of Central Pollution Control Board explained the provisions of EPR in Solid Waste Management Rules, Plastic Waste Management Rules and E-waste Management Rules, 2016. The producers/brand owners/manufacturers are liable for implementing EPR.

Mr. **Nanda Kumar Gurav**, Regional Officer, Maharashtra Pollution Control Board presented the implementation of EPR in Maharashtra, They have notified Maharashtra Plastic Ban Notification, 2018 banning single use items. Fine of Rs. 4 Cr collected in joint action with urban local bodies; banned plastic items of 1200 tonnes seized, 450+ EPR plans received from plastic industries, most of the EPR are planned to be implemented through PROs, and PROs have established collection centers at different locations in Maharashtra. Production capacity, collection mechanism, disposal mechanism, year-wise targets, and monitoring and reports are the parameters considered for evaluation of EPR plan.

- PET / PETE Bottles of Drinking water, having liquid holding capacity of one litre or more, shall be printed on it, the Deposit and Refund Price of Re.1 or buyback price as decided by the Manufacturer. Drinking water PET / PETE Bottles, having liquid holding capacity of less than 1 Lit. but more than 200 ml. shall be printed on it, Deposit and

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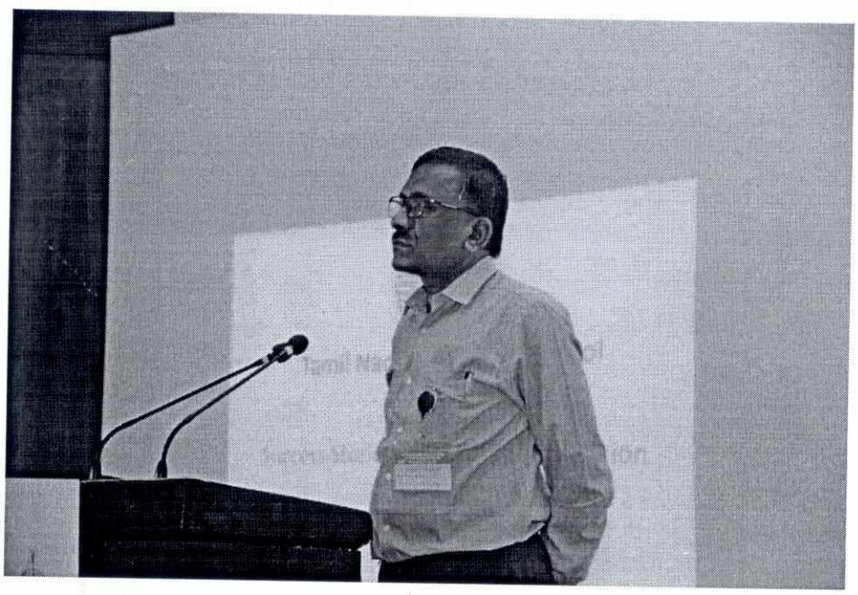
Refund Price of Rs. 2 or buyback price as decided by Manufacturer. Drinking water PET/PETE bottles less than 200 ml. banned

Dr. Selvan, ACEE, Tamil Nadu Pollution Control Board explained the implementation of extended producer responsibility in Tamil Nadu. A few Reverse Vending Machines have been installed to accept plastic bottles in exchange for coupons that can be redeemed at selected shops. Cement plants (ACC Ltd, Dalmia Cements Ltd., Ultra Tech Ltd.) in Tamil Nadu have set up co-processing facilities to use plastic wastes as alternate fuels.



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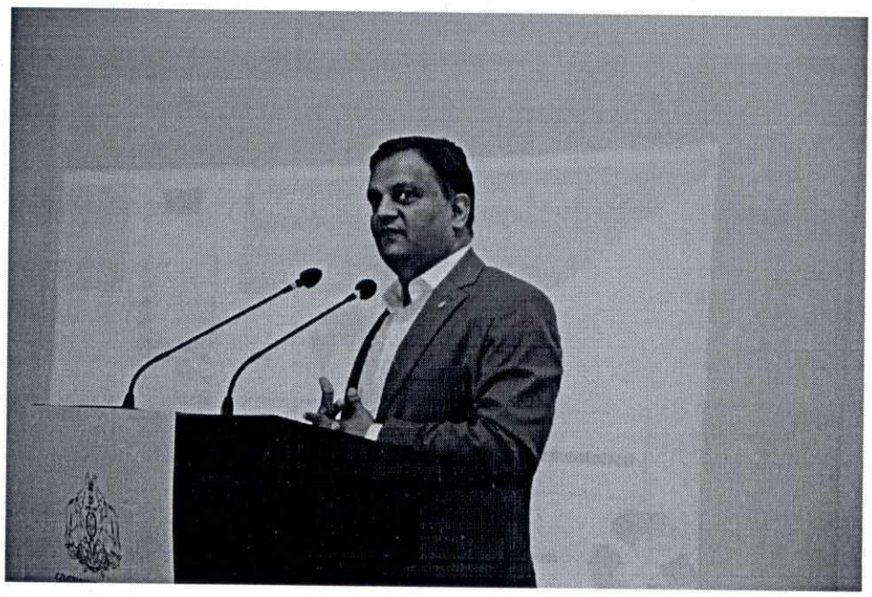
Third Session - Sector wise EPR Implementation –Plastic, mattress

The third session was moderated by Sri. Sri Krishna Balachandran, Programme Manager-Plastic Waste Management, United Nations Development Programme. In the third session, presentation was first made by Sri. Chandra Mohan Gupta, Coca Cola, PACE member of Management Committee. PACE represents 28 businesses which contributes 65% of Plastic value chain. He said that managing used plastic and plastic packaging is very complexwhich needs collective efforts. The measures like charging a small refundable fee for bottles to ensure they are returned to the shop; establishment of more recycling units for enabling easy transportation and an economical recycling process are to be adopted.

Dr. Atul Sud, Director Legal & Regulatory Affairs, Perfetti Van Melle India Pvt. Ltd., Member of We Care Management Committee(MLP) made the presentation. We Care is a joint venture of more than 35 companies in the field of multi layer packaging. They have joint EPR initiative for collection, segregation, and reprocessing of multilayer packaging. In their Maharashtra model, they have enhanced recycling and reprocessing established for MLP and there is economic benefit for entire value chain. In the Punjab model, for the effective management of post-consumer multi layered packaging(MLP),the Punjab Plastic Waste

Annexure 5

Management Society and a consortium of 26 fast moving consumer good(FMCG) companies signed a pact with the Punjab Pollution Control Board(PPCB) to launch a five-year progamme. The decision making in PPWMS entrusted to the industry as a major stakeholder and EPR action plans are being executed in a time bound manner. In Tamil Nadu model, it is requested for a public private partnership model under CII and CII is preparing working EPR model for TN state. He said that informal sector is also to be included in the formal industry and a model at national level is required.



Dr. Praveen Aggarwal, Chief Executive Officer, Action Alliance for Recycling Beverage Cartons(tetrapack)(AARC) made a presentation on their initiatives for managing tetrapack. AARC is a alliance for recycling beverage cartons. He said that integral plastic shall not be banned. They have take initiatives for implementing signature projects on collection, recycling to increase recycling rate; replicate successful models directly, in partnership or through AARC, and to create a funding mechanism and raise resources to increase recycling rate.

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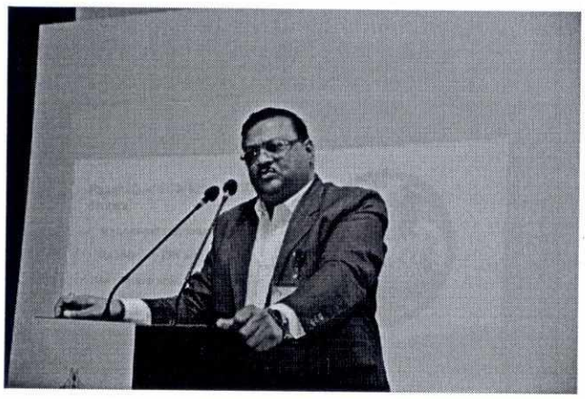

Indian Sleep Products Federation –ISPF representative informed their inability to attend and sent their presentation. It is noted that they made some initiatives for the recycling of mattresses. The discussion may be done with their representatives for further action.

Fourth Session- Sector wise EPR Implementation – Electronic, expired medicines

The fourth session was moderated by Dr. Selvan, ACEE, Tamil Nadu Pollution Control Board. Sri. Anup Mathur, Group Leader of Technical Support, which includes Quality support, Training, Legal complaints, Product Environment, Samsung made the presentation. They made some initiative like toll free number, collection bins, some news in website. They said tht training will be given to ITI students. Home pick up is also introduced by them.

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Sri. Gautam Mehra, Manufacturers Association of Information Technology-Consultant made the presentation on EPR as per E-Waste Rules. According to him, EPR can finance collection costs which can incentivize formal recycling in India. He explained that as per EPR guidelines, EPR targets for producers based upon volumes sold; targets to be increased from 30 percent to 70 percent incrementally every year(Revised later starting from 10 percent); individual and collective producer responsibility models allowed for implementation of targets; Financial models for meeting targets also allowed – Deposit Refund Schemes and

Advance Recycling Fees depending on respective producers; CPCB to provide authorization to producers based on EPR plans; PROs to seek authorization to set-up collection centers and collection points. He suggested that inventorization and appropriate infrastructure are necessary for the implementation of EPR and the methodology of inventorization is yet to be standardised.

Sri. PranshuSinghal, KaroSambhav made the presentation on their experience as Producer Responsibility Organization. They have made awareness to bulk consumers, college students, residents, and to waste collectors. The need to stop the occurrence of mal practices in this field like on-paper collection/recycling of e-waste, mis-declaration of data sets, activities on driving awareness has been stressed. He also added to introduce of recovery charges for collected e-waste and to digitize the full process.

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The Drugs Controller, Drugs department, Kerala introduced the programme, PROUD, ie, the programme for the removal of unused drugs. Presently the unused & date expired medicines are dumped on land, water bodies which is one of the primary reason for AMR, water pollution and destruction of aquatic flora. He said that nearly 90% of the drugs sold in the state are manufactured in other states and most of the firms do not take back unused stock or expired drugs from distributors or retailers. Further there are no regulatory guidelines in Drugs & Cosmetics Act, regarding the disposal of unused & expired drugs. PROUD is a joint initiative of State Drugs Control Department and All Kerala Chemists & Druggists Association. It is launched on a pilot basis in Thiruvananthapuam on 15-4-2019. Bins placed in front of around 35 medical shops in Thiruvananthapuram district. On monthly basis, drug filled in the bins will be collected and sorted at a central collection point, from where it will be transported to incineration plant. He said the process is expensive and producers/manufacturers/brand owners have to take steps to support this collection system under Extended Producer Responsibility.

Fifth Session - Concluding session

In the concluding session, Dr. Ajit Hardias, Chairman, Kerala State Pollution Control Board, Smt. Sreekala, S., Member Secretary, Kerala State Pollution Control Board and Smt. Poornima, B.M., Environmental Engineer& Scientist C, Central Pollution Control Board led the discussion on EPR implementation in Kerala.

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The participants have congratulated Government of Kerala for holding a seminar and consulting stakeholders before formulation of EPR policy.

The remarks are as follows:

1. KSPCB submitted that the rag-picker model used by PROs for collection of value components of packaging wastes does not comprehensively address plastic wastes. Therefore, bulk of the plastic wastes must be addressed by local bodies through regular door-to-door waste collection and treatment. EPR for Producers/Importers/Brand-Owners (PIBO) shall primarily be a financial responsibility while the physical responsibility shall be that of Urban Local Bodies.
2. In order to implement the EPR financial responsibility of PIBOs, KSPCB proposed bringing all Producers, Brand Owners, Importers in under consent and generating EPR fund from consent fee. The EPR fund can be distributed to the local bodies for the strengthening of their collection system which they are to be submitted periodically the annual report. The PWM 2016 Rule 9.2 provides requires consent for PIB who introduce multi-layered plastic packaging into the market. SWM Rule 17.1 requires all manufacturers and brand-owners who introduce disposable packaging to provide financial assistance to local authorities. Consent is given under the Water Act and Air

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Act. PIB are bought under consent with the formation of negative Environmental impact by introduction of products, cause air and water pollution when improperly disposed off.

3. PIB may implement a Return Deposit Scheme for collection and recycling of bottles and containers. In this case, PIB shall be give consent fee credit for effective collection for recycling. Schemes for recycling of plastics are practical only when economically feasible.
4. PIB/PRO representatives mentioned that under PWM 2016 Rule 13.2, national brand-owners are already registered with CPCB. Therefore, it is burdensome for PIBs to take consent from KSPCB.
5. Producers as defined in E-waste Rules 2016, should implement EPR through Return-Deposit-Scheme or Buy-back scheme for e-waste so as to improve collection. Collection through own sales distribution network is preferred. When EPR plan uses PROs, Sufficient collection points must be provided for effective collection of e-waste.
6. Inventorization of plastic, e-goods is to be prepared with the support of producer/brand owner/ manufacturers.
7. ULB need to strengthen door-to-door collection for plastic wastes. Doubts on the capability of ULB for collection was raised by Directorate of Urban Affairs, Government of Kerala. The Corporation of Thiruvananthapuram and Clean Kerala Company mentioned that collection can be effectively managed if greater financial resources are provided through EPR.
8. For plastic and other products, recycling units shall be set up in the industrial estate and the land is to be given by the Industries department.
9. For the e-wastes, support is to be given for setting up e-waste dismantling/recycling facility in the State. The land in industrial estates/parks is to be given by the Industries department.
10. Financial support is to be given by the manufacturers/producers/brand owners for the taking back of unused medicine by PROUD progamme launched by Drugs Controller, Kerala.

Dated: 08/07/2019

CHAIRMAN

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16-Jul-19

ROAD MAP FOR THE IMPLEMENTATION OF EXTENDED PRODUCER RESPONSIBILITY

	Subject	Activities	Implementing agency	Time line
1.	Formulation of EPR scheme. Notification of consent fees for PIBO	• Discussions with major stake holders namely Producer/brand owner/manufacturer associations and Govt officials • Details such as sales details to be collected from Producer/brand owner/manufacturer	Kerala State Pollution Control Board	31-8-2019
2.	Formulation of Deposit refund scheme / Buy back scheme for e-goods	• Discussions with major stake holders namely Producer/brand owner/manufacturer associations and Govt officials Details such as sales details to be collected from Producer/brand owner/manufacturer	Kerala State Pollution Control Board	31-8-2019
3.	Inventorization of plastic and electronic goods to the State and to the district	• Issue of questionnaire to Producer/brand owner/manufacturer • Compilation of data	Kerala State Pollution Control Board	30-9-2019
4.	Strengthening of collection mechanism for recyclable containers – PET bottles, tins,	• Assessment of present status • Discussion on gaps in the present status • Action plan to be evolved with concerned for efficient take back system	Associations of PET,MLP, tetrapack; Clean Kerala Company, Kudumbasree, Scrap dealers Association	

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16-Jul-19

5.	Support for setting up recycling parks for solid waste namely plastic	• Allocation of land in industrial estate/park • All support for setting up of the facility	Industries department Associations of PET,MLP, tetrapack	30-12-2019
6.	Support for setting up of dismantling/recycling units for e-goods	• Allocation of land in industrial estate/park • All support for setting up of the facility	Industries department Associations	30-12-2019
7.	Collection of unused medicine	• Discussion with pharmaceutical companies, associations	Drugs Control department Kerala State Pollution Control Board	30-9-209
8.	Disposal of used mattresses	• Discussion to be done with ISPF-Indian Sleep Products Federation	Kerala State Pollution Control board	30-9-2019

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☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
E-mail: chn.kspcb@gov.in ,chn.kspcb@gmail.com FAX: 0471 – 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD
കേരളസംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/TRAINING/WORKSHOP/2019 Date: 07.06.2019

From

The Chairman

To

The Secretary,
Thiruvanthapuram Corporation/ Attingal Municipality/ Varkala Municipality/ Nedumangad Municipality/ Neyyattinkara Municipality

The Executive Director,
Suchitwa Mission,
Swaraj Bhavan, Base Floor -1,
Nanthancode Jct, Kowdiar,
Thiruvananthapuram, Kerala 695 003

The District Medical Officer,
Palayam - Airport Rd, Near Government Hospital Junction, Rishimangalam,
Vanchiyoor, Thiruvananthapuram, Kerala 695 035

The Managing Director,
Kerala Water Authority -Jalabhavan, Vellayambalam ,
Thiruvananthapuram -695 033

The Chief Engineer,
Irrigation & Administration,
Public Office Building, Museum P. O.,
Thiruvananthapuram-695 033

The Chief Engineer, LSGD Engineering Section,
The Public Office (New Building),
Thiruvananthapuram - 695 033

Sub: Technical presentation by Paques Environmental Technology India Pvt. Ltd on 'Biopaq® UBOX - an Advanced Technology for Decentralized Sewage Treatment in Smart Cities/Remote Communities – reg.

Ref: Email dated 06.06.2019

Sir,

Paques Environmental Technology India Pvt. Ltd, an industrial wastewater treatment company has requested the Board for an opportunity to conduct a detailed and thorough technical presentation on Biopaq® UBOX - an Advanced Technology

Annexure 6

for Decentralized Sewage Treatment in Smart Cities/Remote communities for all key stakeholders in the Kerala Government/Bureaucracy/Implementers/End User Departments. Accordingly a technical presentation has been organized in the PWD Guest House at Vazhuthacaud on 26.06.2019 at 11.00 am. Please attend the meeting.

Yours faithfully,

CHAIRMAN

Copy to: Paques Environmental Technology India Pvt. Ltd (by e-mail)

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MINUTES OF THE MEETING OF RIVER REJUVENATION COMMITTEE ON 06-06-2019

The meeting was convened by the Environment Secretary. Secretary welcomed all the participants to the meeting. The list of participants is attached.The Senior Environmental Engineer explained that the action plan for River Karamana was approved by the Hon'ble National Green Tribunal. A review on the progress on the implementation of action plan by the different departments is to be done by the River Rejuvenation Committee.The progress on the implementation of activities is given as annexure.

The action taken on the remaining 20 stretches which fall in the fourth and fifth priorities were also discussed. The departments namely Water Resources Department; Irrigation department; Kerala water Authority; Urban Affairs directorate, Panchayath Directorate , Industries Department, Suchitwa Mission were asked to ensure that all details as per the NGT order were submitted and a check list on the same was also given. They were asked to submit the details by 15th June 2019.

Meeting came to an end at 2 pm.

20/06/2019

MEMBER SECETARY

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ANNEXURE 1

PROGRESS ON IMPLEMENTATION OF KARAMANA RIVER ACTION PLAN AS ON 6-6-2019

1. Short termplan

Maintenance and de-bottlenecking of existing seweragenetwork

Sl. No.	Activity	Implementing agency	Cost Rs. Cr.	Source of fund	Time line	Expected outcome
2.1.1	Pumping lines from the terminal pumping stations namely Kuriyathi, Pattoor, Kannammoola and Enchakkal pumping stations are to be connected directly to STP at Muttathara	Kerala Water Authority		Plan scheme	May 2019	For the Kuriyathi pumping line, 90% work completed. Interconnection work and testing pending. The adequacy of facility for connection of pumping line from other Pattoor, Kannammoola, and Enchakkai is to be reported.
2.1.2	Rehabilitation/upgradation of Thaliyal and Aranoor Sewerage Pumphouse by rehabilitation of existing well, construction of new well and grit chamber, installation of new pump sets	Kerala Water Authority	2.37	Plan scheme	May 2020	Estimate under scrutiny at the office of Chief Engineer (SR)
2.1.3	5 MLD sewage treatment plant at Medical College	Kerala Water Authority	19.2	Amrut	May 2020	Design being prepared by the Contractor
2.1.4	Installation of adequate pumps in Mudavanmughal and Enchakkal pumping stations	Kerala Water Authority	0.23	Plan scheme	March 2020	Estimate under scrutiny at the office of Chief Engineer (SR)

Annexure 6

2.1.5	DG sets in all lift and pumping stations – Mudavanmughal, Aranoor, Thaliyal, Kuriyathi, Pattoor, Kannammola, Pattom,Murinjapalam and Enchakkal	Kerala Water Authority	0.92	Plan scheme	May 2020	AS to be issued by Government
2.1.6	Reconnect sewer at Rajaji Nagar, stop outflow of sewage into Amayizhanchanthodu, control stormwater entry into sewer to avoid overflow in Thampanoor area Sewage generated in Rajaji Nagar shall be diverted to main sewerline Sewage generated in Thoppil area shall be diverted main sewerline	Kerala Water Authority	0.10	Mace	Dec 2019	Tender invited. To be opened on 6.6.2019
2.1.7	Discharge of sewage in Parayilkadavu shall be stopped as there is overflow of sewage reaches in houses having sewerage connection and this may lead to discharge ofsewage into River Karamana	Kerala Water Authority			Completed	Reduced pollution load of River Karamana
2.1.8	Divert the sewer line from the School compound of Government Karamana High School	Kerala Water Authority	0.42	Plan Scheme	May 2020	AS to be issued by Government
2.1.9	Rehabilitation by laying new lines increasing size of undersized main and reconstruction by dilapidated manholes for the last 3 years	Kerala Water Authority		Plan Scheme/ Amrut	May 2020	Works completed - 15 No. (Rs. 1.5 cr.) In progress – 41 No. (Rs. 11.6 cr.)

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	Total works in progress (45No.) Works in tendering (33No.)		11.6 7.6			Tendered/To be tendered – 22 No. (Rs. 6.1 cr.)
2.1.10	Extension of sewer network wherever technically feasible in new areas of existing blocks In progress(17No.) Tendering(12No.)	Kerala Water Authority	5.5 19.6	Plan scheme / Amrut	May 2020	Works completed - 6 No. (Rs. 0.9 cr.) In progress – 11 No. (Rs. 4.6 cr.) Tendered/To be tendered – 12 No. (Rs. 19.6 cr.)
2.1.11	Procurement of sewercleaning machines and equipment maintenance	Kerala Water Authority	3.17	Plan Scheme	Mar2020	Can be tendered before 10.6.2019.
2.1.12	Around 155 houses in Kurukuvilakom, Kannettumukku shall be provided with septic treatment system.	Kerala Water Authority	To be estimated	-	-	Not technically feasible to connect to existing sewer system. Septic tanks may be provided by Corporation.
2.1.13	Establishment of six additional blocks in uncovered areas In Progress (7 nos.) Tendering (13 nos)	Kerala Water Authority	69.59 43.33	Jnnurm&Amrut	May 2020	Works completed - 1 No. (Rs. 2.28 cr.) In progress – 6 No. (Rs. 57.31 cr.) Tendered/To be tendered – 13 No. (Rs. 43.33 cr.)

Solid Waste Management Action Plan

Sl. No.	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion	Status
2.2.1	Slaughter house and poultry waste	Thiruvananthapuram Corporation	Rendering plant	1	9.6	Plan fund	March 2021	Rendering plant is to be constructed urgently and the poultry wastes are also to be treated in rendering plant. The Corporation was asked to include this also in the wok order.

Annexure 6

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion	Present status
2.2.2	Sanitation facility and Treatment of waste water in the markets of Pangode, Kumarichanda, Kannettumukku	Thiruvananthapuram Corporation	Treatment plant Portable aerobic bins	2 4	0.3	Plan Fund	Dec 2019	Suchitwa Mission is to give technical support. Work for Kannettumukku started Pilot project using Membrane bioreactor technology is proposed to be install in Kumarichanda market. Now it is reported that the work has been awarded to KEL.

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion	Status

Annexure 6

2.2.3	Provide facility for the treatment of sewage, sullage and garbage generated in the poonthura slum area between Karamana river and sea	Thiruvananthapuram Corporation	Aero bins at various places(28) **Proposed sites** 1. Moonnathumukkuu – Purampoku 2. Poonthura – HI Office 3. Cheriyanmuttam– Poonthura 4. BeemapallyCompound 5. TsunamiColony 6. Mother Theresa Colony 7. KumariChantha 8. PoonthuraMarket 9. Moonnattumukku bridge 10. Ambalathara–Nilama 11. Fishermen Flat – Muttathara 12. PerunalliMarket road 13. Poundkadavu old market 14. Market behind Attipra zonaloffice 15. Tsunami Colony near 110KV tower (Poundkadavu) 16. Near ValiyavilaVeli St. Thomas Church (Poundkadavu) 17. Near Kamalesshwaram HSS 18. Valiyavetil Residence associati	28	3.36	Plan Scheme	March 2020	Community aerobins (45Nos) were already installed and functioning at various places within the Corporation limit.

Annexure 6

			on 19. Near ArannoorGovt Quarters 20. Kunjalumo oduJunctio n 21. Kumarapuram Thamarabhaga m(near comfortstation) 22. NaerKannamm oola Bridge 23. Mannanth alaMarket 24. SanthiNag ar Residents associatio n 25. AlantharaKattayi l 26. UlloorMarket 27. Museum RKVRoad 28. New NalanthaRo ad					

Sl.No	Activity	Implementing Agency	Un it	No of uni t s	Cos t in Rs Cr	Source of fund	Time for complet ion	Status
2.2.4	The discharge of waste water from the surrounding houses to the pond at Jagathy is to be stopped	Thiruvananthapur am Corporation Kerala water Authority	Ponddesilting Issued notices to thehousehold Project is prepared for desilting the pond		0.50	Plan Fund	March 2020	Feasibility of connecting sewage to sewer line to be done by Kerala Water Authority. Steps taken for the rejuvenatio n of pond and to

Annexure 6

								solve sanitation problems near the pond
2.2.5	Around 155 Houses in Kurukuvilakom, Kannettumukku shall be provided with septic and treatment system	Thiruvananthapuram Corporation						Thiruvananthapuram Corporation is to take action to provide septic tank –soakpit system. Issued notices to the concerned parties ad steps to provide
2.2.5	Identification of illegal outlets into storm water drains and fine shall be imposed on such units	Thiruvananthapuram Corporation	Fine imposed and prosecution initiated		12.06 lakhs Fine collected			
2.2.6	Biodegradable waste	Thiruvananthapuram Corporation	Bio-Composter	50,000	9			**EOI invited**

Annexure 6

								is readg EOI invited
2.2.7			Thumboormuzhi aerobic bins	154	11.97	Plan Scheme	May 2020	Launched tendering and will complete by 22/06/19 remaiing will be completed by phase wise.
2.2.8			Community biogas	12	2.1	Plan Scheme	May 2020	Repaired 5 & working in Kaladymugham, Perunnelli, Manacadu, Palayam, Sreekandeshwaam
2.2.9			Organic Waste Converter	1	0.4	Plan Scheme	May 2020	DRP is ready

Annexure 6

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion	Status
2.2.10		Thiruvananthapuram Corporation	Portable biogas	200	0.21			Last year subsidies 87 houses.
2.2.11			Portable aero bins	100	1.50			
2.2.12			Ring compost	500	0.13			Tendering stage
2.2.13			Segregation bins	1,00,000	4			Tendering stage
2.2.14	Biodegradable waste	Thiruvananthapuram Corporation	RRC	7	7			
2.2.15			Plastic Recycling unit	1	1.36			
2.2.16			Mobile MRF	5	1.3			Tendering stage
2.2.17			Electronic Weigh bridge	1	0.1			
2.2.18			Solar electrical cart	25	0.5			Negotiation with KEL
2.2.19			Swaps shops	4	0.2			
2.2.20			PET bottle crushing	15	0.05			
2.2.21			Community level unit Napkin destroyer	102	0.35			EOI invited

Annexure 6

2.2.22		Thiruvananthapuram Corporation	Animal Crematorium at Kattela	1	1	Plan fund	May 2020	Civil construction is going on
2.2.23		Thiruvananthapuram Corporation	Urban Gardening		0.5			
2.2.24		Thiruvananthapuram Corporation	UPgradation of present facilities	42	1.86			Going on
2.2.25		Thiruvananthapuram Corporation	Capacity Building & IEC		0.7			IEC organized in 27 places along with exhibition.

Annexure 6

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion	Status
2.2.26		Thiruvananthapuram Corporation	Viability gap Fund		0.92			Selection progress to find Harithakarma sena is in progress
2.2.27	Prevent entry of Stormwater into sewer line along with KWA	Thiruvananthapuram Corporation	KWA is authorized to prepare and implement proper sewerage lines under Amrut scheme		154	AMRUT	May 2020	
2.2.28	Take steps to prevent the solid wastes in sewer line as reported by KWA	Thiruvananthapuram Corporation	Squad and Fines Special squad is formed at corporation level. Health Inspectors are authorized for regularly monitoring and preventing the waste discharge				May 2020	

Annexure 6

	Thekkanakkara canal			KSPCB fund	monsoon, post-monsoon	
2.3.3	Inspection and effluent quality monitoring of the flats, industrial units, service stations, hospitals, hotels etc in Thiruvananthapuram Corporation area	Kerala State Pollution Control Board	As per sampling charge	KSPCB funds,	Ongoing Interval: Red – 1 month. Orange – 3 m. Green – 6 m.	Monitoring of establishments, service stations, flats, industrial units

Annexure 6

Monitoring

	Activity	Implementing agency	Cost	Source of fund	Time line	Remarks
2.3.1	River water quality monitoring - Killiyar, Karamana, Parvathiputhanar, Akkulam-Veli lake	Kerala State Pollution ControlBoard	Rs. 3000 per sample	National Water Quality Monitoring Programme (NWMP), CPCB fund	Ongoing; monthly frequency	Monitoring of water quality
2.3.2	Storm drains monitoring - Amayizhanchanthodu , Ulloorthodu, Pattomthodu, Kannamoolathodu,	Kerala State Pollution ControlBoard	Rs. 3000 per sample	State Water Monitoring Programme, KSPCB fund (SWMP),	Ongoing Seasonal monitoring – pre-monsoon,	Notice issued to TVM Corporation

Annexure 6

2. **Long term Plan**

Sewerage network

	Long term measures proposed	Implementing agency	Amount Required (Rs.in Crore)	Time line	Remarks
3.1.1	Extension of sewerage system to Block F to G coastal belt	Kerala Water Authority	200	Three years	Proposal for engaging Consultants for preparation of Detailed Engineering Report is under scrutiny in Head Office for issuing Administrative Sanction
3.1.2	Extension of sewerage system to Block H to R	Kerala Water Authority	700		
3.1.3	Extension of sewerage system to Newly added areas of corporation viz,	Kerala Water Authority	300		
3.1.4	Providing sewerage system in Block A to E	Kerala Water Authority	100		
3.1.5	Rehabilitation of existing network and pump house in block A toE	Kerala Water Authority	100		
3.1.6	Procurements of equipments for maintenance seweragesystem	Kerala Water Authority	10		
3.1.7	Additional STP requirement	Kerala Water Authority	60		
3.1.8	Total Amount required	Kerala Water Authority	1470 Crore		

Annexure 6

Solid waste management

	Long term measures proposed by Thiruvananthapuram	Implementing agency	Amount Required (Rs.in Crore)	Time line	Remarks
3.2.1	Acquire 58 acres of land and rehabilitate 8150 families from the banks ofRiver	Thiruvananthapuram Corporation	600	5 years	Action is being taken for the identification of land

Annexure 6

Solid waste management

Desilting and developement

No.	Activity	Implementing agency	Amount allotted Rs. crore	Department	Tim eline	Status
3.3.1	Development package for ParvathyPuthanar	Irrigation department	150	Irrigation department Included in KIFB by KWIL includes cleaning of canal	3 years	Desiltin g is done by KWIL uptoVal lakkada vu
3.3.2	Desilting and development of AmayizhanchanThod u	Irrigation Department	25	Irrigation department	1.5 years	Regular maintena nce is being done with Thiruvan anthapur am Corporat ion. Estimate prepared and administr ative sanction obtained.
3.3.3	Improvements to Thekkenekara canal and desiliting-	Irrigation Department	5 (under preparation)	Irrigation department	1 year	Estimate prepared
3.3.4	Karimadam tank improvements,desilti ng sheet piling/under preparation and providing fencing	Irrigation Department	4.5 (under preparation)	Irrigation department	1.5 years	Estimate is being prepared.
3.3.5	Development of Karamana basin	Irrigation Department	6.77 crores/under preparation	Irrigation department	1.5 years	Some works being done and others under preparati on

Annexure 6

3. Recommendations by Kerala State Pollution ControlBoard

Activities for compliance with Solid Waste Management Rules, 2016; Bio-medical Waste Management Rules, 2016

Activity	Responsibility	
Door-to-door collectionion and transportation ofMSW	Thiruvananthapuram Corporation	Proposed Kerala Solid Waste Management Authority
	Local bodies of Census Town	
Modern Solid Waste Treatment Plant	Thiruvananthapuram Corporation	
	Local bodies of Census Town	
Rendering plant for slaughter house/poultry wastes	Thiruvananthapuram Corporation	
	Local bodies of Census Towns	
Common bio-medical waste treatmentfacility	Health Department	Proposed Kerala Solid Waste Management Authority
Regional sanitary landfill site identification and land acquisition	District Collector	
	Thiruvananthapuram Corporation	Proposed Kerala State Waste Management Authority
Establishment and operation of Regional SanitaryLandfills		

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RRC meeting on 06/06/2019

Annexure 6

No.	Name	Designation	Mobile no & Email.id	Signature
1				
2.				
3	Deepa. L.S.	Secretary, Thiruvananthapuram Corporation.	9446556176	[signature]
4	Sreekala. S,	Member Secretary KSPCB	9447975787	[signature]
5	AJIT HARIDAS	Chairman, KSPCB	94479 75006	Ajit Haridas
6	Anuja. P.G	Liquid waste management expert. Suchitwa Mission	9645410089, anujapg@hotmail.com	[signature]
7	R. Subhash	Deputy Secretary WRD	9400585525 subhashkdvr@gmail.com	[signature]
8	Thomas Isaac N	Executive Engineer Sew Dn, KWA	8547638033 eesmtumskwa@gmail.com	[signature]
9	Subodh. S	Project Officer Directorate of Urban Affairs	9496743562 Subodhsundaresan@gmail.com	[signature]
10	Jasnamol S.	Joint Director Panchayats	9496380419 jddj.dp@gmail.com	[signature]
11	[illegible]			
12	T. S. Sudheer	CE (SR) KWA	9447798484	[signature]
13	S. Sethukumar	CE(PPD & WASCON) KWA, TVPM.	9446361100	[signature]
14	K. G. SANTHI	Asst. TMC.	9446771272	[signature]

Annexure 8

MINUTES OF THE MEETING CONDUCTED ON 01/07/2019 AS PER ORDER DATED 25/04/2019 OF THE HON'BLE NATIONAL GREEN TRIBUNAL IN OA 606/2018

Background

As per the Order of the Hon'ble NGT on 25/04/2019, the State Government selected model city/town/villages as per G.O. (Rt.) No. 45/2019/Envt. dated 31/05/2019 of the Department of Environment. These model city/town/villages are to be fully compliant in respect of Environmental norms within six months. Workshop was conducted on 01/06/2019 for the President/Secretary/Health Standing Committee Chairman/Health Officers of model the local bodies for the implementation of Solid Waste Management Rule 2016 and Plastic Waste Management Rule 2016.

The Member Secretary welcomed the participants. The Chief Environmental Engineer, Regional Office, Kozhikode, Senior Environmental Engineer-2, Head Office, Environmental Engineer, District Office, Kollam/Thrissur/Kozhikode and Assistant Engineer Thiruvananthapuram and Assistant Engineer, Head Office attended the meeting. The Member Secretary informed that as per the NGT Order all environmental norms are to be complied by Model City/Town/Panchayat. For the implementation of the Solid Waste Management Rules, 2016, a workshop was conducted on 01/06/2019. The compliance of the said rules by the local bodies is to be strictly monitored by the Pollution Control Board Officers. The Member Secretary said that besides the above rules, other environmental statues namely Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Biomedical Waste Management Rules, 2016, Hazardous Waste Management Rules, 2016, Construction and Demolition Waste Management Rule 2016, Battery Waste Management Rules, E-Waste Management Rules 2016 are to be complied with by the model city/town/panchayat. The inventorisation, submission of annual report/ progress report/inspection/monitoring of the units are to be done by the Board. The implementation of action plan prepared under the Hazardous Waste Management Rule, Biomedical Waste Management Rule, E-Waste Rule, Plastic Waste Management Rules are to be done promptly by all Regional Offices and District Offices. A copy of the compiled action plan is enclosed for reference. The following decisions were taken in the meeting.

1. The status of compliance of Water (Prevention and Control of Pollution) Act, 1974, Air (Prevention and Control of Pollution) Act, 1981, Environment Protection Act, 1986, Hazardous and other waste(Management & Transboundary Movements)Rule2016, Biomedical Waste Management Rule 2016, Plastic Waste Management Rules 2016, Noise Pollution (Regulation and

Annexure 8

Control) Rules, 2000, E- Waste Management Rules, 2016, Batteries (Management and Handling) Rules,2001, Construction and Demolition Waste Management Rules, 2016 by units/local bodies is to be monitored strictly by the Board.

2. Inventorisation, compliance status report of consent/authorisation conditions, submission of annual report and progress report are to be submitted promptly by all Regional Offices and District Offices.
3. Chief Environmental Engineer, Regional Office shall supervise and give direction to all District Officers of Model villages.
4. The review of the progress will made at 2.30 p.m. on 15/07/2019. The progress report is to be submitted.
5. Required Staffs having B-Tech Degree in Civil/Chemical for preparing inventorisation/annual report and progress report submission and monitoring of units in model city/town/panchayat shall be appointed through walking interview as contract basis for a period of 6 months. The wage shall be consolidated pay of Rs. 20,000/- months.
6. Service of Assistant Engineers in the concerned Regional Offices and legal cell, Ernakulam shall be utilized as per the requirements of District Office

7. The staffs shall be assigned for the above work as follows.

Name of District	Number of staffs allotted
TVM	1AE, RO, TVM + 2 (Additional required)
TSR	1AE, RO, EKM + 1AE Legal Cell + 1 (Additional required)
KKD	2 (Additional required)
KLM	2 (Additional required)
PTA/ALP/KTM/EKM/IDK/PKD/ MLP/WYND/KNR/KSGD	1 Each (Additional required)

8. Required additional vehicles shall be hired for the above purpose.
9. Bulk generators/consumes of e-waste, plastic, battery, food waste shall be monitored.
10. The concerned Chief Environmental Engineers are to review the progress on the above by all District Offices.

MEMBER SECRETARY

Annexure 9

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
E-mail: ms.kspcb@gov.in FAX: 0471 – 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

Pattom P.O., Thiruvananthapuram – 695 004
പട്ടം പി.ഒ., തിരുവനന്തപുരം - 695 004

PCB/HO/TVM/AIR/1285/89 Dated: 25 /06/2019

DIRECTION

(Direction under section 5 of the Environment (Protection) Act, 1986.)

Ref:-1. Order dated 20.08.2018 in O.A. No.606/2018 of the Hon'ble NGT.
2. CPCB Guidelines for Co-processing of plastic waste in Cement Kilns.

WHEREAS, section 5 of the Environment (Protection) Act, 1986 mandates the Kerala State Pollution Control Board to direct the concerned parties to implement the adequate requirements for the prevention and control of environmental pollution and for the protection of the environment,

WHEREAS, section 12 of the plastic Waste Management Rules, 2016, and section 16 of the Solid Waste Management Rules,2016, under schedule VII(4) of the Hazardous and other wastes (Management and Transboundary Movement) Rules 2016, mandates the SPCB to take necessary steps to process and dispose the wastes defined in the concerned rules;

WHEREAS, in pursuant to Hon'ble National Green Tribunal order dated 20.08.2018 in OA no 606/2018, mandatory arrangements have to be made by cement plants to collect and use Refused Derived Fuel (RDF), from the RDF plants, located within 200 kms;

WHEREAS, co-processing of plastic wastes, and other combustible wastes, RDF, different kinds of hazardous waste etc. in cement kiln is practiced substantially in different countries as an environmentally sound option for management of these wastes and as a replacement to the fossil raw materials and fossil fuels that are conventionally utilized in the kiln;

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NOWTHEREFORE, you are hereby directed to submit the proposal for fully implementing the infrastructure for co-processing in your unit as detailed below:

Submit a budgetary proposal to implement co-processing in your cement klin invariably consisting the following items.

1. Co-processing of plastics waste as Alternate Fuel and Raw Material (AFR) in your cement kiln and monitoring/controlling emission as per set standards.
2. Use of Refused Derived Fuel from solid waste plant
   1. @ 25% Thermal Substitution Rate.
   2. @ 50% Thermal Substitution Rate.
3. Co-processing of hazardous waste and sludges from effluent Treatment plant.

Guidelines for co-processing in cement kilns by CPCB shall be adhered while preparing the proposal.

The Proposal shall be submitted within a month time of receipt of this direction.

Receipt of this direction shall be acknowledged and the action taken shall be communicated to the undersigned within 7 days.

(Dr. AJITH HARIDAS)
CHAIRMAN

To:-

Managing Director
Malabar Cements Limited
Walayar, Palakkad -678 624.

o/c

Copy to:-

1. Chief Environmental Engineer, Regional Office, Kozhikkode.
2. Environmental Engineer, District Office, Palakkad.

} For follow up.

Annexure 9

മലബാർ സിമന്റ്സ് ലിമിറ്റഡ്
(ഒരു കേരള സർക്കാർ സ്ഥാപനം)
MALABAR CEMENTS LIMITED
(A Government of Kerala Undertaking)

CIN: U26941KL1978SGC002975

EN/PC-46/02/2019/
July 11, 2019

The Chairman
Kerala State Pollution Control Board,
Thiruvananthapuram-695 004

Exalted Sir,

Sub: Direction under section 5 of Environment(Protection) Act 1986

Ref 1. Direction From KSPCB No. PCB/HO/TVM/AIR/1285/89, dt. 25.06.19
Ref 2. Direction from Hon. Chairman, KSPCB on 17.05.19 during the visit to Malabar Cements Limited.
Ref 3. Letter to ACS No. Mdo/3-01/2018/174, dt. 12.01.17

This has kind reference to the Direction issued to Malabar Cements Limited (MCL), under section 5 of Environment(Protection) Act 1986, and we would like to invite your kind attention to the following:

As per the directions of the Hon. Chairman, KSPCB, during the plant visit on 17.05.2019 we immediately initiated actions for critically reviewing our infrastructure for the technical suitability for co-incineration.

It is submitted that though we have promptly invested over the years to meet the improving environmental standards, we haven't expended much for the modernization and capacity enhancement due to the constrains in availability of limestone. We have a 4-stage suspended pre-heater without a Pre-Calciner through which the homogenized raw meal is fed to the kiln inlet. Almost all the cement plants in the country have Pre-Calciner which is required for effective co-processing. At present Alternate Fuel and Raw material (AFR) feeding is possible only through kiln outlet along with the fuel for ideal burning in a comfortable temperature of above 1100 ^{0}C with required retention time for effective destruction of hazardous emissions like dioxin, furan etc.

In this connection, it is submitted that there is lack of experience of feeding of fine/shredded AFR along with fuels through Multichannel Burners in the Cement Kiln at outlet side in the Indian industry. There is also insufficient data available on the performance for verifications. Therefore a need is felt that the feasibility of installing and integrating such facilities in our plant will have to be studied by a professional technical agency. It is also submitted that

Registered Office &Works:
Walayar - 678 624, Palakkad District, Kerala. *Telephone*: 0491-2863600, 0491-2862373/74, 2862228/33, 2862117/18, *Fax*: 0491-2862230
Cement Grinding Unit:
Pallippuram, Cherthala - 688 541, Alappuzha District, Kerala. *Telephone*: 0478-2552186, 2553967, *Fax*: 0478-2553688
Email: ro@malabarcements.com *Website*: www.malabarcements.co.in

system suitable for thermal substitution varies from plant to plant depending on the plant infrastructure, raw material used, nature of AFR available in the area etc., and customization to some extend is necessary with the help and guidance of an expert agency after a thorough study.

Hence for coming up with a correct and sustainable techno-commercial proposition after a through examination of all aspects, we are contemplating to entrust M/s. National Council for Cement and Building Materials (NCBM) to carryout the work for us. M/s. NCBM is a premier Government Agency who is familiar with this matter and is interacting with all major cement units and CPCB for various similar assignments including co-processing in the country. We would be carrying out the study expeditiously after getting necessary approvals, and would be requesting the agency to interact with the State Pollution Control Board while formulating the proposal.

Thanking You,

Yours Faithfully
For Malabar Cements Limited

Managing Director
Encl: As above

MALABAR CEMENTS LTD. WALAYAR, PALAKKAD

Copy to: The Member Secretary
Kerala State Pollution Control Board,
Thiruvananthapuram- 695 004

The Chief Environmental Engineer,
Regional Office, Kerala State Pollution Control Board,
3rd Floor, Zamorin's Square, Link Road, Kozhikode - 673 002

The Environmental Engineer
Kerala State Pollution Control Board,
District office, Near Jilla Panchayath Office,
Palakkad-678 001

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Annexure 10

☎: General: 0471- 2312910, 2318153, 2318154, 2318155 Chairman: 2318150 Member Secretary: 2318151
E-mail: ms.kspcb@gov.in FAX: 0471 – 2318134, 2318152 web: www.keralapcb.nic.in

KERALA STATE POLLUTION CONTROL BOARD
കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്
Pattom P.O., Thiruvananthapuram – 695 004
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PCB/HO/RULES/PLA/EPR/306/49/2017 Dated: 05/07/2019

From

The Chairman

To

The Reliance

Sub: Extended Producer Responsibility-reg

Ref: 1. Meeting on extended producer responsibility held on 25/06/2019

Sir,

Minutes of the Meeting on extended producer responsibility held on 25/06/2019 is enclosed for initiating necessary actions.

Yours faithfully

CHAIRMAN

Annexure 10

KERALA STATE POLLUTION CONTROL BOARD

MINUTES OF THE MEETING WITH RELIANCE ON 25-6-2019

The Meeting commenced at 11 am. Sri. Rajesh K Gera, Assistant Vice President, Business Development, Sri. KPG Ramanan, General Manager, Marketing, PET Chips Business attended the meeting. The Chairman welcomed the officials from Reliance PET Marketing Division. The Chairman said that producers, brand owners, importers and manufacturers are liable for Extended Producer Responsibility as per the provisions of the Plastic Waste Management Rules and Solid Waste Management Rules, 2016. The littering of plastic on the road and water bodies is the main problem. The Government has given financial support for setting up material collection facility and Kudumbasree, Haritha Karma Sena are engaged for collection. But still the collection mechanism is very poor. As per the provisions of the rules, 5% of the land is to be set apart in industrial areas for recycling. Recycling parks can be set up in Kerala. The Government is welcoming the investment in the State. They were informed of the need to provide collection mechanism especially in model city/town/villages selected as per the order of the Hon'ble NGT.

23000TPA of PET resin is entering the State. Reliance claimed that more that 80% of PET bottles are being recycled. The weight of Pet bottle ranges from 20-30g. Collected PET bottles are taken to the recycling factories where fibers and straps are made. 95% is converted as fibers and 5% as straps. RIL has factories are in Bharabangi in UP, Hoshiyarpur in Punjab and in Nagabanga, Maharashtra. There are PET recycling factories in Coimbatore of 1000TPM, Tirupur of 500TPM and Eroad of 400TPM.

Chairman informed the company that bottles are not being collected efficiently in Kerala and road/water bodies are getting littered.

The outcomes of the meeting are as follows:

1. In order to strengthen collection, they proposed a pilot project for collection of PET bottles by providing a reverse vending machine at a suitable place in

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Thiruvananthapuram. After ensuring its proper working they will provide more in the State.

2. A proposal for setting up recycling unit in the State after studying its feasibility and the same shall be submitted by RIL or by another agency recommended by RIL to the Pollution Control Board so that it will be brought to the notice of the Government for land allocation in a industrial park.
3. The other sections of their company dealing with plastic other than PET may also be informed to discuss with Kerala State Pollution Control Board on strengthening of collection mechanism of plastic in Kerala.
4. RIL shall submit data on supply of PET resin and manufacturers consuming PET in Kerala. A Extended Producer Responsibility plan for recycling of the PET products shall be submitted.

04/07/2019 **CHAIRMAN**

Annexure 11

MINUTES OF THE MEETING ON EXTENDED PRODUCER RESPONSIBILITY HELD ON 27-6-2019 IN THE CHAMBER OF CHAIRMAN

The meeting commenced at 11 am. Maj. Sachan Kumar Saini, Head – Global Environment, Relations and Public Policy, Procter & Gamble; Mr. Rakesh Sahni, Directo – Westen Region, Johnson & Johnson; Mr. Nirav Shah, Managing Partner (Ahamedabad) ad Partner- Consulting, PWC;Mr. Prathap Nair, Assocaite Dierctor, Advisory, PWC attended the meeting. The Chairman said that producers, brand owners, importers and manufacturers are liable for Extended Producer Responsibility as per the Plastic Waste Management Rules, 2016 and Solid Waste Management Rules, 2016. The littering of plastic on roads and water bodies and the improper disposal of sanitary napkins and diapers are creating problems. The Chairman said that Kerala is purely a consumer State and producers/brandowners are having physical responsibility and financial responsibility to prevent pollution due to their product. The Government is giving financial support for setting up Material Collection Facility ad Resource recovery facility by the local bodies. Kudumbasree and Haritha Karma Sena are engaged for collection of waste. But the collection mechanism is poor.

Further the disposal of sanitary napkin and diaper is still a problem and there is no authorized facility for the disposal of such waste. Rule 17 of the Solid Waste Management Rules, 2016 specifies the duty of manufacturers or brand owners of disposable products and sanitary napkins and diapers and are given below:

" (1) All manufacturers of disposable products such as tin, glass, plastics packaging, etc., or brand owners who introduce such products in the market shall provide necessary financial assistance to local authorities for establishment of waste management system.

(2) All such brand owners who sell or market their products in such packaging material which are non-biodegradable shall put in place a system to collect back the packaging waste generated due to their production.

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(3) Manufacturers or brand owners or marketing companies of sanitary napkins and diapers shall explore the possibility of using all recyclable materials in their products or they shall provide a pouch or wrapper for disposal of each napkin or diapers along with the packet of their sanitary products.

(4) All such manufacturers, brand owners or marketing companies shall educate the masses for wrapping and disposal of their products."

They replied that steps are being taken and proposal has been sent to the Ministry of Environment and Forests.

The outcomes of the meeting are as follows:

1. The copy of the proposal submitted to the Ministry of Environment and Forests is to be furnished to the Kerala State Pollution Control Board.
2. Kerala State Pollution Control Board proposes to bring producers/Importers/Brand Owners (PIB) under consent. Consent fee will include financial support to local bodies for the collection and disposal of wastes and packaging due to their product. PIBs may send their responses
3. Inventory of all products (name and quantity per annum) to the State is to be submitted to the Kerala State Pollution Control Board.

The meeting came to an end at 11.30am.

Ajit Kumar

8-7-2019 **CHAIRMAN**

Annexure 12

MINUTES OF THE MEETING ON EXTENDED PRODUCER RESPONSIBILITY WITH INDUSTRIAL UNITS IN KERALA HELD ON 27-6-2019 IN THE CHAMBER OF CHAIRMAN

The meeting commenced at 11-30 am. The representatives from MILMA, KERA, Kerala Beverages Limited, Hindustan Latex Limited, Keltraon and the Director and representatives from Clean Kerala Company Limited attended the meeting. The Chairman said that producers, brand owners, importers and manufacturers are liable for Extended Producer Responsibility as per the Plastic Waste Management Rules, 2016 and Solid Waste Management Rules, 2016. The littering of plastic on roads and water bodies is creating problems. The Chairman said that producers/brand owners are having physical responsibility and financial responsibility to prevent pollution due to their product. The Government is giving financial support for setting up Material Collection Facility ad Resource recovery facility by the local bodies. Kudumbasree and Haritha Karma Sena are engaged for collection of waste. But the collection mechanism is poor.

The provisions of the EPR in Solid Waste Management Rules, 2016 and Plastic Wastes Management Rules have been explained.

Provisions of EPR in Solid Waste Management Rules, 2016

As per Rule 17 of the Solid Waste Management Rules, 2016, all manufacturers or brand owners of disposable products such as tin, glass, plastics packaging, etc., or brand owners who introduce such products in the market shall provide necessary financial assistance to local authorities for establishment of waste management system. All such brand owners who sell or market their products in such packaging material which are non-biodegradable shall put in place a system to collect back the packaging waste generated due to their production.

Annexure 12

Provisions of EPR in Plastic Waste Management Rules, 2016

For plastic covers and plastic packaging, Rule 9(1) of the Plastic Waste Management Rules, 2016 specifies that the producersshall work out modalities for waste collection system based on Extended Producers Responsibility and involving State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned.

As per Rule9(2) of the said rules, the Primary responsibility for collection of used multi-layered plastic sachet or pouches or packaging is of Producers, Importers and Brand Owners who introduce the products in the market. They need to establish a system for collecting back the plastic waste generated due to their products. This plan of collection to be submitted to the State Pollution Control Boards while applying for Consent to Establish or Operate or Renewal. The Brand Owners whose consent has been renewed before the notification of these rules shall submit such plan within one year from the date of notification of these rules and implement with two years thereafter.

As per Rule 13 (1) of the Rules, no person shall manufacture carry bags or recycle plastic bags or multi-layered packaging unless the person has obtained a registration from the State Pollution Control Board. The producer or brand owner is to submit application in the concerned State Pollution Control Board if operating in one or two states and from Central Pollution Control Board if operating in more than two states. .

The Chairman said that producers/brand owners are having physical responsibility and financial responsibility to prevent pollution due to their product. The Government is giving financial support for setting up Material Collection Facility and Resource Recovery Facility by

Annexure 12

the local bodies. Kudumbasree and HarithaKarmasena are engaged for collection of waste. But the collection mechanism is poor.

The Director of the Clean Kerala Company reported that discussion is going on with MILMA for becoming their Producer Responsibility Organization. The Chairman informed that the PRO will be responsible for the entire plastic packaging generated by MILMA. Hindustan Latex Limited reported that 20-30% of their product is sold in Kerala. The Chairman informed that Kerala State Beverages Limited is to pay Rs. 5/- per bottle and the same is to be taken back through their own distribution channel.

The outcomes of the meeting are as follows:

1. Inventory of all products (name and quantity per annum)in the State is to be submitted to the Kerala State Pollution Control Board by all industrial units in the State
2. Kerala State Beverages Limited is to introduce deposit return fund for both the glass and plastic bottles. The quantum of glass and plastic bottles used per annum is to be reported separately.
3. Action plan shall be provided by producers/brand owners on waste collection system based on Extended Producers Responsibility and involving State Urban Development Departments, either individually or collectively, through their own distribution channel or through the local body concerned. Financial and technical support to the local self-government in the collection, and disposal of all waste shall be included in the action plan.
4. Credit will be given to producers/brand owners who have appointed PRO for the collection of waste.

Annexure 12

5. Action is to be taken to bring all other producers/brand owners in the State under Extended Responsibility Organization.
6. The producers/brand owners are to obtain Registration as per Rule 13 of the Plastic Waste Management Rules, 2016 within 3 months.
7. Consent of the Board is to be obtained for the supply of plastic products, plastic cover, plastic packaging within 6 months.

The meeting came to an end at 11.30am.

Ajit Haridas

CHAIRMAN

8-7-2019

BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH AT NEW DELHI

Case No.: OA 606/18

IN THE MATTER OF:

SOLID WASTE MANAGEMENT RULES, 2016

Versus

PROOF OF SERVICE

APPLICANT	
RESPONDENT NO.1	
RESPONDENT NO.2	
RESPONDENT NO.3	
RESPONDENT NO.4	
RESPONDENT NO.5	
RESPONDENT NO.6	
RESPONDENT NO.7	
RESPONDENT NO.8	
RESPONDENT NO.9	
RESPONDENT NO.10	

NO NEED OF SERVICE

Alim Anvar

Alim Anvar

9995852123