

INDEX

<u>SL Nos.</u>	<u>PARTICULARS</u>	<u>PAGE Nos</u>
1.	LETTER TO REGISTRAR, NGT DATED 22 APRIL 2019	1
2.	COMPLIANCE REPORT ON THE ORDER OF HON'BLE NATION GREEN TRIBUNAL DATED 16.01.2019 IN O.A No.606 OF 2018 & THE ORDER DATED 19.02.2019 IN O.A No.593 of 2017.	2-58
3.	COMPLIANCE ON SOLID WASTE MANAGE- MENT MENTIONED IN THE ORDER OF NGT DATED 16.1.2019 IN O.A No.606/18.	59-107
4.	DETAILS OF SEGREGATION OF SOLID WASTE IN URBAN LOCAL BODIES	108-111
5.	DETAILS OF MUNICIPAL SOLID WASTE GENERATED PER DAY AND OTHER RELATED DETAILS.	112-113
6.	GRAMAPANCHAYAT WISE DETAILS OF SOILD WASTE GENERATION AND RELATED MATTERS.	114-115
7.	AFFIDAVIT OF THE CHIEF SECRETARY	116-117
8.	VERIFICATION	118

**Tom Jose  
Chief Secretary**



**Government of Kerala  
Secretariat  
Thiruvananthapuram-695 001**

22<sup>nd</sup> April 2019

No. A1/852/2015/Environment

The Registrar  
Hon'ble National Green Tribunal  
Faridkot House, Copernicus Marg  
New Delhi - 110 001.

**Sir:**

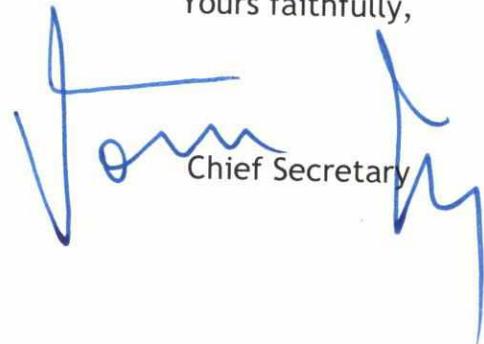
Sub:- Report on compliance of Hon'ble NGT Order dated 16.01.2019 in  
OA.No. 606/2018 & others - reg.

Ref:- 1) Hon'ble NGT Order dated 16.01.2019 in OA.No. 606/2018

2) Hon'ble NGT Order dated 19.02.2019 in OA.No. 593/2017

Kind attention is invited to the Hon'ble NGT Orders under references;  
wherein the Hon'ble NGT as per the referred orders directed the Chief  
Secretary of Kerala to be present in person along with the compliance  
reports before the Hon'ble NGT on 25.04.2019. The compliance report is  
submitted herewith for kind information.

Yours faithfully,

  
Chief Secretary

Secretary,  
State of  
Kerala

2

**Status Report on the Compliance by the State Of Kerala**  
with the directions of  
The Hon'ble National Green Tribunal, Principal Bench, New Delhi

As per the  
Order dated 16-1-2019 in O.A. No.606/2018  
and  
Order Dated 19-2-2019 in O.A. No. 593/2017

Submitted by  
The Chief Secretary, Government of Kerala

25<sup>th</sup> April, 2019

## Contents

List of Acronyms .....	2
1. The Context and Background .....	4
2. The Status of Implementation of Interventions.....	7
2.1. Status of implementation of Solid Waste Management Rules, 2016.....	9
2.2. Status of implementation of Plastic Waste Management Rules, 2016.....	17
2.3. Status on compliance of Biomedical Waste Management Rules, 2016.....	18
2.4. E-Waste Management Rules,2016.....	23
2.5. Compliance of NGT order dated 16-1-2019 in OA 606/2018.....	24
2.6. Polluted river stretches in O.A. No. 673/2018.....	25
2.7. Ambient Air Quality (681/2018).....	46
2.8. Industrially Polluted clusters (OA 1038 of 2018).....	53
2.9. Total amount collected from erring industries on the basis of Polluter Pay's principle 'Precautionary principle and details of utilization of funds collected .....	54
2.10. Primary Effluent Treatment Plant as per order dated 19-2-2019 in O.A. No. 593/2017 .....	55
5	
3. Annexure.....	56
Annexure 3.1 : Report from Local Self Government Department (LSGD) on Solid Waste Management.....	56

## 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 Rural 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

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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

# 1. The Context and Background

1.1. 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<sup>1</sup>. 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<sup>2</sup>:-

- 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.

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

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<sup>1</sup> Remarks made by the Union Minister of State for Environment, Forests and Climate Change in September 2018

<sup>2</sup> SWM Rules, 2016

<sup>3</sup> 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 inert<sup>4</sup>. 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<sup>1</sup>.
- 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.

1.3. 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<sup>5</sup>. 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.

<sup>4</sup> 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>)

<sup>5</sup> <http://www.greentribunal.gov.in>

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1.4. The enclosed 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), and order in O.A. 593/2017 dated 19-2-2019. 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	Status	Page No.
1	Status of compliance of Solid Waste Management Rules, 2016 (OA No.606/2018)-Item (a) of para 40 of the order dated 16-1-2019 in 606/2018	The State has ensured compliance to Rules 11, 22, 23 and 24.	9
2	Status of compliance of Plastic Waste Management Rules, 2016 (OA No.606/2018)- Item (a) of para 40 of the order dated 16-1-2019 in 606/2018	The State has complied with Rules 16 and 17, and has set up monitoring committee and regulatory mechanisms.	17
3	Status of compliance of Bio medical waste Management Rule, 2016 (OA No. 606/2018)- Item (a) of para40 of the order dated 16-1-2019 in 606/2018	The State has complied with Rule 13 and initiated capacity-building, regulatory and monitoring mechanisms in collaboration with public and private institutions.	18
4	Status of E-waste Management Rules	The State has complied with Rule 18, and is setting up a waste processing unit which will become operational in 2020.	23
5.	Status of functioning of Committees constituted by this order – Item (b) of para 40 of the order dated 16-1-2019 in 606/2018	The State has complied with the order, and formed a State Level Monitoring Committee. Field visits have been undertaken.	24
6.	Status of the Action Plan in compliance vide order dated 20-9-2018 in the New Item published in "The Hindu" authored by Sri. Jacob Koshi titled "More river stretches are now critically polluted, CPCB (Original application No. 673/2018)- Item (c) of para 40 of order dated 16-1-2019 in 606/2018. (a) Karamana River (OA No. 581/2018)	The Action Plan approved by River Rejuvenation Committee was submitted in April 2019 to Central Pollution Control Board. Action Plans for Priority IV & V Polluted stretches have been filed before NGT. Budget and timeline provisions will be intimated.	25

	and Priority I-stretch of O. A. No. 673/208 (b) Tirur-Ponnani river (OA No.582/2018) (c) Polluted river stretches (OA No.673/2018)		
7.	Status of functioning of Committees constituted in News Item published in "The Times of India" authored by Sri. Vishwa Mohan titled "NCAP with multiple timelines to Clean Air in 102 cities to be released around August 15 dated 8-10-2018 --Non-attainment cities (OA No.681/2018) - Item (d) of para 40 of order dated 16-1-2019 in 606/2018	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 is to be developed and the details were submitted to CPCB. Continuous Real-Time Monitoring has been initiated in several locations.	47
8.	Status of Action Plan with regard to identification of industrial clusters in O. A. No. 1038/2018, news item published in "The Asian Age" authored by Sanjay titled "CPCB to rank industrial units on pollution levels" dated 13-12-2018- Item (e) of para 40 of order dated 16-1-2019 in 606/2018	Greater Kochi was identified as critically polluted in 2009. The score was again calculated in 2011 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.	53
9.	Status of the work in compliance of the directions passed in O.A.No. 173/2018. Sudarsan Das Vs. State of West Bengal and othes order dated 4-9-2018- Item (f) of para 40 of order dated 16-1-2019 in 606/2018	Not Applicable	Not Applicable
10.	Total amount collected from erring industries on the basis of "Polluter Pays Principle" "Precautionary Principle and details of utilization of funds collected- Item (g) of para 40 of order dated 16-1-2019 in 606/2018	15 Industries have been fined and more than INR 7.25 Crores have been collected.	54
11.	Status of 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 Item (h) of para 40 of order dated 16-1-2019 in 606/2018	Not identified	
12.	Primary Effluent Treatment Plant as per order dated 19-2-2019 in O.A. No. 593/2017	Inspected CETPs and ETPs. Non-functioning ETPs have been identified and further action has been initiated. The reports for the term upto March 2019 have been submitted.	55

## 2.1. 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 24 meetings, till date, for monitoring solid waste management on monthly basis.

### 2.1.1. Compliance of the Rules

- **Submission of annual report (Rule 24)** - Annual report was submitted to the Central Pollution Control Board on 26-9-2018 (Rule 24).
- **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 is submitted within Annexure 3.1.

### 2.1.2. Activities and Action Taken

#### 2.1.2.1. Activity - Identification of suitable sites for setting up solid 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	Floated Global Tender for the setting up of Waste to Energy Plant	2 years from the date of obtaining environmental clearance.
b)	Ernakulam	Brahmapuram (Govt. land)	20	Work awarded to M/s G.J Ecco Power Pvt. Ltd.	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	Floated Global Tender for the setting up of Waste to Energy Plant	2 years from the date of obtaining environmental clearance.

Sl. No	Corporation/ Municipality	Identified site	Area (acre)	Status	Completion date
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	Tender process completed. Decided to award the work to M/s Zonta Infratech Pvt. Ltd.	2 years from the date of obtaining environmental clearance.
e)	Kannur	Chelora (Govt. Land)	9.7	Floated Global Tender for the setting up of Waste to Energy Plant	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)	Thiruvananthapuram	Peringamala (Govt. Land)	15	Stakeholder meetings have been conducted. Further action is being taken.	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.	2 years from the date of obtaining environmental clearance.

2.1.2.2. **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.

**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 Kureepuzhabut had to be abandoned due to public protest.

2.1.2.3. **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.

2.1.2.4. **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.

\*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.

2.1.2.5. **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\*.

2.1.2.6. **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.

2.1.2.7. **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	Floated Global Tender for the setting up of Waste to Energy Plant	2 years from the date of obtaining environmental clearance
b)	Ernakulam	Brahmapuram (Govt land)	20	Work awarded to M/s G.J Ecco Power Pvt Ltd.	2 years from the date of obtaining environmental clearance
c)	Palakkad	Kanjikode (Land taken over from Kerala State Electricity Borad Ltd. in advance possession)	15	Floated Global Tender for the setting up of Waste to Energy Plant	2 years from the date of obtaining environmental clearance
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	Tender process completed. Decided to award the work to M/s Zonta Infratech Pvt Ltd.	2 years from the date of obtaining environmental clearance
e)	Kannur	Chelora (Govt. Land)	9.7	Floated Global Tender for the setting up of Waste to Energy Plant	2 years from the date of obtaining environmental clearance
f)	Thiruvananthapuram	Peringamala (Govt. Land)	15	Stake holder meetings have been conducted. Further action is being	2 years from the date of obtaining

				taken	environmental clearance
g)	Thrissur	Laloor (Govt. Land)	15	Stake holder 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

2.1.2.8. **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 ProcessingPvt. Ltd. Expected to be completed within two years from April, 2019.
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.

2.1.2.9. **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.

2.1.2.10. **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 district and 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.

#### 2.1.2.11. 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.	

#### 2.1.2.12. 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.

#### 2.1.3. 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.

**2.1.4 Project Green Grass in Forest Area**

2.1.4.1 Following the NGT Order in OA No. 585/2018, 126 waste dumping sites in forest areas were mapped in the State. 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 Sancturies, 5 National Parks under the project.

2.1.4.2 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

**2.1.5 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.

2.1.6 **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. Status of implementation of Plastic Waste Management Rules, 2016**

### **2.2.1. Compliance of the Rules**

#### **2.2.1.1 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.

#### **2.2.1.2. State Level Monitoring Committee (Rule 16 3)-**

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.

#### **2.2.1.3. 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.

#### **2.2.1.4. 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.

#### **2.2.1.5. Registration to producers, brand owners**

The concept of Extended Producer Responsibility was brought to the notice of producers, and brand owners through several workshops. The agencies namely Milma, Kera etc., were also addressed in this regard. The matter is being followed up.

#### **2.2.1.6. 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 brought 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.

The government order on banning of single use plastic products will be issued on 5th June 2019 and the implementation of the same will come into effect from 1st January 2020.

### 2.3. Status on compliance of Biomedical Waste Management Rules, 2016

#### 2.3.1. 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 centres fall under the purview of the Biomedical Waste Management Rules.

#### 2.3.2. 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.

#### 2.3.3. Compliance of the Rules

##### 2.3.3.1. Submission of annual report(Rule 24)

Annual report 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)	<b>Veterinary institutions</b>	<b>150</b>
d)	<b>Animal houses</b>	<b>1</b>
e)	Pathological laboratories	882
f)	Blood banks	14
g)	Clinical establishments	955
h)	Research institutions	0
i)	AYUSH	216
	Total	9,628

##### 2.3.3.2. State Level Advisory Committee for Biomedical Waste Management

21

SLAC was constituted in the State 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.

State Advisory Committee is to be reconstituted as per BMW Rules, 2016. District Level Monitoring Committee as per BMW Rules, 2016 is to be constituted by the Health Department. District level committees as per the new rules are to be constituted. The matter was brought to the notice of the Health Department by the Kerala State Pollution control Board. It is proposed that the constitution of the committees will happen after the conclusion of the Lok Sabha elections.

#### 2.3.4. 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 is generated in hospitals. 82.5% of biomedical waste is generated in hospitals.

#### 2.3.5. Common biomedical Waste treatment facility in the State (CBMWTF)

##### 2.3.5.1 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](http://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 CO<sub>2</sub>, CO, NO, NO<sub>2</sub>, O<sub>2</sub>, primary temperature and secondary temperatures are continuously measured.

#### 2.3.5.2 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 4-4-2014 for setting a Common Biomedical Waste Treatment Facility (Incinerator – 100kg/hr; autoclave -1000l; shredder of 100kg/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 26<sup>th</sup> 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 21-5-2018, 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) CBWMTF facility by Kerala Enviro Infrastructure Limited, Ambalamedu, Ernakulum**

- Consent was issued vide consent No. PCB/HO/EKM/ICE/08/2014 dated 10-3-2014 to Kerala Enviro Infrastructure Limited for setting up CBWMTF 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) CBWMTF 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 CBWMTF to manage and 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.

**2.3.6. Authorization from the Board**

7314 Health care institutions have obtained authorization from the Board.

**2.3.7. Others**

SI 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-

SI No:	Action Points	Action taken
		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	The State Level Advisory Body was reconstituted vide Order no: G.O(M.S) No.02/10/Envt dated 6.03.2010.Additional Chief Secretary, Health has been addressed to constitute State Advisory Committee and District Level Monitoring Committee as per BMW Rules,2016.
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	Authorisation 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.

## **2.4. E-Waste Management Rules, 2016**

### **2.4.1. Submission of Annual Report (Rule 18)**

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

### **2.4.2. Collection Centres**

2.4.2.1. **Brand owners:** As per the Action plan submitted by Producers/Brand owners, there are 105 collection centres. The collection centres of 12 producers in Thiruvananthapuram were inspected by Kerala State Pollution Control Board. The Collection centers were not in operation. The matter was reported to the Central Pollution Control Board. EPR authorization of 10 Producers including Samsung was withdrawn. They have submitted revised proposal to Central Pollution Control Board. The matter is being pursued for bringing their collection centers to consent purview. Kerala State Pollution Control Board is considering enforcing 'Buy back Scheme', on producers and the retail establishments are also forced to channelize the e-wastes to Registered recyclers and for reporting through Annual returns to the Board.

The EPR authorization of those producers and brand producers have been cancelled by CPCB. The cancellations are kept in abeyance pending the report from SPCB.

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

### **2.4.3. 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.

### **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. A copy of the letters is enclosed. They have identified land at two places and the matter is being pursued.

## **2.5. Compliance 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 three meetings during February - April 2019. Field visits were conducted in April 2019 to study the Brahmapuram plant at Ernakulum and Karamana river.

**2.6. 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. The pictorial representation in this section depicts the pollution load through storm-water drains into Karamana River.

For River Karamana, there is a connected OA 581/2018. For Tirur-Ponnaniriver, there is a connected OA 582/2018.

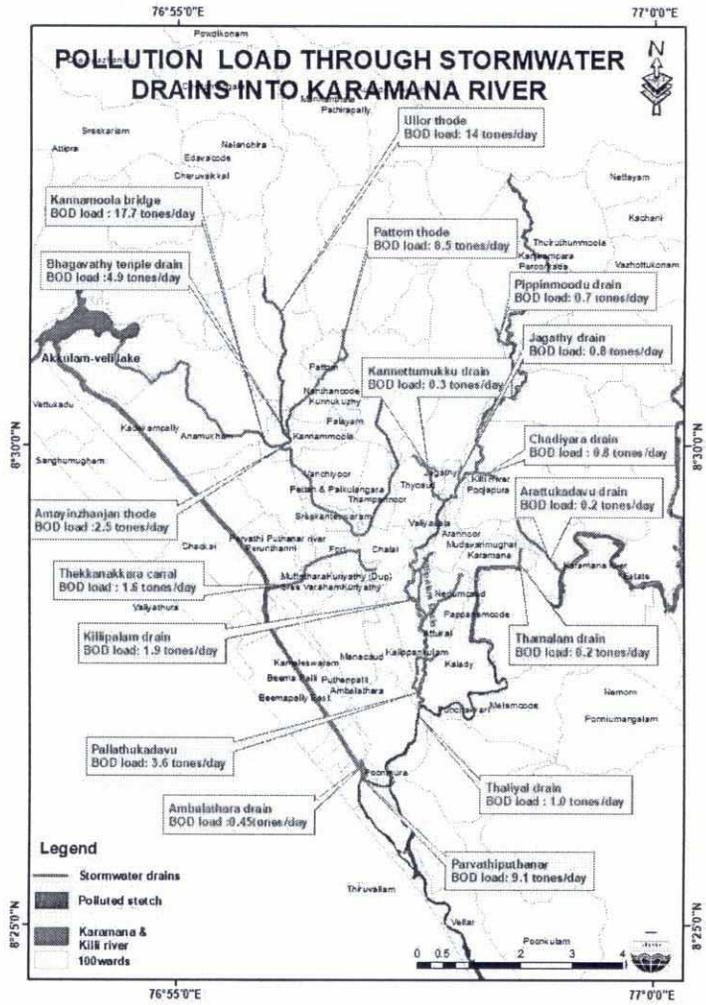
**2.6.1. River Karamana**

The Concept plan was approved on 28-12-2017. For the co-ordination of different departments, seven meetings were conducted by the Chief Secretary and Additional Secretary from January 2018 to

March 2019. The meetings discussed the preparation of Action Plan for River Karamana. The five meetings of River Rejuvenation Committee were conducted March and April 2019.

The Karamana Action Plan has been approved by River Rejuvenation Committee on 17-4-2019 and submitted to the Central Pollution Control Board.

The action taken by Pollution Control Board, Kerala Water Authority, Irrigation Department and Thiruvananthapuram Corporation is as follows:



**2.6.1.1. Works done by different departments**

S No	Department	Action taken
a)	Kerala State Pollution Control Board	<ul style="list-style-type: none"> <li>Determination of pollution load into Karamana from storm-water drains used for sewage disposal</li> <li>Sanitation survey of Karamana River, Killiyar (250 m on either side of the river) and polluted drains(10 m on either side of the identified polluted</li> </ul>

S No	Department	Action taken																																	
		<p>drain)<a href="http://117.232.111.146/envisan/">http://117.232.111.146/envisan/</a>– Rs.11.775 lakh</p> <ul style="list-style-type: none"> <li>• GIS database has been developed. Web portal is available in related links of websitekeralapcb.nic.in as Enviclean-Rs. 35 lakh</li> <li>• Draft river action plan submitted to Central PCB on 13-12-2018 and CPCB approved with conditions on 11-2-2019. Five meetings of River Rejuvenation Committee were over. Karamana action plan has been submitted to Central Pollution Control Board by the River Rejuvenation Committee on 17-4-2019.</li> <li>• Action plan has been finalized at the Government level and by River Rejuvenation Committee.</li> <li>• Inspected 79 units namely flats, hospitals commercial establishment. Notice was issued to 17 units and instructions were given to 15 units on finding the defects</li> <li>• Monitoring of all water bodies. Pollution load from the drains was identified.</li> </ul>																																	
b)	Kerala Water Authority	<ul style="list-style-type: none"> <li>• Common Sewage treatment plant of 107 MLD</li> <li>• Sewerage Network Rehabilitation by laying new lines increasing size of undersized main and reconstruction by dilapidated manholes for the last 3 years</li> </ul> <table border="1"> <thead> <tr> <th>Works</th> <th>No.</th> <th>Cost (crores)</th> </tr> </thead> <tbody> <tr> <td>Completed</td> <td>48</td> <td>9.1</td> </tr> <tr> <td>In progress</td> <td>45</td> <td>11.6</td> </tr> <tr> <td>On Tender</td> <td>33</td> <td>7.6</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Extension of sewer network wherever technically feasible in new areas of existing blocks</li> </ul> <table border="1"> <thead> <tr> <th>Works</th> <th>No.</th> <th>Fund (crores)</th> </tr> </thead> <tbody> <tr> <td>Completed</td> <td>42</td> <td>10.3</td> </tr> <tr> <td>In progress</td> <td>17</td> <td>5.5</td> </tr> <tr> <td>On Tender</td> <td>12</td> <td>19.6</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• Annual maintenance contracts for O&amp; M dividing the entire area into different maintenance zones (2.66 crores).</li> <li>• Procurement of sewer cleaning machines and equipment maintenance-under progress (3.17 crores)</li> <li>• Emergency brigade for urgent blockage rectification works to clean temporary overflows.</li> <li>• Establishment of six additional zones</li> </ul> <table border="1"> <thead> <tr> <th>Work</th> <th>No.</th> <th>Fund (crores)</th> </tr> </thead> <tbody> <tr> <td>Completed</td> <td>2</td> <td>2.33</td> </tr> <tr> <td>In Progress</td> <td>7</td> <td>69.59</td> </tr> </tbody> </table>	Works	No.	Cost (crores)	Completed	48	9.1	In progress	45	11.6	On Tender	33	7.6	Works	No.	Fund (crores)	Completed	42	10.3	In progress	17	5.5	On Tender	12	19.6	Work	No.	Fund (crores)	Completed	2	2.33	In Progress	7	69.59
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S No	Department	Action taken		
		On Tender	13	43.33
c)	Irrigation department	<ul style="list-style-type: none"> <li>Chain linked fencing both sides of various bridges upstream and Providing fencing-GI instream along Killi and Karamana River and Thiruvallomthodu - Rs. 1.95 Crore</li> <li>Integrated Solid waste management at Thiruvallom-Balikkadavu providing Grated flushing arrangements, renovation of drains with silt traps at Myladikkadavu surveillance system(CC Camera) from Myladikkadavu to Attakal bridge- Rs. 1.86 Crore</li> <li>Constructing biodiversity park on the bank of Karamana river-52.65 lakh</li> <li>Solid waste removal, side wall renovation rcc slotted slabs and fencing of sensitive areas of Thekkenekkara canal- Rs. 1.241Crore</li> <li>Construction of check dam in Karamana river at Kalady to prevent the salt water intrusion and scarcity of water during dry season- Rs. 61.68 lakh</li> </ul>		
d)	Thiruvananthapuram Corporation	<ul style="list-style-type: none"> <li>Health wing of TMC conducted survey. The following actions were taken                             <ul style="list-style-type: none"> <li>Notice issued- 2,939                                     <ul style="list-style-type: none"> <li>Houses-1047</li> <li>Institution-49</li> <li>Rectified-1,013</li> <li>Departmental action initiated-1,843</li> <li>Fine imposed and realized-1006960</li> </ul> </li> </ul> </li> <li>Mass cleaning organized on 26/2/2019 by TMC for Rs. 50 lakh</li> <li>21 community toilets at Rs. 57 lakh</li> <li>RRF completed at three locations(Muttathara, Manacadu, Vattiyookavu)</li> <li>MRF -44 completed at Rs. 25 lac</li> <li>Biogas plant at Rs. 25 lakh</li> <li>40 public toilets at Rs. 20 lakh</li> <li>3 mobile toilets at Rs. 40lakh</li> <li>Three septage sucking machine at Rs. 1 Crore</li> <li>4257 individual toilets at Rs. 4.45 Crore</li> </ul>		

**2.6.1.2. Action Plan for River Karamana**

**2.6.1.2.1. OA 581/2018 Karamana River Pollution**

The pollution of River Karamana is primarily from Thiruvananthapuram City sewage discharge. The City has STP of capacity 107 MLD. However, only 50 MLD reaches the STP, as the sewage network does not cover all areas of the City. Sewage flows into storm water drains and reaches River Karamana and the Akkulam-Veli lake connected to the river. In the short-term, resolving bottlenecks and overflows in the existing sewerage system can convey another 10 MLD into the STP (Action has been initiated and works are in progress.)

plan for River Karamana

The pollution load due to sewage entering the River Karamana system through various drains has been determined. The pollution load sorted in order of importance is given in the following table:-

S No	Drain	Pollution loadBODin TPD
a)	Kannamoola stream into Akkulam-Veli lake	17.7
b)	Ulloor thodu	14
c)	Parvathiputhanar	9
d)	Pattom thodu	3.8
e)	Killiyar river	3.5
f)	Amayizhanchal	2.5
g)	Killippalam drain	1.9
h)	Thekkanakkara canal	1.6
i)	Thaliyal drain`	1.0
j)	Chadiyara drain	0.8
k)	Jagathy drain	0.8
l)	Pippinmoodu drain	0.7
m)	Amabalathara drain`	0.45
n)	Kannettumukku drain	0.3
o)	Arattukadavu drain	0.2
p)	Thamalam drain	0.2

### 2.6.1.3. Short term plan

#### 2.6.1.3.1. Maintenance and de-bottlenecking of existing sewerage network

No.	Activity	Implementing agency	Cost Rs. Cr.	Source of fund	Time line	Expected outcome
a)	Pumping lines from the terminal pumping station Kuriyathi, to be connected directly to STP at Muttathara	Kerala Water Authority	3.375	Amrut	May 2019	Reduced pollution load in Parvathiputhanar
b)	Rehabilitation/upgradation of Thaliyal and Aranoor Sewerage Pumpouse 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	Reduced pollution load in Thaliyal drain leading to Killiyar
c)	5 MLD sewage treatment plant at Medical College	Kerala Water Authority	19.2	Amrut	May 2020	Reduced sewage load in City network
d)	Installation of adequate pumps in Mudavanmughal and Enchakkal pumping stations	Kerala Water Authority	0.23	Plan scheme	March 2020	Reduced pollution load in the drains
e)	DG sets in all lift and pumping stations – Mudavanmughal, Aranoor, Thaliyal, Kuriyathi, Pattoor, Kannammola,	Kerala Water Authority	0.92	Plan scheme	May 2020	Reduced pollution load in the drains

No.	Activity	Implementing agency	Cost Rs. Cr.	Source of fund	Time line	Expected outcome
	Pattom, Murinjapalam and Enchakkal					
f)	Reconnect sewer at Rajaji Nagar, stop outflow of sewage into Amayizhanchan thodu, 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	Reduced pollution load in Amayizhanchan thodu storm water drain
g)	Divert the sewer line from the School compound of Government Karamana High School	Kerala Water Authority	0.42	Plan Scheme	May 2020	Stop overflow of sewage through manholes in the school compound
h)	Rehabilitation by laying new lines increasing size of undersized main and reconstruction by dilapidated manholes for the last 3 years Total works in progress (45No.) Works in tendering (33No.)	Kerala Water Authority	11.6 7.6	Plan Scheme/ Amrut	May 2020	Reduced pollution load in the drains
i)	Extension of sewer network wherever technically feasible in new areas of existing blocks:- <ul style="list-style-type: none"> <li>• In progress(17No.)</li> <li>• Tendering(12No.)</li> </ul>	Kerala Water Authority	5.5 19.6	Plan scheme / Amrut	May 2020	Reduced pollution load in the drains
j)	Around 155 Houses in Kurukuvilakom, Kannettumukku shall be provided with septic treatment system	Kerala Water Authority	To be estimated			Reduced pollution load in the drains
k)	Procurement of sewer cleaning machines and equipment maintenance	Kerala Water Authority	3.17	Plan Scheme	May 2020	Reduced pollution load in the drains
l)	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	Reduced pollution load in the drains

#### 2.6.1.3.2. Solid Waste Management Action Plan

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
a)	Slaughterhouse and poultry waste	Thiruvananthapuram Corporation	Rendering plant	1	9.6	Plan fund	March 2021
b)	Sanitation facility and treat of waste water in the markets of Pangode, Kumarichanda	Thiruvananthapuram corporation	Treatment plant Portable aerobic bins	2 4	0.3	Plan Fund	Dec 2019
c)	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)	28	3.36	Plan fund	March 2020
d)	The discharge of waste water from the surrounding houses to the pond at Jagathy is to be stopped	Thiruvananthapuram Corporation	-Pond desilting -Issued notices to the household -project is prepared for desilting the pond	61	0.50	Plan Fund	March 2020
e)	Identification of illegal outlets into storm water drains and fine shall be imposed on such units	Thiruvananthapuram Corporation	-Total no of notice served -fine imposed and prosecution initiated	2939 336	1006960 fine	Collected from the individual- 1006960	Going on
f)	Biodegradable waste	Thiruvananthapuram Corporation	Bio-Composter	50,000	9	Plan fund	May 2020
g)			Thumboormuzhi aerobic bins	154	11.97		
h)			Community biogas	12	2.1		

33

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion	
i)			Organic Waste Converter	1	0.4			
j)		Thiruvananthapuram Corporation	Portable biogas	200	0.21			
k)			Portable aero bins	100	1.50			
l)			Ring compost	500	0.13			
m)			Segregation bins	1,00,000	4			
n)	Biodegradable waste		Thiruvananthapuram Corporation	RRC	7	7		
o)		Plastic Recycling unit		1	1.36			
p)		Mobile MRF		5	1.3			
q)		Electronic Weigh bridge		1	0.1			
r)		Solar electrical cart		25	0.5			
s)		Swaps shops		4	0.2			
t)		PET bottle crushing		15	0.05			
u)		Community level unit		102	0.35			
				Napkin destroyer				
v)				Thiruvananthapuram Corporation	Animal Crematorium at Kattela	1	1	Plan fund
w)		Thiruvananthapuram Corporation	Urban Gardening	10	0.5			
x)		Thiruvananthapuram Corporation	Upgradation of present facilities	42	1.86			
y)		Thiruvananthapuram Corporation	Capacity Building & IEC	14	0.7			
z)		Thiruvananthapuram Corporation	Viability gap Fund	15	0.92			
aa)	Prevent entry of storm-water into sewer line along with KWA	Thiruvananthapuram Corporation	KWA is authorized to prepare and implement proper sewerage lines under Amrut scheme	112	154	AMRUT	May 2020	

Sl.No	Activity	Implementing Agency	Unit	No of units	Cost in Rs Cr	Source of fund	Time for completion
bb)	Take steps to prevent the solid wastes in sewer line as reported by KWA	Thiruvananthapuram Corporation	Squad and Fines No of waste dumping cases  (Special squad is formed at corporation level. Health Inspectors are authorized for regularly monitoring and preventing the waste discharge	27	65740	Fine collected from the individuals	May 2020

#### 2.6.1.3.3. Monitoring

S No	Activity	Implementing agency	Cost	Source of fund	Time line	Remarks
a)	River water quality monitoring -Killiyar, Karamana, Parvathiputhanar, Akkulam-Veli lake	Kerala State Pollution Control Board	Rs. 3000 per sample	National Water Quality Monitoring Programme (NWMP), CPCB fund	Ongoing; monthly frequency	Monitoring of water quality
b)	Storm drains monitoring - Amayizhanchan thodu, Ulloorthodu, Pattom thodu, Kannamoola thodu, Thekkanakkara canal	Kerala State Pollution Control Board	Rs. 3000 per sample	State Water Monitoring Programme, KSPCB fund (SWMP), KSPCB fund	Ongoing Seasonal monitoring – pre-monsoon, monsoon, post-monsoon	Notice issued to TVM Corporation
c)	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

#### 2.6.1.4. Long term Plan

##### 2.6.1.4.1. Sewerage network

S No	Long term measures proposed	Implementing agency	Amount Required(Rs.in Crore)	Time line	Remarks
a)	Extension of sewerage system to Block F to G coastal belt	Kerala Water Authority	200	Three years	DPR Preparation in 6 months (through consultants)
b)	Extension of sewerage system to Block H to R	Kerala Water Authority	700		
c)	Extension of sewerage system to Newly added areas of corporation viz, Kazhakootam, Sreekaryam, Kudappanakunnu, Vattiyookavu & Vizhinjam	Kerala Water Authority	300		
d)	Providing sewerage system in Block A to E	Kerala Water Authority	100		
e)	Rehabilitation of existing network and pump house in block A to E	Kerala Water Authority	100		
f)	Procurements of equipment for maintenance sewerage system	Kerala Water Authority	10		
g)	Additional STP requirement	Kerala Water Authority	60		
h)	Total Amount required	Kerala Water Authority	1,470		

##### 2.6.1.4.2. Solid waste management

S No	Long term measures proposed	Implementing agency	Amount Required (Rs.in Crore)	Time line
a)	Acquire 58 acres of land and rehabilitate 8150 families from the banks of River Karamana, Killiyar and Parvathi-puthanar	Thiruvananthapuram Corporation	600	3 years ( INR 25cr is earmarked under plan project for the year 2019-2020 under life scheme for land acquisition and

##### 2.6.1.4.3. Desilting and development

S No.	Activity	Implementing agency	Amount allotted Rs. Crore	Department	Timeline
a)	Development package for Parvathy Puthanar	Irrigation department	150	Irrigation department Included in KIFB by KWIL includes cleaning of canal	3 years
b)	Desilting and development of Amayizhanchan Thodu	Irrigation Department	25	Irrigation department	1.5 years
c)	Improvements to Thekkenekara canal and desilting	Irrigation Department	5 (under preparation)	Irrigation department	1 year
d)	Karimadam tank improvements, desilting sheet piling/under preparation and providing fencing	Irrigation Department	4.5 (under preparation)	Irrigation department	1.5 years
e)	Development of Karamana basin	Irrigation Department	6.77 crores/under preparation	Irrigation department	1.5 years

### 2.6.2. River Tirur-Ponnani

The action plan <sup>for R.</sup> is under the consideration of River Rejuvenation Committee. The Board prepared the frame work of the action plan. This draft plan was placed before the committee members and discussed in the two meetings of the River Rejuvenation Committee. It was also shared with different line departments. The action plan will be finalized on getting the details from the different departments.\*\*

#### 2.6.2.1. Macro-level Action Plan Proposed For Tirur Municipality

SI.No.	Action	Implementing Agency	Estimated Expenditure in Crore	Fund Approved In Crore	Funding Agency	Time Line
a)	Septic Tank for nearest 500 houses	Tirur Municipality	1	0.02	Shuchithwa Mission & Plan Fund	2019-20
b)	Solid & liquid waste Treatment plant	Tirur Municipality	6	0.27	Plan Fund	June 2019

SI.No.	Action	Implementing Agency	Estimated Expenditure in Crore	Fund Approved In Crore	Funding Agency	Time Line
	a. RRF					
c)	Plastic Shredding Unit	Tirur Municipality	0.1	0.098	Plan Fund	2019-20
d)	Slaughtering	Tirur Municipality	1	0.58	Directorate of Urban Affairs	Civil work completed. New DPR prepared for mechanical fittings
e)	Crematorium	Tirur Municipality	0.5	0.54	World Bank	Completed
f)	De silting and river training works	Tirur Municipality	1	**	No fund received. De-silting work done by Irrigation Department	**
g)	Fencing	Tirur Municipality	**	**	**	**
h)	Bamboo	Tirur Municipality	**	**	**	**
i)	Installation of CCTV Camera	Tirur Municipality	**	**	**	**
j)	Monitoring	a. Municipality b. Police Department c. Pollution Control Board	**	**	**	**
k)	Proposal of VCB at Tributaries for not entering salt water	Irrigation department	2*	**	**	**
l)	Repair and maintenance of Kootayi Regulator	Irrigation department	10*	**	**	**

\*Amounts as per the report of Executive Engineer, Irrigation Department, Malappuram

**2.6.2.2. Action taken report for Tirur-Ponnani river**

Sl. No.	Action	Implementing agency	Action taken	Action proposed
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33

Sl. No.	Action	Implementing agency	Action taken	Action proposed
a)	Effluent treatment plant @ fish market	Tirur Municipality	Work awarded for 23,70,800/- Amount Paid – 15,00,000/- AMC commitment amount- 3,53,500/- Amount paid- 1,76,750/-	AMC Awarded to Hydrad Waste Water management System, Tirur
b)	Fine Collected from households/ commercial establishments	Tirur Municipality	Rs. 2,010/- collected	Notice Issued To Commercial ,Establishment, Hotels etc
c)	RRF	Social Economic Foundation Malappuram	Work on going Amount of TS- 27,08,000/- Amount spent 5,42,000 Will be completed by June 2019	Work In Progress
d)	The construction of Effluent Treatment Plant to be completed at the earliest possible and divert the existing drains near the Tirur Railway Bridge and rear side of market.	Tirur Municipality AMC Awarded to Hydrad Waste Water management System, Tirur	Work Awarded For Rupees 53,16,712/-	STP construction (Work In Progress)
e)	Two drains joining the river near Thazhepalam is containing blackish water. These drains are coming from the township. As an immediate measure all the outlets of establishments make their own arrangements for discharge in to the soak away pits after giving preliminary treatments.	Tirur Municipality	Work Awarded To PWD Contractor Sri.K.Sidhique For An Amount Of Rupees 8430000/- (Construction Of RCC Drain along the central line of the road for preventing the liquid and toilet waste from Commercial Buildings, Hotel Buildings etc.)	Work nearing Completion
f)	Where the canal joining the river at Vallikanjeeram, the flow is disrupted. The water is stagnant there. Action is to be taken to make continuous flow in the area. The discharge of any waste in to the canal is to be stopped.	Tirur Municipality	Thodu Located in Nirmaruthur panchayath (Nirmaruthur Village). Work taken by Tanur Block panchayath.(Report Sent to District Collector Malappuram)	
g)	Dumping of solid wastes on both banks of the river at	Vetom GramaPanchayath	CCTV Installation and collection	Work awarded for Rs.

Sl. No.	Action	Implementing agency	Action taken	Action proposed
	Ettirikadavu bridge is to be stopped with the help of police		of plastic waste from river banks implemented	1,250,000+900,000 =2,150,000. Amount Paid 6,48,285. Projects will be completed by July 2019
h)	Dumping of solid wastes on both banks of the river at Mangattiri Bridge is to be stopped with the help of police	Vettom GramaPanchayath	CCTV Installation and collection of plastic waste from river banks implemented	Work awarded for Rs. 1,250,000+900,000 =2,150,000. Amount Paid 6,48,285. Projects will be completed by July 2019
i)	The canal joining the river through the side of CV Land Water Theme, Park is to be cleaned and protected.	Vettom GramaPanchayath	CCTV Installation and collection of plastic waste from river banks implemented	Work awarded for Rs. 1,250,000+900,000 =2,150,000. Amount Paid 6,48,285. Projects will be completed by July 2019
j)	The island formed on the middle of the river is to be cleaned and protected.This can be used as a tourist spot.	Vettom GramaPanchayath	CCTV Installation	Work awarded for Rs. 1,250,000+900,000 =2,150,000. Amount Paid 6,48,285. Projects will be completed by July 2019
k)	The drains/canals reaching the river at 6 places in Mangalam Grama Panchayath area is to be cleaned and all types of waste discharged in to the drains is to be restricted.	**	**	**
l)	The Mangalam shutter is to be opened and allowed flushing as easily as possible as the river water quality will start deteriorate in March-April season	**	**	**

### 2.6.3. Other polluted stretches

Report was filed before NGT on 15-12-2018.

Of the 20 stretches, for the seven stretches, i.e for the stretches of Pamba – Mannar- Thakazhi; Manimala River –Kalloorpara-Thondra, Kuttiyadi, Kavvayi, Morgal, Uppala and Bhavani, BOD is within the limit of 3 mg/l. Hence Central Pollution Control Board was addressed vide the letter no. dated 16-4-2019 to exclude those eight stretches from the list of polluted stretches. For the remaining 12 stretches, the budget provisions and time line are to be included in the action plan. The budget details and time line are being calculated.

S No.	River	Priority	River stretch	District	Corporation near the polluted stretch	Municipality near the polluted stretch	Panchayath near the polluted stretch	Remarks
a)	Pamba	IV	Mannar - Thakazhi	Alappuzha	Nil	Nil	Mannar Thakazhi	As per the analysis done on 2017-2018 the BOD of the river is within the limit i.e. below 3 mg/L
b)	Manimala	IV	Kalloorpara-Thondra	Alappuzha	Nil	Nil	Kuttor Iraviperoor Puramattom	As per the analysis done on 2018 the BOD of the river is within the limit i.e. below 3 mg/L
c)	Chithrapuzha	V	Irumpanam - Karingachira	Ernakulam	Kochi	Thikkakara Kalamassery	-	Budgetary details and timeline are collected.
d)	Kadambrayar	IV	Manckakadavu-Brahmapuram	Nil	Nil	Thrikkakara	Edathala Kizhakkathala Kunnathunadu	Budgetary details and timeline are collected.
e)	Periyar	V	Aluva, Elloor - Kalamassery	Ernakulam	Kochi	Aluva Elloor	Kadungallur	Budgetary details and

S No.	River	Priority	River stretch	District	Corporation near the polluted stretch	Municipality near the polluted stretch	Panchayath near the polluted stretch th	Remarks
						Kalamassery		timeline are collected.
f)	Karuvannur	V	Karuvannur	Thrissur	Thrissur	Vadakkanchery Irinjalakuda	Vallachira Cherppu	Budgetary details and timeline are collected.
g)	Kechery	IV	Puliyannor- Kechery	Thrissur	Nil	Vadakkanchery	-	Budgetary details and timeline are collected.
h)	Puzhakkal	V	Olarikkara- Puzhakkal	Thrissur	Thrissur	Vadakkanchery	Arimpoor	-
i)	Bharathapuzha	IV	Pattambi	Palakkad	Nil	Pattambi Shornur Ottapalam	-	Budgetary details and timeline are collected.
j)	Tirur	V	Naduvilangadi- Thalakandathur	Malappuram	Nil	Tirur Ponnani	Thalakkad Vetom Mangalam Purathur	Specified in
k)	Kadalundy	V	Hajiyarpalli	Malappuram	Nil	Malappuram	Kadalundi	Budgetary details and timeline are collected.
l)	Kallai	V	Thekkepuram- Arakkinar	Kozhikode	Kozhikode	-	Kallai	Budgetary details and timeline are collected.
m)	Kuttiyadi	V	Kuttiyadi	Kozhikode	Kozhikode	-	Kuttiyadi	As per the

S No.	River	Priority	River stretch	District	Corporation near the polluted stretch	Municipality near the polluted stretch	Panchayath near the polluted stretch th	Remarks
								analysis done on 2018 the BOD of the river is within the limit i.e. below 3 mg/L .
n)	Kavvai	V	Kavvai	Kannur	Nil	Payyannur	Thrikaripur	As per the analysis done on 2018 the BOD of the river is within the limit i.e. below 3 mg/L
o)	Kuppam	V	Thalipparamba-Vellichangool	Kannur	Nil	Thaliparamba	Pariyaram	As per the analysis done on 2018 the BOD of the river is within the limit i.e. below 3 mg/L
p)	Peruvamba	V	Peruvamba	Kannur	Nil	Payyanur	Erimam Kuttor	
q)	Ramapuram	V	Ramapuram	Kannur	Nil	Nil	Ramapuram	
r)	Morgal	V	Morgal	Kasargode		Kasargod	Morgal Puthur	As per the analysis done on 2018 the BOD of the river is within the limit i.e. below 3 mg/L
s)	Uppala	V	Poyya- Mulinja	Kasargode	Nil	Kasargod	Manjeshwaram Mangalpandy Meenja	As per the analysis done on 2018 the BOD of the river is within the limit i.e.

S No.	River	Priority	River stretch	District	Corporation near the polluted stretch	Municipality near the polluted stretch	Panchayath near the polluted stretch th	Remarks
								below 3 mg/L
t)	Bhavani	V	Elachivazhi	Palakkad	Nil	Nil		As per the analysis done on 2018 the BOD of the river is within the limit i.e. below 3 mg/L

### 2.6.3.1. Action Plan of Perumbavoor Municipality

Sl. No.	Activity	No.	Timeline
a)	Bio gas plan household level	62	October 2019
b)	Ring compost household level	720	October 2019
c)	Bio gas plant	1	April 2019
d)	Aerobic bin compost unit	1	March 2020
e)	Aerobic bin compost unit	13	October 2019
f)	MCF plant	4	October 2019
g)	RRF	2	October 2019
h)	Swap shop	1	October 2019

### 2.6.3.2. Action Taken Report of Perumbavoor Municipality

Sl. No.	Activity	Status
a)	Waste disposal sites identification	The space has been decided for providing waste treatment facilities.
b)	Identification of sanitary land filling sites for population below 5000	158 cents of land procured for Parappuram sanitary land filling in ward 26.
c)	Procurement of suitable sites for solid waste disposal & sanitary land filling	158 cents of land procured for Parappuram sanitary land filling in ward 26.
d)	Directions issued for waste producers for classification of wastes, Bio degradable wastes, recycling wastes and wastes disposed through burning	Household wastes, hazardous wastes and other wastes from commercial establishments are disposed after segregation. Biomedical wastes are disposed through IMAGE. The direction is issued to waste producers regarding the waste disposed from source.
e)	Collection & transportation of segregated waste from houses & commercial establishments to treatment site in closed vehicles.	Haritha Karma Sena is collecting the segregated plastic waste from houses & commercial establishments.
f)	Collection, storage, transportation of the construction & demolition waste	No action plan.
g)	Solid waste disposal treatment facility to be provided in areas having more than 1 lakh population rate.	Not applicable.
h)	Solid waste disposal treatment facility to be provided in areas having less than 1 lakh population rate.	Work will be completed in October 2019.
i)	Public or private sanitary land filling facility should be provided in areas having more than 5 lakh population rate.	Not applicable.
j)	Public or private sanitary land filling facility should be provided in areas having less than 5 lakh population rate.	158 cents of land procured for Parappuram sanitary land filling in ward 26.
k)	Deactivate the old or unwanted dumping sites through biological measures.	Not applicable.

**2.6.3.3. Action Plan of Eloor Municipality-Periyar stretch**

Activity	Fund and Source	Timeline
Bio-gas plant	Central Government –Rs. 4.7 Lakhs State Government - Rs. 3.1 Lakhs Beneficiary Contribution - Rs. 5.6 lakhs	2020 March
Bucket compost	Central Government - Rs. 10.5 Lakhs State Government - Rs. 7 Lakhs Beneficiary Contribution - Rs. 12.5 Lakhs	2020 March
VGF	Plan fund - Rs. 5 Lakhs Central Government - Rs. 3.3 Lakhs Own Fund - Rs. 11.7 Lakhs	2019-2021
Aerobic bin	Plan fund - Rs. 13.3 Lakhs Central Government - Rs. 11.2 Lakhs State Government - Rs. 7.4 Lakhs	2019-2020
MCF	State Government - Rs. 17.7 Plan fund - Rs. 31.7 Lakhs Central Government - Rs. 26.6 Lakhs	2019-2020
RRF	Central Government - Rs. 8.6 Lakhs State Government - Rs. 5.7 Lakhs Plan fund - Rs. 10.2 Lakhs	2019-2020

2.6.4. Actions by various municipalities

River	District	Panchayath	Remarks	Works Done	Amount Spent	Proposed Work	Fund Required	Timeline	Funding Agency
Pamba	Alappuzha	Mannar	As per the analysis done on 2017-2018 the BOD is within the limit i.e. below 3 mg/L.	Deepening & purification of Kuttamperoor river	5 Lakhs	Reconstruction of river bank	10 Lakhs	30/10/19	Own fund, Plan fund
		Thakazhi	As per the analysis done on 2017-2018 the BOD is within the limit i.e. below 3 mg/L.	Deepening & purification of canals in Thakazhi	14,000	Reconstruction of river bank		30/10/19	Own fund
Kadambrayar	Ernakulam	Kunnathunadu		Nil	Nil	Installation of CCTV camera at Manakkakadavu	1 Lakh	2019-2020	CSR fund Wonderla
		Kizhakkambalam		Nil	Nil	Nil	Nil	Nil	Nil
		Edathala		Nil	Nil	Nil	Nil	Nil	Nil
		Vadavukodu puthen cruz		Nil	Nil	Nil	Nil	Nil	Nil
Periyar	Ernakulam	Kadungallur		Nil	Nil	Nil	Nil	Nil	
		Eloor	Given above in Table 6.1.4.b						
Tirur-Ponnani			Given above in Table 6.1.3a						

River	District	Panchayath	Remarks	Works Done	Amount Spent	Proposed Work	Fund Required	Timeline	Funding Agency
Kuppam	Kannur	Pariyaram	As per the analysis done on 2017-2018 the BOD is within the limit i.e. below 3 mg/L	Cleaning river bank		Bamboo oxygen park	1.1 Lakhs	2020 January	MGNREGA

**2.6.5 National Hydrology Project**

Under the National Hydrology Project, a study is planned on 5 major rivers, namely Meenachil, Periyar, Bharathapuzha, Kallai and Valapatnam. The bids for the study will be called once the Model Code of Conduct (MCC) is withdrawn.

**2.6.6 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.

**2.6.7. 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.

## 2.6. Ambient Air Quality (681/2018)

### 2.7.1. 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 and Research 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
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

### 2.7.2. 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.

### 2.7.3. 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), Vyttila Bus Stand (Ernakulum- Commercial Area), Palayam Bus Stand(Kozhikode-Commercial Area) are also included in 6.1 and 6.2.

#### 2.7.4. 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).

##### 2.7.4.1. 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 Connecters Ernakulam	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

##### 2.7.4.2. 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

52

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.

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.	Population 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	Existing Stations	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 capitals

				Kochi	Residential-5 Industrial-3	1- Background	1-Traffic 1- Commercial 1-Industrial	1- Residential	CAAQMSinstall ed at Eloor, MG Road and Vyttila
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54

## 2.8. 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).

**2.9. 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 fertilizers Ernakulum	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

57

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

The report for the month upto March 2019 was submitted to Central Pollution Control Board.. As per the reports upto March 2019, 4,017 units 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.

58

## 2. Annexure

***Annexure 3.1: Report from Local Self Government Department (LSGD)  
on Solid Waste Management***

STATUS REPORT FILED BY CHIEF SECRETARY, STATE OF KERALA BEFORE HON'BLE NATIONAL GREEN TRIBUNAL ON THE COMPLIANCE OF SOLID WASTE MANAGEMENT RULES MENTIONED IN THE ORDER OF HON'BLE NGT DATED 16.1.2019 IN OA.NO. 606/2018

**Abstract**

State of Kerala generates 10,044 TPD of Municipal Solid Waste; 14% by 6 Municipal Corporations, 45% by 87 Municipalities and 41% by 941 Gram Panchayats. 49% of the waste is generated in households, 36% in institutions and 15% in waysides and public places. 7734 TPD of waste is putrescible in nature, 1808 TPD is non-biodegradable and 502 TPD is inert. Non-biodegradable waste includes 603 TPD of paper, 402 TPD of plastic, 100 TPD of metals, 100 TPD of glass, 200 TPD of rubber & leather and 40 TPD of domestic hazardous waste. Currently, 3494 ton/day out of a total of 7734 ton/day (45%) of biodegradable waste is treated at households, institutions and community level. This works out to be 45% of the biodegradable waste generated in the State. Projects for installation of 13,09,478 household level composting or biomethanation units, which will increase the waste treatment capacity to 71% (i.e., 5491 TPD). The non-biodegradable waste is collected from the sources and temporarily stored in Material Collection Facility (MCF). There are 354 operational MCF in GPs and 126 operational MCF in ULBs. These MCFs have a potential to store about 842 ton/day of non-biodegradable waste, i.e. about 46% of the total non-biodegradable waste. 109 MCF in GPs and 7 MCFs in ULBs are under construction. This will enhance the storage capacity to 1045 ton/day (58% of the total non-biodegradable waste generated).

State Government vide GO (Rt) No. 3122/2017/LSGD dated 23/09/2017 constituted a State Level Advisory Committee (SLAC) chaired by Chief Secretary, to coordinate the implementation of investible projects in the waste management sector and to take key decisions in this regard. The SLAC in its subsequent meetings resolved that setting up of Integrated Waste Management Projects with Modern Waste to Energy Plants, at identified locations across the state through private implementing agencies identified through global tender process would be the best strategy to address the issue. Reports on land available with Govt departments were obtained and based on the report from Dist. Collectors, 7 sites were shortlisted. A feasibility study of the shortlisted locations found that the locations are feasible for the setting up of waste to energy plants. SLAC

approved the following 7 locations across the state for the setting up of centralized Waste to Energy plant.

Sl No	Location	District
1	Peringamala	Thiruvananthapuram
2	Kureepuzha	Kollam
3	Lalur	Trichur
4	Kanjikode	Palakkad
5	Panakkad	Malappuram
6	Njalianparambu	Kozhikode
7	Chelora	Kannur

State Govt. vide GO ( Rt) No 82/2018/LSGD dated 11th June 2018, accorded sanction for the setting up of 5 MW Waste to Energy (WtE) plants at the 7 sites on Design, Build, Finance, Operate and Transfer (DBFOT) basis, in Public Private Partnership mode. Kerala State Industrial Development Corporation (KSIDC) was designated as the nodal agency to set up the Waste to Energy plants in collaboration with the Concessionaire and local bodies, float the RFP, select the concessionaire and execute the concession agreement. KSIDC was entrusted to float the RFP with the broad terms and conditions, for the selection of a suitable concessionaire to set up WtE plants in the identified 7 sites. Accordingly RFP document and Draft concession agreement prepared by the consultant, was reviewed by the SLAC and legally vetted by Law Department. Tariff Rate to be quoted for the power generated in the plant was the bidding criteria in the RFP document. SLAC decided to float the RFP for the setting up the integrated Waste Management Project with Waste to Energy plant at Kozhikode district as the pilot project. The global tender for the development of waste to Energy Plant with 300 TPD capacity was floated on 22<sup>nd</sup> November 2018 in Government e - tender portal. M/s Zonta Infratech Pvt Ltd based in Bangalore submitted bid for Kozhikode Waste to Energy Project. The 22<sup>nd</sup> meeting of SLAC held on 05<sup>th</sup> February 2019 it was resolved to proceed with the evaluation of bid submitted by M/s Zonta Infratech pvt Ltd . The Technical and Financial evaluation of the bid has been completed.

The 20<sup>th</sup> meeting of State Level Advisory Committee on waste management resolved to float three separate bids for the WtE projects with 200 TPD capacity at Kollam, Palakkad and Kannur districts. In

accordance with the decision taken by the SLAC, KSIDC had floated the global tender for Kollam and Palakkad waste to energy projects on 29<sup>th</sup> January 2019 and for Kannur project on 04<sup>th</sup> February 2019. 15<sup>th</sup> March 2019 was the last date for the submission of bids. Considering the request by prospective bidders in pre bid meeting the 23<sup>rd</sup> meeting of SLAC decided to extend the last date for the submission of bids up to 15<sup>th</sup> April 2019.

In addition to this a Centralized Waste to Energy plant at Kochi with a capacity to treat 300 ton/day of waste has obtained Consent to Establish from the Kerala State Pollution Control Board and is awaiting environmental clearance. Sanction has also been accorded for the setting up a Waste to Energy plant at Munnar on Build, Own, Operate and Maintain (BOOM) basis by M/s. AG Dauters Waste Processing Pvt Ltd in the land provided by Kannan Devan Hills Plantations Company Pvt Ltd. Construction of a centralized Solid Waste Treatment Plant is nearing completion in Sulthan Batheri, Wayanad District and will be commissioned soon. The Centralized plants are expected to have a treatment capacity of 3030 TPD. Thus the State will have the capacity to treat the entire solid waste generated.

### **Introduction**

Kerala is one of the first states in the country to do away with the dehumanizing practice of manual scavenging. Kerala is one among the first open defecation free (ODF) states in the country. Now Kerala is taking effective actions for establishing sustainable waste management systems in accordance with pertinent rules.

A comprehensive sectoral status study on solid waste management sponsored by the Water and Sanitation Project- South Asia of the World Bank estimated the per capita Municipal Solid Waste (MSW) generation as 400 gpd in major urban centres, 300 gpd in municipalities and 200 gpd in rural areas. Detailed sampling studies in major urban centres of the state indicated that the waste generation is higher by almost 17.5% than the general estimates. Accordingly, the total MSW generation in Kerala is 3.7 Million tons annually, which includes 1415 tpd (tons per day) of municipal solid waste generated by six City Corporations, 4523 tpd by 87 Municipalities and 4106 tpd by 941 Gram Panchayaths. The local governments are mandated to manage the waste generated within their domain as per the prevailing rules under Environmental (Protection) Act,

1986, Kerala Municipality Act, 1994 and Kerala Panchayat Raj Act, 1994. Government formed Suchitwa Mission (SM) vide GO(MS) No.31/08/LSGD dt. 31/01/2008 to provide technical support on sanitation and waste management to Local Governments. Government have also formed Clean Kerala Company in 2013 under Companies Act, 1956 to provide waste management services to the state and local governments.

Compilation of various studies indicates that by weight, 49% of the municipal solid waste is generated in households, 36% in institutions and 15% in waysides and public places. By weight, 77% of the waste generated is putrescible in nature, 18% is non-biodegradable and the rest is inert. The non-biodegradable waste includes paper (6%), plastics (4%), metals (1%), glass (1%), rubber & leather (2%), domestic hazardous materials (0.4%), inert (5%) etc. The moisture content of the waste varies from 45% to 79% depending on the season and time of collection. The calorific value of solid waste varies from 923 to 1816 Kcal/Kg depending on the place of generation and composition.

As mandated in the Solid Waste Management Rules 2016, Govt. of Kerala constituted a State Level Advisory Board vide G.O (Rt) No. 140/2018/LSGD dated 16.01.2018. Kerala have also notified s State Policy on Solid Waste Management in terms of Rule 11 and 15 of Solid Waste Management Rules, 2016. As notified in the policy, the State is adopting the following strategies for achieving sustainable waste management systems.

1. Mandatory segregation of waste at source based on primary characteristics
2. Establish door to door collection of non-biodegradable waste from all sources for bulk handling and ensure their reuse and recycling to the maximum extent
3. Aerobic or anaerobic composting of biodegradable waste at source (household & institutions) as far as possible
4. Ensure decentralized community facilities for biodegradable waste that overflows from the source
5. Promote modern centralized waste processing facilities in major cities using state of the art technologies
6. Evolve a procedure for handling domestic hazardous waste and promote its implementation

7. Promote provision of storage bins for dumping wet and dry waste by all vendors and institutions including shops, retail joints, super markets, hotels, hospitals, railway and bus stations for the use public
8. Enforce captive waste management systems for the bulk waste generators
9. 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
10. Develop regional sanitary landfill facility to dispose of ultimately unusable materials
11. Prevent or discourage single use and throw away materials
12. Hygienic and aesthetic upkeep of public places by ensuring regular sweeping, cleaning and beautification
13. Enable the reuse, recycle and value addition of construction and demolition waste
14. Rationalize and strengthen the enforcement of rules and penalty provisions
15. Promote automated grievance redressal system for citizen
16. Undertake appropriate Information, Education and Communication campaign
17. Coordinate appropriate capacity building programmes for stakeholders
18. Develop appropriate community monitoring system for ensuring continual improvement in waste management
19. Network with academic and research & development institutions for updation of technologies and application protocols
20. Enlarge the service provider domain through encouraging start-ups among professionals and skilled youths

In accordance with the strategy, various actions have been taken at the State and Local Governments level to comply with various provisions of Solid Waste Management Rules, 2016. The compliance report with respect to various provisions of the rules are given hereunder.

As directed by Hon'ble National Green Tribunal in order dated 16.01.2019 in O.A.No.606/2019 the Chief Secretary State of Kerala has convened a meeting on 18.02.2019 to review the progress of implementation of solid Waste Management Rules,2016. Copy of minutes of meeting is enclosed as annexure II.

## COMPLIANCE TO SOLID WASTE MANAGEMENT RULES, 2016

### Rule No.4: Duties of waste generators

#### 1. Every waste generator shall

- a. Segregate and store the waste generated by them in three separate streams namely bio-degradable, non-biodegradable and domestic hazardous wastes in suitable bins and handover segregated wastes to authorized waste pickers or waste collectors as per the direction or notification by the local authorities from time to time;

**Action taken for compliance:** Segregation of waste is practiced in 67% Urban Local Bodies (ULBs) and 51% Gram Panchayats (GP). 62 ULBs out of the total 93 ULBs and 484 GPs out of the total 941 GP are practicing segregation at source. The segregation is ensured as the Local Governments are engaging Haritha Karma Sena (HKS) for door to door collection of segregated non-biodegradable waste. 22 ULBs and 362 GPs have formed HKS and trained them and they will shortly commence door-to door collection enhancing the compliance level. 7 ULBs and 95 GPs have formed HKS but yet to be trained and made operational. HKS is a micro-enterprise group formed and trained by the State Poverty Eradication Mission namely Kudumbasree who collect the segregated waste by charging a user fee. In the initial stages of operation, the HKS is given a viability Gap Fund for one year as per the rate fixed by the State Government. The biodegradable waste is treated at the source itself using composting methods such as aerobic composting or biomethanation (biogas generation).

- b. Wrap securely the used sanitary waste like diapers, sanitary pads etc., in the pouches provided by the manufacturers or brand owners of these products or in a suitable wrapping material as instructed by the local authorities and shall place the same in the bin meant for dry waste or non- bio-degradable waste;

**Action taken for compliance:** It is found difficult to manage the sanitary wastes by placing in the bins meant for dry waste or non-biodegradable waste. So, it is being advised to separate it from other types of wastes and to treat it through CPCB approved small incineration disposal units. since

May 2018. Many of the private women's hostels, hotels, apartment complexes and such other buildings are equipped with Sanitary Napkin Incinerator (SNI). About 150 Schools in Thiruvananthapuram District have installed Sanitary Napkin Incinerator by the Hindustan Life Care Systems. 18 ULBs have proposed to install 420 SNI at a total cost of Rs. 1.34 Cr. More efforts will be made to improve the compliance.

- c. *Store separately construction and demolition waste (C&D), as and when generated, in his own premises and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016*

**Action taken for compliance:** 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 Swachh Bharat Mission (Urban) in the Ministry of Housing and Urban Affairs, Govt. of India for technical support.

- d. *Store horticulture waste and garden waste generated from his premises separately in his own premises and dispose of as per the directions of the local body from time to time.*

**Action taken for compliance:** Kerala have homestead habitation practice dominantly thereby cultivable land is normally available around a house. All the horticultural and garden waste are generally used for covering and protecting tree bottom and such material gets composted naturally. In accordance with the Government Order G.O (Rt) No. 2420/2017, /LSGD dated 15.07.2017, the State is promoting Overflow Waste Management system, thereby the biodegradable waste is treated at the sources itself, as far as possible. Accordingly, aerobic composting or biomethanation (for generating biogas) facilities are being installed in households, institutions and community spots. If biodegradable waste overflows from the above

sources due to inadequacy of space or facility, they will be treated at decentralized or centralized facilities. The household level survey carried out during August 2017 as part of Freedom from Waste Campaign indicated that about 34.84 lakh households, 31,075 institutions and 2151 community locations are treating biodegradable waste within the premises. Sanctions have been given during the last two years to install 13,09,478 household level composting or biomethanation units.

2. *No waste generator shall throw, burn or burry the solid waste generated by him, on streets, open public spaces outside his premises or in the drain or water bodies.*

**Action taken for compliance:** An Executive Directive No. D2-206170/2016/PHQ dated 14.11.2016 has been issued by the State Police Chief to the Sub Inspectors, Circle Inspectors, Deputy Superintendent of Police, District Police Chief etc., to take cognizance of littering of waste and polluting air and water bodies and register cases under Sections 269 r/w and 278 of IPC and Section 120 (e) of Kerala Police Act. A handbook on various punitive measures for violating various provisions under Environmental (Protection) Rules, 1986; Solid Waste Management Rules, 2016 etc. has been prepared with the support of State Legal Cell Authority and State Pollution Control Board describing the penal provisions under Indian Penal Code, Environment (Protection) Rules, 1986; Solid Waste Management Rules, 2016; Kerala Panchayati Raj Act 1994; Kerala Municipalities Act, 1994; Kerala Irrigation and Water Conservation (Amendment) Act 2018 and such other relevant provisions. Based on the handbook, orientation training has been conducted to the Executive Officers at the district levels for alerting them and reminding them on the various punitive measures that have to be taken against those who are littering and polluting land, water and air by dumping, disposing and burning of waste. The Government have enhanced the punitive provision for polluting water bodies by dumping of waste or discharging waste water with imprisonment up to 3 years, fine of Rs. 2 lakh or both. The legal provisions have been given wide publicity through print and electronic media.

Intensive Information, Education and Communication (IEC) campaign is organized to bring about a behavior change necessitating every generator to segregate the waste generated and process, treat and dispose off the

biodegradable waste through composting or bio-methanation within the premises as far as possible. A reality shows namely "Think Clean" was organized through Door darshan, Thiruvananthapuram during 2016 to popularize the message of "My Waste, My Responsibility" thereby promoting waste management at the sources itself as far as possible and persuading citizen to reduce waste generation including one time use and throw plastic materials. 4-page advertorial has been published in major newspapers during 2017 and 2019 communicating the messages for treating the biodegradable waste at the sources itself, the details of tools for composting and biomethanation of biodegradable waste, good practices in waste management, various rules and penalty clauses for violations in waste management etc. Details of major IEC campaigns taken up is given as Annexure I.

*3. All waste generators shall pay such user fee for solid waste management, as specified in the bye-laws of the local bodies.*

**Action taken for compliance:** The draft bye-law on solid waste management has been prepared and is under consideration of Government. Vide Government Order, GO (Rt) 2420/2017/LSGD dated 15.07.2017, an institutional system namely Haritha Karma Sena (HKS), an enterprise group is entrusted with the task of door-to-door collection of non-biodegradable waste and facilitating treatment of biodegradable waste at the sources itself as far as possible. Wherever required, the HKS is also entrusted with the task of helping the households and institutions to maintain the composting system or transfer the biodegradable waste to nearby composting facilities. The User Fee suggested for various types of services by the HKS are given hereunder.

- Rs.60/- per month for collection of non-biodegradable waste twice a month and inspecting the source level biodegradable waste management facility
- Rs. 250/- per month for collection of non-biodegradable waste on a weekly basis and supplying inoculum (30 Litre/month) for the biodegradable waste management facility and for collecting the compost, if it is not used at the source itself
- Rs.800/- per month for collection of biodegradable and non-biodegradable waste on a daily basis

- Rs.300/- per month for collection of non-biodegradable waste once in a week, supplying inoculum (30 Litre/month) for the biodegradable waste management facility and providing support for assisting in organic vegetable cultivation using the compost generated there.
- Appropriate fee fixed by the LSGI for periodical collection of non-biodegradable waste, day-to-day collection of biodegradable waste and inspecting the waste management system, if the institution has established on its own, on a weekly basis.

4. *No person shall organize an event or gathering of more than one hundred persons at any*

*unlicensed place without intimating the local body, at least three working days in advance and such person or the organizer of such event shall ensure segregation of waste at source and handing over of segregated waste to waste collector or agency as specified by the local body.*

**Action taken for compliance:** A unique programme named 'Green Protocol Campaign' has been taken up by the state to reduce waste generation particularly to prevent the use of single use and throw away materials and promoting the use of recyclable materials. All government offices and government functions are asked to observe Green Protocol, thereby it is ensured that only reusable materials are used and waste generated is minimized. Green Protocol is also being promoted in private functions such as marriages as well as in festivals of religion and temples. Green Protocol ensures considerable reduction of waste and management of the waste generated at the source or elsewhere by the event management agency or the contractor who takes up the service. Currently, 215 state level offices out of 399, 756 district level offices out of 1114 and 190 Block level offices out of 358 have completed first level activities in green office campaign. 17 major festivals and all the state level functions by Govt departments observe green protocol thereby waste generation is reduced. The details of Green Protocol promotion are given in Annexure II.

5. *Every street vendor shall keep suitable containers for storage of waste generated during the course of his activity such as food waste, disposable plates, cups, cans, wrappers, coconut shells, leftover food, vegetables, fruits,*

*etc., and shall deposit such waste at waste storage depot or container or vehicle as notified by the local body.*

**Action taken for compliance:** As per Government Order G.O (Rt) No. 2511/2017/LSGD dated 22.07.2017, all the Local Governments are instructing the street vendors to avoid littering of wastes in public areas. As per Rules 371 & 372 of the Municipality Act, a vendor is required to take a license from the Local Government and this is linked to prevention of littering.

*6. All resident welfare and market associations shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorized waste pickers or the authorized recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body*

**Action taken for compliance:** 62 ULBs out of the total 93 ULBs and 484 GPs out of the total 941 GP are practicing segregation at source and door to door collection of non-biodegradable waste. Rest of the ULBs except two and all the GPs have formed Haritha Karma Sena (HKS) for door to door collection of segregated non-biodegradable waste and it will be operational soon. Source level aerobic or anaerobic composting of biodegradable waste is promoted at the households and institutions using Kitchen bin, Pipe composting, Pot composting, Ring Composting kit, Biobins, biogas plants etc. In markets and public places, decentralized composting facilities are being set up. Aerobic composting or biomethanation facility is installed in about 4.84 lakh houses, 31075 institutions and 2151 community places. In addition, about 30 lakh households are composting their waste in composting pits. Sanction has been given for installation of 13,09,478 household level composting facilities. In addition, 23 ULBs have set up centralized composting plants among which the plants at Kochi has a treatment capacity of 220 ton/day and that at Kozhikode has a capacity of 100 ton/day. These plants are functional currently but need renovation. The rest of the plants have a capacity varying from 1 ton/day to 10 ton/day. Among the 23 centralized plants, only 10 are now functional.

Currently, 3494 ton/day out of a total of 7762 ton/day of biodegradable waste is treated at households, institutions and community level. This works out to be 45% of the biodegradable waste generated in the State. The non-biodegradable waste is collected from the sources and temporarily stored in Material Collection Facility (MCF). There are 354 operational MCF in GPs and 126 operational MCF in ULBs. These MCFs have a potential to store about 842 ton/day of non-biodegradable waste, i.e. about 46% of the total non-biodegradable waste. 109 MCF in GPs and 7 MCFs in ULBs are under construction. This will enhance the storage capacity to 1045 ton/day (58% of the total non-biodegradable waste generated). The non-biodegradable waste stored in MCF are transferred to Resource Recovery Facility (RRF) for final segregation and recycling. It is proposed to establish 263 RRF all over the state by providing atleast one RRF in each Block Panchayat (as cluster of GPs) and Municipality and four each in each City Corporations. So far 131 RRFs have been constructed (81 in Block Panchayats and 50 in ULBs). 92 RRFs are under construction (62 in Block Panchayats and 27 in ULBs). 109 RRFs (66 in Block Panchayats and 43 in ULBs) are now functional. All the RRFs are provided with Plastic Shredding Units and Bailing Units. Some of the RRFs are also equipped to recycle plastic materials. The Clean Kerala Company Ltd (CKCLL) is entrusted to collect the non-biodegradable waste from MCF and operate the RRF facility vide GO (Rt) No.2420/2017/LSGD dated 15.7.2017. During the current year, the CKCL have supplied 395 ton of shredded plastics for mixing with bitumen. 220 tons of shredded plastics are consumed for road making in Local Self Government Institutions and 175 tons by the PWD.

*7. All gated communities and institutions with more than 5,000 sqm area shall, within one year from the date of notification of these rules and in partnership with the local body, ensure segregation of waste at source by the generators as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorized waste pickers or the authorized recyclers. The bio-degradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual -\*waste shall be given to the waste collectors or agency as directed by the local body*

**Action taken for compliance:** More than 746 high rise apartment complexes, 156 in Thiruvananthapuram, 450 in Kochi, 95 in Thrissur, 25 in Kozhikode, 12 in Kottayam, 6 in Thiruvalla and 2 in Changanasseri are provided with Biobin composting systems to compost biodegradable waste. 31075 institutions have composting systems, 96% of which are aerobic composting units and rest are biogas plants. There are 2151 decentralized waste treatment facilities (94% aerobic composting units and rest biomethanation systems) which also receives biodegradable waste from gated colonies. Altogether, 539 tons/day of biodegradable waste from gated colonies, high rise building and institutions are treated on a daily basis. The non-biodegradable waste from such locations are collected by Haritha Karma Sena or such other enterprise group and transferred to Resource Recovery Facility or handed over to scrap dealers. 2360 Scrap dealers are enlisted and they are also receiving non-biodegradable waste for recycling. All the buildings above 20000 m<sup>2</sup> are given environmental clearance only after stipulating captive waste management system.

8. *All hotels and restaurants shall, within one year from the date of notification of these rules and in partnership with the local body ensure segregation of waste at source as prescribed in these rules, facilitate collection of segregated waste in separate streams, handover recyclable material to either the authorized waste pickers or the authorized recyclers. The biodegradable waste shall be processed, treated and disposed off through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or agency as directed by the local body.*

**Action taken for compliance:** As per order issued vide G.O (Rt) No. 2511/2017 / LSGD dated 22.07.2017 and as per order issued vide G.O(Rt)No.2420/2017/ LSGD dated 15.07.2017, it has been made mandatory that all the business establishments having D&O license shall segregate waste and shall treat biodegradable wastes at the source itself using bio-methanation or composting and that the non-biodegradables shall be handed over to Local Self Government Institutions (LSGI) or agencies authorized by them by paying a user charge. Those who do not have facilities for treating biodegradable waste is also handed over to the authorized agencies for treating the biodegradables in the decentralized/centralized common facilities.

**Rule No.11: Duties of the Secretary-in-charge, Urban Development in the States and Union territories-**

1. *The Secretary, Urban Development Department in the State or Union territory through the Commissioner or Director of Municipal Administration or Director of local bodies shall-*

- a. *prepare a state policy and solid waste management strategy for the state or the union territory in consultation with stakeholders including representative of waste pickers, self-help group and similar groups working in the field of waste management consistent with these rules, national policy on solid waste management and national urban sanitation policy of the ministry of urban development, in a period not later than one year from the date of notification of these rules;;*

**Action taken for compliance:** Government notified the State Policy on Solid Waste Management in terms of Rule 11 and 15 of Solid Waste Management Rules, 2016 vide G.O(P) No. 65/2018/LSGD dated 13-09-2018 and published in Kerala Gazette in Vol. VII No. 2332 dated September 13, 2018. Government also have approved the Kerala State Sanitation Strategy Vide GO(Rt) No. 2516/2015/LSGD dated 13.8.2015. Vide GO(P) No. 10/2017/Plg&Econ. Affairs dated 19.4.2017, Government issued guidelines for sanitation & waste treatment sector detailing the activities to be taken up in the. Further, vide GO(Rt) No.2420/2017/LSGD dated 15.7.2017, Government issued implementation guidelines for sanitation and waste treatment actions.

- b. *while preparing State policy and strategy on solid waste management, lay emphasis on waste reduction, reuse, recycling, recovery and optimum utilization of various components of solid waste to ensure minimization of waste going to the landfill and minimize impact of solid waste on human health and environment;*

**Action taken for compliance:** The guiding principles on which the solid waste management policy is based include

- Waste will be considered as a resource
- 3R principle of Reduce, Reuse and Recycle will be embraced
- Polluter pays principle will be adopted

- Responsibility of the citizen to the waste he generates and right of the society to have hygienic environment will be protected

c. *State policies and strategies should acknowledge the primary role played by the informal sector of waste pickers, waste collectors and recycling industry in reducing waste and provide broad guidelines regarding integration of waste picker or informal waste collectors in the waste management system.*

**Action taken for compliance:** As per the policy statement of the State “The informal sector shall be recognized as that supplement the formal system to manages all types of waste as it promotes reuse or recycling of materials and provides employment to a large number of people. They shall be facilitated to operate competitively and enhance the level of efficiency. They shall also be recognized for establishes linkages with the formal economy through the recycling chain and for offsetting carbon emissions by making recycling possible and reducing the extraction and use of virgin raw materials. The informal sector shall be formalized and integrated with the waste management system of each local government”. Government through the Suchitwa Mission have initiated enlistment and registration of all types of scrap dealers in the state to promote recycling. Around 2000 Scrap Dealers and Rag Pickers have been registered so far in district wise and their address and contact details are uploaded in the web site of Suchitwa Mission. They are also being given an identity card with the help of Police Department so as to formalize the system. It is estimated that about 56% of the recyclable materials are handled by the scrap dealers in the state. During the post-flood clean-up efforts in Kerala, the Scrap Dealers played a major role in collecting the waste, recovering the recyclables and disposing the inert and hazardous waste materials.

d. *Ensure implementation of provisions of these rules by all local authorities;*

**Action taken for compliance:** Government issues orders, circulars and instructions for detailing the procedure to be adopted for implementation of various provisions of the Solid Waste Management Rules, from time to time. Government have formed Suchitwa Mission to provide specific technical support required for implementation of the provisions of the rules. Suchitwa Mission is provided with organizational and technical personal at the State and District level to extend necessary support to the

local authorities. Government have also enlisted 2 Accredited agencies and 120 Service Providers for providing technical services for installation of various tools. Further, Government have constituted Haritha Keralam Mission (Green Kerala Mission) to enable the local authorities to pursue integrated action for environmental upgradation of the State linking waste management, compost generation, organic cultivation, water conservation etc. The Government have also made it mandatory to provision 10% and 15% of the plan fund received respectively by rural and urban local governments for waste management. Further, Government is also providing additional fund required for improving the infrastructure for waste management as well as awareness and capacity building. For example, during 2018-19, the Local Governments were given development fund of Rs. 6722.17 Crore (941 Gram Panchayats- Rs.3310.44 Cr; 152 Block Panchayats- Rs.893.47 Cr; 14 District Panchayat- Rs.892.22 Cr; 87 Municipalities- Rs.742.56 Cr and 6 City Corporations- Rs.716.72 Cr.). Accordingly, the Urban Local Governments earmarked Rs.186.99 Cr and Rural Local Governments earmarked Rs. 509.61 Cr for sanitation and waste management. In addition, Rs. 52 Cr had been provided under the State Plan Scheme namely Suchitwa Keralam and Rs.182.93 Cr. had been provided under Centre-State Schme namely Swachh Bharat Mission. Government have also constituted Clean Kerala Company to provide waste management services, especially in the management of plastics and other recyclables, e-waste and operation & maintenance of Resource Recovery Facilities established by the Urban Local Governments and Block Panchayats.

The Chief Minister chair the Haritha Keralam Mission and the Minister for Local Self Governments chair the Suchitwa Mission and Clean Kerala Company and take periodical review of the activities of respective institutions which include various provisions under the Solid Waste Management Rules and other rules under Environmental (Protection) Act, 1986. The Chief Secretary chair a State Level Empowered Committee for sanitation which monitor the activities on sanitation and waste management in the State. The Chief Secretary also chair a State Level Advisory Committee exclusively for promoting the establishment of Waste to Energy Plants in Kannur, Kozhikode, Malappuram, Palakkad, Thrissur, Ernakulam, Munnar, Kollam and Thiruvananthapuram. The Additional Chief Secretary of the Local Self Government Department chair the State Level Advisory Board constituted as provisioned in the Solid Waste

Management Rules, 2016 and monitor the activities at least twice in a year. The Director of Urban Affairs, Director of Panchayats and Commissioner of Rural Development respectively monitor the activities of Urban Local Governments, Gram Panchayats and Block Panchayats respectively in which sanitation and waste management forms important components. The District Collectors chair a Task Force constituted under the Haritha Keralam Mission in which sanitation and waste management forms an important component. Besides, District Sanitation Samithi are functional in all the 14 districts for which the District Panchayat President is the Chairman and District Collector is the Executive Director.

- e. *Direct the town planning department of the State to ensure that master plan of every city in the State or Union territory provisions for setting up of solid waste processing and disposal facilities except for the cities who are members of common waste processing facility or regional sanitary landfill for a group of cities; and*

**Action taken for compliance:** Action to be initiated

- f. *Ensure identification and allocation of suitable land to the local bodies within one year for setting up of processing and disposal facilities for solid wastes and incorporate them in the master plans (land use plan) of the State or as the case may be, cities through metropolitan and district planning committees or town and country planning department;*

**Action taken for compliance:** Government have 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 to establish on Design, Build, Finance, Operate and Transfer (DBFOT) basis through Public Private Partnership (PPP) mode. The tender procedure for the setting up of a Centralized WtE plant at Kozhikode is completed. In addition, a Waste to Energy Plant of capacity 300 TPD is in the advanced stage of implementation at Kochi and its environmental clearance is awaiting.

- g. *(Missing in the Rule)*

h. *Direct the town planning department of the State and local bodies to ensure that a separate space for segregation, storage, decentralized processing of solid waste is demarcated in the development plan for group housing or commercial, institutional or any other non-residential complex exceeding 200 dwelling or having a plot area exceeding 5,000 square meters;*

**Action taken for compliance:** Action is being initiated

i. *Direct the developers of Special Economic Zone, Industrial Estate, Industrial Park to earmark at least five percent of the total area of the plot or minimum five plots or sheds for recovery and recycling facility*

**Action taken for compliance:** Sites available for recovery and recycling facility have been notified by Kerala State Industrial Development Corporation and Kerala Industrial Infrastructure Development Corporation.

j. *Facilitate establishment of common regional sanitary land fill for a group of cities and towns falling within a distance of 50 km (or more) from the regional facility on a cost sharing basis and ensure professional management of such sanitary landfills;*

**Action taken for compliance:** 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 Ernakulam district, Kottayam, Idukki and Pathanamthitta district and Alappuzha, Kollam and Thiruvananthapuram districts. Further, detailed study had been conducted in Palakkad district to establish a pilot sanitary landfill by a Committee appointed by the District Collector. The findings of the Committee are not favorable and hence it has been requested to look for an alternate site. Earlier in 2012, work had been initiated to establish sanitary landfill in Thiruvananthapuram and Kollam City Corporations, respectively at Vilappilsala and Kureppuzha, but had to be abandoned due to public protest and judicial intervention

- k. *Arrange for capacity building of local bodies in managing solid waste, segregation and transportation or processing of such waste at source;*

**Action taken for compliance:** Appropriate Capacity Building Programs are organized through Kerala Institute of Local Administration (KILA), a capacity building organization under the Local Self Government Department of the State. KILA organizes training for elected representatives, Secretaries, Health Officials, Engineers, Self Help Groups (Haritha Karma Sena) etc. on a regular basis in collaboration with the Suchitwa Mission. In addition, specialized trainings are organized by the Suchitwa Mission. About 450 capacity building programmes have been organized during the current year. In addition to this, Haritha Keralam Mission, Pollution Control Board, Local Governments also organize various training programmes linked to sanitation and waste management.

- l. *Notify buffer zone for the solid waste processing and disposal facilities of more than five tons per day in consultation with the State Pollution Control Board; and*

**Action taken for compliance:** This shall be ensured in consultation with the State Pollution Control Board.

- m. *Start a scheme on registration of waste pickers and waste dealers.*

**Action taken for compliance:** Most of the domestic hazardous waste are collected through Scrap dealers. Series of discussions have been held with the Kerala Scrap Merchants Association and they are oriented to collect all the non-biodegradable waste. The scrap dealers are enlisted and issued identity cards by the Suchitwa Mission. The district-wise details of the enlisted scrap dealers are uploaded in the website of Suchitwa Mission.

**Rule No.12: Duties of District Magistrate or District Collector or Deputy Commissioner-**

1. The District Magistrate or District Collector or as the case may be, the Deputy Commissioner shall,
- a. *Facilitate identification and allocation of suitable land as per clause (f) of rules 11 for setting up solid waste processing and disposal facilities to local authorities in his district in close coordination with the Secretary-in-*

*charge of State Urban Development Department within one year from the date of notification of these rules;*

**Action taken for compliance:** Adequate land has been identified in 8 major cities for setting up centralized facilities and order G.O (MS) No.82/2018/ LSGD dated 11/06/18 issued regarding this.

- b. *Review the performance of local bodies, at least once in a quarter on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development*

**Action taken for compliance:** This is being done through district level project reviews by the District Collector in presence of representatives from concerned LSGIs, regulatory body and concerned departments. In addition, the District level Task Force constituted as part of the Haritha Keralam Mission and chaired by the District Collector review the activities under sanitation and waste management including the progress of wet waste management at the household, institution and community levels as well as segregation and door-to-door collection of non-biodegradable waste and its storage and recycling.

**Rule No.13: Duties of the Secretary-in-charge of Village Panchayats or Rural Development Department in the State and Union territory-**

1. *The Secretary-in-charge of Village Panchayats or Rural Development Department in the State and Union territory shall have the same duties as the Secretary-in-charge, Urban Development in the States and Union territories, for the areas which are covered under these rules and are under their jurisdictions.*

**Action taken for compliance:** This is being complied as the administrative structure of the state is in line with this

**Rule No.15: Duties and responsibilities of local authorities and village Panchayats of census towns and urban agglomerations-**

1. *The local authorities and Panchayats shall-*

- a. *Prepare a solid waste management plan as per state policy and strategy on solid waste management within six months from the date of notification of state policy and strategy and submit a copy to respective departments of State Government or Union territory Administration or agency authorized by the State Government or Union territory Administration;*

**Action taken for compliance:** State has prepared a solid waste management plan as per the State policy and strategy. Subsequently, a draft action plan has been prepared for each of the 93 ULBs. The action plans with or without revision have been considered by the elected Municipal Council of 47 ULBs and obtained approval. The same has been submitted to the State Pollution Control Board (KSPCB). Other ULBs are reminded.

- b. *Arrange for door to door collection of segregated solid waste from all households including slums and informal settlements, commercial, institutional and other non-residential premises. From multi-storage buildings, large commercial complexes, malls, housing complexes, etc., this may be collected from the entry gate or any other designated location;*

**Action taken for compliance:** This is facilitated by establishing 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.

- c. *Establish a system to recognize organizations of waste pickers or informal waste collectors and promote and establish a system for integration of these authorized waste-pickers and waste collectors to facilitate their participation in solid waste management including door to door collection of waste;*

**Action taken for compliance:** A series of discussions have been done with Kerala Scrap Merchant Association (KSMA), the only organization for scrap dealers. Based on the discussion they have agreed to increase the type of scraps that they receive including those items which have low recyclable value. The scrap dealers in each district are enlisted and their details are uploaded in the website of Suchitwa Mission. They are also being issued identity cards by the Suchitwa Mission with the help of Police Department as part of recognizing them.

- d. *Facilitate formation of Self-Help Groups, provide identity cards and thereafter encourage integration in solid waste management including door to door collection of waste;*

**Action taken for compliance:** Vide Government Order G.O (Rt) No. 2420/2017 /LSGD dated 15.07.2017 statewide action has been taken to form Self Help Group namely HKS with the help of Kudumbasree Mission and they are integrated in solid waste management including door to door collection. 1663 SHGs are formed in all the 941 GPs of the State with a membership strength of 26946. Among these 23356 members of the SHGs in 846 GPs are given training through the Kudumbasree Mission with the help of KILA, Suchitwa Mission and Haritha Keralam Mission.

- e. *Frame bye-laws incorporating the provisions of these rules within one year from the date of notification of these rules and ensure timely implementation;*

**Action taken for compliance:** A draft by-law has been prepared which is vetted by the Law Department. It will be approved shortly after incorporating the comments of the Law Department.

- f. *Prescribe from time to time user fee as deemed appropriate and collect the fee from the waste generators on its own or through authorized agency;*

**Action taken for compliance:** As per order (G.O (Rt) No. 2420/2017/LSGD dated 15.07.2017) issued, it has been directed to collect user for the services provided in managing solid waste by the Self Help Group namely HKS.

- g. *Direct waste generators not to litter i.e. throw or dispose of any waste such as paper, water bottles, liquor bottles, soft drink canes, tetra packs, fruit peel, wrappers, etc., or burn or burry waste on streets, open public spaces, drains, waste bodies and to segregate the waste at source as prescribed under these rules and hand over the segregated waste to authorized the waste pickers or waste collectors authorized by the local body;*

**Action taken for compliance:** Executive Directive issued through Police Department against dumping and burning of waste on 14-11-2016. Similarly, an Act has been passed by the State for preventing waste dumping in water bodies, issued as Kerala Irrigation and Water Conservation (Amendment) Act 2018 with stringent punitive conditions.

- h. *Setup material recovery facilities or secondary storage facilities with sufficient space for sorting of recyclable materials to enable informal or authorized waste pickers and waste collectors to separate recyclables from the waste and provide easy access to waste pickers and recyclers for collection of segregated recyclable waste such as paper, plastic, metal, glass, textile from the source of generation or from material recovery facilities; Bins for storage of bio-degradable wastes shall be painted green, those for storage of recyclable wastes shall be printed white and those for storage of other wastes shall be printed black;*

SL

**Action taken for compliance:** As per Government order G.O (Rt) No. 2420/2017 /LSGD dated 15.07.2017, it is required to set up Material Collection Facilities (MCFs) in each Gram Panchayat (GP) for storage of non-biodegradable waste collected on a door to door basis and Resource Recovery Facilities (RRFs) in each Block Panchayat (BP) for segregation and management of different types of waste for reuse or recycling. MCF has been set up in 354 GPs (38% of total) and RRF in 45 GPs and 21 BPs (43% of total). The Operation & Maintenance of the RRFs are being transferred to the Clean Kerala Company Ltd (CKCLL).

- i. *Establish waste deposition centres for domestic hazardous waste and give direction for waste generators to deposit domestic hazardous wastes at this centre for its safe disposal. Such facility shall be established in a city or town in a manner that one centre is set up for the area of twenty square kilometers or part thereof and notify the timings of receiving domestic hazardous waste at such centres;*

**Action taken for compliance:** Most of the domestic hazardous waste are being collected for safe disposal. The domestic hazardous waste are also collected through collection campaigns organized periodically by notifying and informing public about the specific locations and time of collection. The Clean Kerala Company Ltd., a Govt. company, collects e-waste from the Local Governments and institutions and transfer it to e-waste recyclers. Massive collection drive were organized during post-flood period in Kerala, when the non-biodegradable waste mixed with domestic hazardous waste were collected and disposed of in a scientific hazardous waste landfill facility operational at Kochi. More than 15000 tons of waste was disposed of scientifically during the collection drive. A scientific facility for landfilling hazardous waste is operated and maintained at Brahmapuram, Kochi by the Kerala Enviro Infrastructure Ltd. which is linked to the Local Governments for disposal of domestic hazardous waste through CKCLL

- j. *Ensure safe storage and transportation of the domestic hazardous waste to the hazardous waste disposal facility or as may be directed by the State Pollution Control Board or the Pollution Control Committee;*

**Action taken for compliance:** Domestic hazardous waste collected through the door-to-door collection are temporarily stored in Material Collection Facility (MCF) and transferred to Resource Recovery Facility (RRF). The CKCLL disposes non-recyclable hazardous waste in the Scientific Hazardous Landfill Facility at Brahmapuram, Kochi.

- k. *Direct street sweepers not to burn tree leaves collected from street sweeping and store them separately and handover to the waste collectors or agency authorized by local body*

**Action taken for compliance:** The tree leaves collected from street sweeping are transferred to aerobic composting facilities and composted at the community level facilities. Continued awareness campaigns are organized against littering and burning of waste. A campaign is launched during 2019-20 for Litter Free Premises which is expected to create more awareness among the public against littering and burning of waste.

- l. *Provide training on solid waste management to waste-pickers and waste collectors;*

**Action taken for compliance:** Series of training has been given to sanitary workers attached to the ULBs and Govt. institutions. 28582 Waste Collectors (3998 in ULBs and 24584 in GPs) have been imparted training for waste segregation, door-to-door collection and operation and maintenance of composting installations. 2060 Sanitary workers are trained at the district level. In addition, 36 Haritha Sahaya Sthapanam (Green Support Organization) has been enlisted to assist ULBs and GPs for planning, implementing, operating and maintaining waste management systems. These organizations are essentially non-governmental organizations having experiencing in waste management sector. They are providing support to the local governments for handholding the waste management activities including training to the waste collectors. Government through the Suchitwa Mission is also providing the support of Resource Persons in waste management to the local governments including training.

- m. *Collect waste from vegetable, fruit, flower, meat, poultry and fish market on day to day basis and promote setting up of decentralized compost plant*

84

*or bio-methanation plant at suitable locations in the markets or in the vicinity of markets ensuring hygienic conditions;*

**Action taken for compliance:** The LSGIs are encouraged and facilitated to set up aerobic composting and bio-methanation plants in markets and such other community locations to treat biodegradables generated from markets and other nearby commercial establishments. Such facilities are established and operated in 2151 such locations. These plants have total treatment capacity of about 410 ton biodegradable waste per day. In addition, centralized composting plants are operational in 14 locations which also treat market waste on a day to day basis.

n. *Collect separately waste from sweeping of streets, lanes and by-lanes daily, or on alternate days or twice a week depending on the density of population, commercial activity and local situation;*

**Action taken for compliance:** Though street sweeping is done by the LSGIs based on a plan evolved by them, it has been advised to adopt the following criteria for road sweeping in accordance with the Manual of Central Public Health and Environmental Engineering Organization (CPHEEO).

- One person for sweeping of 300-350 m of road with high traffic density
- One person for sweeping of 500 m of road with medium traffic density
- One person for sweeping of 750-1000 m of road with low traffic density

The sweeping schedule suggested is

- Daily once or twice, as required, in town centre and commercial place
- Daily once in markets, small streets, outskirts of commercial streets etc.
- Once in a week in roads or streets with houses or institutions on either side
- Occasionally in Highways depending in the litter spread
- Twice a week in the main streets outside town
- At least once in two weeks in open places depending on the litter spread

- o. *Set up covered secondary storage facility for temporary storage of street sweepings and silt removed from surface drains in cases where direct collection of such waste into transport vehicles is not convenient. Waste so collected shall be collected and disposed of at regular intervals as decided by the local body;*

**Action taken for compliance:** The LSGIs have been advised to transfer all the biodegradable wastes collected during street sweeping to community treatment systems like aerobic composting units or biogas plants and to transfer non-biodegradables to nearby MCFs. Silt removed from surface drains is disposed of through temporary landfills.

- p. *Collect horticulture, parks and garden waste separately and process in the parks and gardens, as far as possible;*

**Action taken for compliance:** Complied as detailed in Rule No.4 (1) (d)

- q. *Transport segregated bio-degradable waste to the processing facilities like compost plant, bio-methanation plant or any such facility. Preference shall be given for onsite processing of such waste;*

**Action taken for compliance:** Source level aerobic or anaerobic composting of biodegradable waste is promoted at the households and institutions using Kitchen bin, Pipe composting, Pot composting, Ring Composting kit, Biobins, biogas plants etc. In markets and public places, decentralized composting facilities are being set up. Aerobic composting or biomethanation facility is installed in about 4.84 lakh houses, 31075 institutions and 2151 community places. In addition, about 30 lakh households are composting their waste in composting pits. Sanction has been given for installation of 13,09,478 household level composting facilities. In addition, 23 ULBs have set up centralized composting plants. Among the 23 centralized plants, only 10 are now functional. Currently, 3494 ton/day out of a total of 7762 ton/day of biodegradable waste is treated at households, institutions and community level. This works out to be 45% of the biodegradable waste generated in the State.

- r. *Transport non-bio-degradable waste to the respective processing facility or material recovery facilities or secondary storage facility;*

**Action taken for compliance:** The non-biodegradable waste is collected from the sources and temporarily stored in Material Collection Facility (MCF). There are 354 operational MCF in GPs and 126 operational MCF in ULBs. These MCFs have a potential to store about 842 ton/day of non-biodegradable waste, i.e. about 46% of the total non-biodegradable waste. 109 MCF in GPs and 7 MCFs in ULBs are under construction. This will enhance the storage capacity to 1045 ton/day (58% of the total non-biodegradable waste generated). The non-biodegradable waste stored in MCF are transferred to Resource Recovery Facility (RRF) for final segregation and recycling. It is proposed to establish 263 RRF all over the state by providing atleast one RRF in each Block Panchayat (as cluster of GPs) and Municipality and four each in each City Corporations. So far 131 RRFs have been constructed (81 in Block Panchayats and 50 in ULBs). 92 RRFs are under construction (62 in Block Panchayats and 27 in ULBs). 109 RRFs (66 in Block Panchayats and 43 in ULBs) are now functional. All the RRFs are provided with Plastic Shredding Units and Bailing Units. Some of the RRFs are also equipped to recycle plastic materials. The Clean Kerala Company (CKCL) is entrusted to collect the non-biodegradable waste from MCF and operate the RRF facility vide GO (Rt) No.2420/2017/LSGD dated 15.7.2017. During the current year, the CKCL have supplied 395 ton of shredded plastics for mixing with bitumen. 220 tons of shredded plastics are consumed for road making in Local Self Government Institutions and 175 tons by the PWD.

- s. *Transport construction and demolition waste as per the provisions of the Construction and Demolition Waste management Rules, 2016;*

**Action taken for compliance:** 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 Swachh Bharat Mission (Urban) in the Ministry of Housing and Urban Affairs, Govt. of India for technical support.

- t. *Involve communities in waste management and promotion of home composting, bio-gas generation, decentralized processing of waste at community level subject to control of odour and maintenance of hygienic conditions around the facility;*

**Action taken for compliance:** Source level aerobic or anaerobic composting of biodegradable waste is promoted at the households and institutions using Kitchen bin, Pipe composting, Pot composting, Ring Composting kit, Biobins, biogas plants etc. In markets and public places, decentralized composting facilities are being set up. Aerobic composting or biomethanation facility is installed in about 4.84 lakh houses, 31075 institutions and 2151 community places. In addition, about 30 lakh households are composting their waste in composting pits. Sanction has been given for installation of 13,09,478 household level composting facilities. In addition, 23 ULBs have set up centralized composting plants, among this only 10 are now functional. Currently, 3494 ton/day out of a total of 7762 ton/day of biodegradable waste is treated at households, institutions and community level. This works out to be 45% of the biodegradable waste generated in the State.

- u. *Phase out the use of chemical fertilizer in two years and use compost in all parks, gardens maintained by the local body and wherever possible in other places under its jurisdiction. Incentives may be provided to recycling initiatives by informal waste recycling sector.*

**Action taken for compliance:** Government have established an enabling mission namely Haritha Keralam Mission to integrate the activities of waste management, water conservation and organic cultivation. Accordingly, actions have been initiated to use the compost generated at the households, institutions, community places and centralized plants as manure for organic cultivation. Efforts are taken to promote this and scale up it so that it will be possible to phase out the use of chemical fertilizers.

v. *Facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own or with private sector participation or through any agency for optimum utilisation of various components of solid waste adopting suitable technology including the following technologies and adhering to the guidelines issued by the Ministry of Urban Development from time to time and standards prescribed by the Central Pollution Control Board. Preference shall be given to decentralized processing to minimize transportation cost and environmental impacts such as*

a) *bio-methanation, microbial composting, vermi-composting, anaerobic digestion or any other appropriate processing for bio-stabilization of biodegradable wastes;*

b) *waste to energy processes including refused derived fuel for combustible fraction of waste or supply as feedstock to solid waste-based power plants or cement kilns;*

**Action taken for compliance:** The state is giving preference to decentralized mode of processing, emphasizing on environment friendly technologies like composting and bio-methanation and also centralized waste treatment plant with modern technology like Waste to Energy plant. Prior to 2012, there were 31 Centralized composting plants managing about 1100 ton per day of waste, many of them closed down due to O&M failure or public protest and currently 10 Centralized composting plants are operational handling about 430 TPD of waste.

In addition to this, Government have also accorded sanction for establishing Waste-to-Energy plants in 7 districts on Design, Build, Finance, Operate and Transfer (DBFOT) basis through Public Private Partnership. The implementation of the proposal is in different stages. The tender procedure for establishing a centralized waste to energy plant at Njeliyanparamba, Kozhikode Corporation is completed. Kochi Corporation entered into an agreement with M/s. GJ Power Ltd. to establish a 300 TPD waste to energy plant which is awaiting environmental clearance. A 5 TPD modern biogas plant is being installed at Sultan Batheri Municipality of Wayanad and is expected to commission shortly. Sanction has also been accorded to establish a centralized Waste to energy Plant at Munnar by M/s AG Dauters Waste Processing pvt Ltd.

- w. *Undertake on their own or through any other agency construction, operation and maintenance of sanitary landfill and associated infrastructure as per Schedule 1 for disposal of residual wastes in a manner prescribed under these rules;*

**Action taken for compliance:** The state is yet to set up a sanitary landfill facility for rejects. The difficulty is to identify large extent of land in a small state like Kerala. A study conducted by the World Bank recommended 6 regional sanitary landfill facility for the state. Based on the criteria for locating sanitary landfill sites and using satellite data, probable sites for 6 regional landfills have been located. Detailed study was conducted to establish a pilot sanitary landfill in Palakkad district, but the Committee appointed by the District Collector found the land to be unsuitable. In order to establish sanitary landfill in Thiruvananthapuram and Kollam, work was started at Vilappilsala and Kureppuzha, but had to be abandoned due to public protest and judicial intervention

- x. *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 these rules;*

**Action taken for compliance:** The GPs and ULBs have been advised through respective orders GO(MS) 11/2018/LSGD dated 29/1/18 and GO(MS) 17/2018/LSGD dated 02/02/2018 to earmark 10% and 15% respectively of their plan funds for projects related to solid waste management. In addition, fund is provided under the Centrally Sponsored Scheme, Swachh Bharath Mission and State Plan Scheme, 'Suchitwa Keralam'. During the year 2018-19, a total of Rs.235 Crore was provided for waste management.

- y. *Make an 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 tons per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee, as the case may be;*

**Action taken for compliance:** This has been brought to the notice of the LSGIs. In most of the LSGIs source level treatment systems are followed. There are also decentralized plants which are small or below 5 TPD. Therefore, many of the LSGIs have not applied for authorization.

*z. Submit application for renewal of authorization at least sixty days before the expiry of the validity of authorization;*

**Action taken for compliance:** The LSGIs will be directed to comply with the stipulation.

*za. Prepare and submit annual report in Form IV on or before the 30<sup>th</sup> April of the succeeding year to the Commissioner or Director, Municipal Administration or designated Officer;*

**Action taken for compliance:** State Pollution Control Board monitors this activity

*zb. The annual report shall then be sent to the Secretary -in-Charge of the State Urban Development Department or village panchayat or rural development department and to the respective State Pollution Control Board or Pollution Control Committee by the 31st May of every year;*

**Action taken for compliance:** State Pollution Control Board monitors this activity

*zc. Educate workers including contract workers and supervisors for door to door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facility;*

**Action taken for compliance:** The waste collectors are made aware of the importance of waste segregation and other safeguards to be taken during transportation, processing and disposal.

*zd. Ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand-gloves, rain coats,*

*appropriate foot wear and masks to all workers handling solid waste and the same are used by the workforce;*

**Action taken for compliance:** The compliance will have to be improved.

*ze. Ensure that provisions for setting up of centers for collection, segregation and storage of segregated wastes, are incorporated in building plan while granting approval of building plan of a group housing society or market complex; and*

**Action taken for compliance:** Action has been taken to ensure designated waste management facility in high rise buildings. The compliance will have to be improved.

*zf. Frame bye-laws and prescribe criteria for levying of spot fine for persons who litters or fails to comply with the provisions of these rules and delegate powers to officers or local bodies to levy spot fines as per the bye laws framed; and*

**Action taken for compliance:** Draft byelaw for solid waste management prescribing criteria including punitive measures is under the consideration of the Government.

*zg. Create public awareness through information, education and communication campaign and educate the waste generators on the following; namely: -*

- i. not to litter;*
- ii. minimize generation of waste;*
- iii. reuse the waste to the extent possible;*
- iv. practice segregation of waste into bio-degradable, non-biodegradable (recyclable and combustible), sanitary waste and domestic hazardous wastes at source;*
- v. practice home composting, vermi-composting, bio-gas generation or community level composting;*
- vi. wrap securely used sanitary waste as and when generated in the pouches provided by the brand owners or a suitable wrapping as*

- prescribed by the local body and place the same in the bin meant for non-biodegradable waste;*
- vii. *storage of segregated waste at source in different bins;*
  - viii. *handover segregated waste to waste pickers, waste collectors, recyclers or waste collection agencies; and*
  - ix. *pay monthly user fee or charges to waste collectors or local bodies or any other person authorized by the local body for sustainability of solid waste management*

**Action taken for compliance:** Series of awareness building campaigns have been organized and the details are provided as Annexure.

zh. *Stop land filling or dumping of mixed waste soon after the time line as specified in rule 23 for setting up and operationalization of sanitary landfill is over;*

**Action taken for compliance:** Since decentralized method of processing has been initiated and ongoing, the practice of dumping of waste is minimal. However, there are wasting dumping spots at places which are mapped and actions are taken to remove and convert the spot as gardens etc. However, the compliance in this regard has to be improved further.

zi. *Allow only the non-usable, non-recyclable, non-biodegradable, non-combustible and non-reactive inert waste and pre-processing rejects and residues from waste processing facilities to go to sanitary landfill and the sanitary landfill sites shall meet the specifications as given in Schedule-I, however, every effort shall be made to recycle or reuse the rejects to achieve the desired objective of zero waste going to landfill;*

**Action taken for compliance:** This is yet to be complied with as sanitary landfills are yet to be established.

zj. *Investigate and analyze all old open dumpsites and existing operational dumpsites for their potential of biomining and bio-remediation and where so ever feasible, take necessary actions to bio-mine or bio-remediate the sites;*

**Action taken for compliance:** This is now initiated by the LSGIs.

zk. In absence of the potential of bio-mining and bio-remediation of dump site, it shall be scientifically capped as per landfill capping norms to prevent further damage to the environment.

**Action taken for compliance:** Shall be ensured

**Rule No.25: State Level Advisory Body. –**

1. Every Department in-charge of local bodies of the concerned State Government or Union territory administration shall constitute a State Level Advisory Body within six months from the date of notification of these rules comprising the following members, namely-

**Action taken for compliance:** Constituted as per G.O (Rt) No. 140/2018/LSGD dated 16.01.2018 and the first meeting of the SLAB has also been conducted.

**Enabling Government Orders**

In order to comply with the Solid Waste Management Rules, 2016 and rules prior to this, Government have issued various orders and directions to facilitate the implementation of the provisions of the rules.

1. Vide GO No. 471/2019/LSGD dt 1.3.2019 operating cost for Haritha Sahaya Sthapanam sanctioned
2. Vide G. O (Rt) no.470/2019/LSGD dated 01/03/2019, administrative sanction is issued by the govt. for the setting up of Septage Treatment Plants in various LSGIs for an amount of Rs. 150 crore by utilizing financial assistance from KIIFB
3. Vide G.O (Ms) No. 13/2019/LSGD dt. 1.2.2019 accorded sanction for setting up waste to energy plant at Munnar on Build, Own, Operate and Maintain (BOOM) basis by M/s. AG Dauters Waste Processing Pvt. Ltd. in the land provided by M/s. Kannan Devan Hills Plantation Company Pvt Ltd. without adopting tender process.
4. Vide G.O.(Rt) No. 194/2019/LSGD dt. 29.1.2019 accorded sanction for setting up of modern waste to energy biogas plants of 2 ton/day capacity through GPS Renewables Bangalore at Perinthalmanna on pilot basis.
5. Vide G. O (Rt) no.3281/2018/LSGD dated 31/12/2018 Government has accorded sanction for providing 90% of govt. subsidy for the

- projects formulated by LSGIs for installing source level waste management devices like bio-gas plants and composting devices.
6. Vide GO. No. 174/2018/LSGD dated 22.11.2018 - Sanction for establishing 5 MW WtE plants on DBFOT basis through PPP mode - modified orders
  7. Vide GO. No. 3687/2018/LSGD dated 15.11.2018 100% subsidy is provided for setting up composting units in public institutions
  8. Vide GO. No. 2724/2018/LSGD dated 24.10.2018 - Utilisation of ULB share of SWM projects included in DPR under SBM (U) -Guidelines issued.
  9. Vide G.O (P) No. 132/2018/LSGD dated 19.09.2018 - Post flood cleaning activities - Mass cleaning movement in LSGIs-Directions issued
  10. Vide G.O (P) No. 65/2018/LSGD dated 13.09.2018 - State policy on Solid Waste Management in terms of Rule 11 and 15 of SWM Rules, 2016
  11. Vide GO No. 2400/2018/LSGD dt. 10.9.2018 Local Bodies are permitted to implement SLWM projects utilizing 100% fund from the SBM (G) scheme.
  12. Vide GO No. 5784/2018/LSGD dated 4.9.2018 orders issued making Green Protocol compulsory for Govt. organized programmes and meetings.
  13. Vide Proceedings No. 2813/A/2018/LSGD dated 27.08.2018 - Removal and treatment of Non-biodegradable waste from flood affected areas - post flood cleaning measures to be adopted
  14. Vide Circular No. 389/DC1/2813/A/2018/LSGD dated 20.08.2018 - Treatment of Animal Carcass in flood affected areas
  15. Vide Proceedings No. 2813/A/2018/SM dated 20.08.2018 - Treatment of Animal Carcass in flood affected areas - directions issued
  16. Vide G. O (Rt) no.2142/2018/LSGD dt. 3.8.2018 - Government has accorded sanction for providing 100% of government assistance against project cost for installing WM Plants in Govt./aided Institutions, Hospitals, Quarters etc. which are unable to have any source of fund
  17. Vide G. O (Ms) no.82/2018/LSGD dated 11/06/18 - Government has accorded sanction for establishing 5 MW solid waste-to-Energy plants in 7 districts on Design, Build, and Finance, Operate and Transfer basis through public Private Partnership and entrusted KSIDC to float Request for Proposal

18. Vide Circular No. 176/DC1/2018/LSGD dated 4.5.2018, Green Protocol is implemented in Govt. Departments
19. Vide Govt. Circular No C2/274/2017/I & PRD dated 14/02/18 Government has issued a circular directing all Govt. departments to avoid use of flex board for the promotion of all government sponsored programmes
20. Vide GO. No. 387/2018/LSGD dated 8.2.2018 VGF earmarked to Clean Kerala Company for operating Resource Recovery Facility
21. Vide G.O (Rt) No. 140/2018/LSGD dated 16.01.2018 – Constitution of State Level Advisory Board (SLAB) – Solid Waste Management Rules, 2016
22. Vide G.O (Rt) No. 127/2018/LSGD dated 12.01.2018 - Modified guidelines issued for sanitation under Haritha Keralam Mission
23. Vide G.O (Rt) No.11/2018/LSGD dated 03.01.2018 – Suchitwa Mission notified as agency for technical and economic appraisal of DPR for SWM under SBM(Urban)
24. Vide G.O (Rt) No.16/2018/LSGD dated 03.01.2018 - Modified G.O. No. 3687/2017/LSGD dated 15.11.2017 - 100% subsidy to Aided Schools for WM plants in public places
25. Vide G.O (Rt) No. 3755/2017/LSGD dated 23.11.2017 directions issued to provide messages related to sanitation including reduction of plastic and other disposable articles, through offices of various departments and agencies which are directly connected to the public
26. Vide G.O. (Rt) No.3687/2017/LSGD dated 15.11.2017 – 100% subsidy for setting up of waste management units in Public offices governed by LSGIs
27. Vide GO. No. 3214/2017/LSGD dated 5.10.2017 Secretariat, Collectorate and Other Govt. Departments are to comply with Green Protocol
28. Vide GO. No. 2511/2017/LSGD dated 22.07.2017 - Implementing effective & efficient methods of source level waste management in LSGIs.
29. Vide G. O (Rt) No.2420/2017/LSGD dated 15.07.2017, Government issued operational guideline for the implementation of Harithakeralam Mission initiatives including Solid & Liquid Waste Management etc.
30. Vide G. O (P) no.10/2017/ P&EA dated 15.07.2017, Government has issued an order regarding the guideline explaining the vision,

- planning, operation and assistance related to the development missions formulated as part of the Nava Keralam Programme
31. Circular No DB3/753/12/CE/LSGD dated 20.06.2017 Chief Engineer LSGD has also issued directions to use shredded plastic in 20% of road works in 2017-18
  32. Vide G.O (Rt) No. 1641/2017/LSGD dated 19.05.2017 Clean Kerala Company has been authorized to establish plastic shredding & bailing units in LSGIs. 106 units have been installed so far.
  33. Vide G.O. (Ms) No.80/2017/LSGD dated 03.04.2017 – Guidelines issued on subsidies and related topics – 13th Five year plan for Panchayatiraj / Municipalika Institutions
  34. Vide Proceedings No.2640/C2/2015/SM dated 09.03.2017 – Addition of more Service Providers in the field of SWM – sanction orders issued
  35. Vide G.O (Rt) No 3119/2016/LSGD dated 17.11.2016 directions issued to LSGIs for the use of shredded plastic for road construction (road tarring)
  36. Vide G.O.(Rt) No. 2732/2016/LSGD dated 24.09.2016 constituted a 18 member State Level Monitoring Committee with the Principal Secretary, Local Self Government Department as Chairman and Director, Urban Affairs, Convener - Effective monitoring of implementation of Plastic Waste Management Rules,2016
  37. High Court W.P(C) No.5636/2016 dated 10.06.2016 - Prohibition of burning of plastic and rubber waste
  38. Vide Government Circular No. 82200/DC1/2014/LSGD dated 15-02-2016 all Grama Panchayats, Municipalities and Municipal Corporations are directed to promote source level segregation (House hold and Institutional Level) of biodegradable and non-biodegradable waste and manage it effectively. All Grama Panchayats, Municipalities and Municipal Corporations are also directed to ensure the treatment of biodegradable waste through composting or bio-methanation methods at all households and institutions by themselves.
  39. Vide G.O. (Rt) No.1826/2016/LSGD dated 02.06.2016 – Extension of service of approved Service Providers in the area of SWM in LSGIs
  40. Vide G.O. (Ms) No. 321/2015/LSGD dated 15.10.2015 – Implementation of Green Protocol under Plastic Free Sabarimala scheme - ban of plastic and other related products

41. Vide Circular No. 80308/DC1/2014/LSGD dated 10.03.2015 – Operation and Maintenance cost for Waste Management devices in LSGIs – clarification provided
42. Vide G.O. (Rt) No. 85/2015/LSGD dated 09.01.2015 – Renewal of Service Providers in the area of Solid Waste Management in LSGIs – approval issued
43. Vide G.O. (Rt) No.1922/2014/LSGD dated 22.07.2014 - Delegating Suchitwa Mission as authorized agency for issuing technical sanction to various projects
44. Vide G.O. (Rt) No.93/2014/LSGD dated 28.05.2014 – Clean Kerala Company to implement Waste Management projects in ULBs by avoiding tenders and other formalities and ULBs to implement the projects using their plan fund – orders issued
45. Vide G.O. (Rt) No. 3201/2013/LSGD dated 28.12.2013 – Renewal of 12 service providers in the area of SWM in LSGIs – approval orders issued
46. Vide G.O. (Rt) No. 3004/2013/LSGD dated 06.12.2013 – Revised list of approved service providers – addition of more agencies - approval orders issued
47. Vide G.O. (Rt) No. 2434/2013/LSGD dated 30.09.2013 – Renewal of 40 service providers in the area of SWM in LSGIs – approval orders issued
48. Vide G.O. (Rt) No. 966/2013/LSGD dated 09.04.2013 - Constitution of a committee for fixing the criteria -norms for selecting accredited agencies in the field of waste management sector
49. Vide G.O (MS) No. 239/2012/LSGD dated 20.09.2012 – Modified guidelines approved of Specifications, standards, unit costs, O & M protocol etc. for house-hold level / small units for construction by Local Bodies using various types of Composting and Biogas plants
50. Vide G.O (Rt) No. 2614/2012/LSGD dated 17.09.2012 – Modified guidelines issued for waste management using indigenous and allied technologies in house-hold / residential and community / school level
51. Vide G.O. (Rt) No.1597/2012/LSGD dated 12.06.2012 – Subsidy rate increased for Source level solid waste management devices for smooth functioning of WM

52. Vide G.O. (Rt) No.1457/2012/LSGD dated 28.05.2012 – Modified guidelines issued for waste management using indigenous and allied technologies in house-hold / residential and community / school level
53. Vide G.O. (Rt) No.1418/2012/LSGD dated 23.05.2012 – Addition of approved service providers in the area of SWM in LSGIs
54. Vide G.O (Rt) No.678/2012/LSGD dated 05.03.2012 – Solid Waste Management - Enhancement of Government financial assistance to Grama Panchayats for setting up comprehensive SWM plants
55. Vide G.O (Rt) No.581/2012/LSGD dated 25.02.2012 – Directions issued for implementing Solid Waste Management activities in Ministers' residences, Government Departments and Flats
56. Vide G.O (Rt) No.561/2012/LSGD dated 24.02.2012 – Solid Waste Management – Increase in subsidy for private individuals
57. Vide G.O (Rt) No.06/2012/LSGD dated 04.01.2012 - Various actions for solving issues related to safe disposal of Municipal Solid Waste especially to Trivandrum Corporation
58. Vide G.O (Rt) No. 2838/2011/LSGD dated 01.12.2011 - Handling and disposal of solid waste - plastic carry bags and NB materials banned
59. Vide G.O (Rt) No. 1491/2011/LSGD dated 22.06.2011 – Expansion of list of service providers in the area of SWM in LSGIs
60. Vide Circular No. 21945/DC1/2011/LSGD dated 16.04.2011 – Implementation of Solid waste management projects through Accredited agencies
61. Vide G.O (Ms) No. 73/2011/LSGD dated 01.03.2011 – Modified guidelines on specifications, standards, unit costs, O&M protocols, subsidy norms and contract conditions for SLWM plants
62. Vide G.O (Rt) No. 87/10/LSGD dated 11.01.2010 - Rs 85 crore sanctioned for the purchase of land for Brahmapuram solid waste plant through KURDFC.
63. Vide Circular No.66753/DC1/2008/LSGD dated 06.10.2008 – Approval of grant to LSGIs for SLWM projects
64. Vide G.O (Rt) No.16/2008/LSGD dated 15.01.2008- Purchase of Solid Waste management plant at Vilappilshala by Thiruvananthapuram corporation - sanction accorded

Annexure I**Information, Education and Communication Campaigns taken up for improving compliance of Solid Waste Management Rules, 2016**

1. Campaign through Akashawani and FM Channels for disseminating messages on scientific waste management from 01<sup>st</sup> May 2017 to 30<sup>th</sup> September 2017.
2. 40 episodes radio campaign from November 2018 to February 2019 to promote waste segregation at source and source level waste treatment methods and to popularize the successful waste management initiatives of various local governments in the state
3. Radio campaign during 1<sup>st</sup> to 15<sup>th</sup> August 2018 through 5 FM stations including Akashavani FM stations at 16 spots per day to promote Green Protocol
4. Radio campaign for 10 days in February-March during the years 2016, 2017 & 2018 to promote compliance to green protocol thereby to reduce waste generation during Atukal Pongala Festival
5. Audio jingles of 30 seconds duration for promoting compliance to green protocol during the festival season especially the Sabarimala festival season for a period of about 2 months in 2017
6. An 80-episode Social Reality Show through Doordarshan namely "Think clean" during August 2016 wherein 150 short films for awareness creation on waste management participated
7. Greeshmolsav, 3- day summer camp 2017 during April- May 2017 for children from Lower Primary, Upper Primary and High School for awareness building on sanitation, hygiene and waste management; 985 camps attended by 54245 students all over the state
8. Message display on 3 sides of 200 KSTRC buses for 3 months from September to October 2017 on source level waste management, prevention of burning of plastics etc.
9. 30 seconds commercials in 438 cinema theatres across the state for two months in 2016 & 2017
10. 200 major exhibitions across the state on source composting, demonstrations and promotion of segregation during the last three years
11. 10 sec jingles in Railway stations for a period of 30 days in two spells- Attukal pongala (March 18) and Freedom from Waste campaign (Aug 17)

12. A10-day long Railway jingles campaign from 11<sup>th</sup> to 20<sup>th</sup> March through 12 selected Railway stations for promoting Green Protocol
13. Slide shows through 102 digital display hoardings (57 LED & 45 touch screen kiosks) in 16 railway stations in the state for one month from 27<sup>th</sup> November to 26<sup>th</sup> December 2018 for dissuading Sabarimala pilgrims from using disposables and dumping/littering of plastic waste on way-sides and forests.
14. 1-minute video campaign through major railway stations in south India to dissuade pilgrims from using disposables in 2018
15. Wall paintings, bill boards, messages in local cable TVs, rallies, group meetings etc., done to popularize Swachh Survekshan in all the Grama Panchayats in 2017 & 2018
16. Onam greeting card making competition held for the students in Govt. & Govt. aided schools in the state to promote 'My waste my responsibility' message in 2017
17. Green Attukal Ponkala campaign 2019, campaign for one week conducted with the support of ACV channel. Street magic shows, Green Protocol messages and broadcast of video messages were part of the campaign.
18. As a part of Freedom from waste campaign short messages were sent through Mobile Phones to 10 lakh BSNL customers across the state, 50 lakhs brochures printed and disseminated through volunteers during house to house visit & a four-page tabloid in 3 leading Malayalam dailies was released as part of the launch of Freedom from waste campaign to promote scientific waste management
19. In the context of a significant number of Local Self Governments putting in place overflow waste management systems and in the backdrop of declaring 'Litter-free Premises Campaign' in Governor's speech, a 4-page advertorial was published in all major Malayalam dailies in the month of March 2019, reaching more than 50 lakh households.
20. Clean campus green campus: campaign through 1828 NSS units across the state was organized in October-December 2018 through 1828 NSS units and 20000 volunteers to make the colleges, higher secondary/VHSE schools and adopted wards of NSS units 'waste-free'
21. Produced 16 Videos on various aspects of scientific waste management with CSR support for social media dissemination and TV commercials

22. Around 100 Audio Jingles produced – for disseminating through FM radios and railway station public announcement systems
23. A 20-minute documentary on ODF journey was produced as part of the declaring rural Kerala as Open Defecation Free in 2016
24. 12 Short demonstration videos on different methods of composting, Green protocol, swap shops, segregation, against dumping and burning, preventing leptospirosis etc., has been produced through C-dit and published in You-tube and website of SM, and disseminated through Facebook page of SM and Whatsapp-groups.
25. A 20-minute video on 9 household level composting techniques was produced through KSFDC for training and capacity building purpose.
26. A 10-minute documentary on decentralized waste management is prepared as per the request of Swachh Bharat Mission and submitted.
27. As part of Post Flood IEC bit notices on dos and don'ts while cleaning homes and premises were printed and widely distributed in the camps
28. Awareness classes held in all the relief camps regarding cleaning houses, wells, waste management etc.,
29. 5 minutes programme was produced by Suchitwa Mission and broadcast through Akashawani from 01.09.2018 for a period of one month regarding proper segregation of waste, composting of bio waste, proper management of dry waste, prevention of leptospirosis by clearing stagnating of waste water in the context of post flood
30. A compendium on best practices on waste management in 29 Local bodies across the state compiled and published for training and cross learning purpose
31. Case study on 'social mobilization by Harithakarmasena' was compiled and sent to the Government of India selected as best practice and included in the Coffee table book released by Ministry of Housing and Urban Affairs in February 2019.

#### **Green Protocol Activities**

- Green Protocol introduced in the State during National Games 2015 attended by 7000 sports persons and 5000 officials in 113 venues in 7 districts for 13 days with an average spectatorship of 35,000 to 45,000 in each venue which held to reduce approx. 1200 tons of non-bio degradable waste

- In 2016-17, green protocol was followed in 16 major State level events and 224 district level events with effective co-operation of people and local bodies.
- 2016 Legislative Assembly Election has conducted as per Green Protocol and there after Swearing in ceremony of Sri. Pinarayi Vijayan Ministry was successfully conducted as per Green Protocol. 35000 persons participated in the Swearing in ceremony and there by reduced the generation of approximate 500 Kg of waste.
- In 2017-18, Green Protocol was strictly followed in 12 major events at State level and 152 events at District level. International cricket Matches, Nehru Trophy Boat Race, By-Election to Parliament and Legislative Assembly, Sivagiri Pilgrimage, Thiruvairanikkulam Temple Festival etc were the major events conducted as per Green protocol during the year.
- In 2018-19, as per Government Order G.O (MS) No. 132/2018/LSGD dated 19.09.2018 Green office campaign in offices has been expedited. As part of this campaign 215 nodal officers were trained at state level, 1114 Nodal officers were trained at District Level, 1516 Nodal officers were trained at Block level.
- As of now 215 Government offices in State level, 756 offices in District Level, 1516 offices in Block level have been following Green Protocol.
- Based on the order from Hon'ble High court of Kerala and Election Commission, 2019 parliament Election campaign is being conducted as plastic free Election. Green protocol facilitation units have placed in Districts, Taluk, Local body level for facilitating Green Protocol activities under the aegis of Suchitwa Mission and Haritha Keralam Mission. Supporting IEC materials like Brochures, Booklets, Guidelines, Hand books are published in this regard.

#### **Capacity building**

- In 2016-17, 25 No of Capacity Building programmes in 127 batches held at state level attended by 9573 participants and 328 No of Capacity Building programmes in 821 batches held at district level attended by 49240 participants.
- In 2017-18, 27 No of Capacity Building programmes in 31 batches held at state level attended by 3070 participants and 330 No of Capacity Building programmes in 350 batches held at district level attended by 26250 participants

- In 2018-19, 19 No of Capacity Building programmes in 27 batches held at state level attended by 2899 participants and 313 No of Capacity Building programmes in 595 batches held at district level attended by 21712 participants
- The Capacity Building programme consisted of workshops, seminars, trainings, orientation programmes and exposure visits on various aspects of waste management, project formulation, execution and monitoring, new projects, campaigns, Green Protocol etc. The participants included elected representatives, NGOs, Officials, school-college teachers, Volunteers etc.

### **State Level Capacity Building Programmes**

#### **2016-17**

- Two Days Residential Training on waste management for program officers and Technical Consultants- 27 persons participated.
- One day Workshop for stake Holders at Mascot Hotel, on scrap dealer registration- 85 persons participated.
- Three Days Residential Workshop for the preparation of Hand books on Solid Waste Management- 28 persons participated.
- Waste Free Swaraj Bhavan- Awareness Classes for Swaraj Bhavan Employees -94 persons participated.
- Waste Free Niyama Sabha- Awareness classes for Kerala Legislative Assembly Employees at Niyama Sabha-1200 persons participated
- Waste Free Secretariat- Awareness classes for secretariat employees at Govt. Secretariat- 2600 persons were participated.
- Two days preparatory workshop on IEC Manual preparation for programme Officers of District Suchitwa Mission- 14 persons participated
- Four days preparatory workshop for Technical manual Preparation for Technical Consultants of District Suchitwa -14 Officers participated.
- Two days Residential Technical Training on SLWM for Technical Consultants in District Suchitwa Missions - 14 Officials participated.
- Two days preparatory workshop for LSGI Manual preparation -28 Officials participated.
- Two-day workshop for the preparation of IEC Plan -28 officials participated.
- Two Days Residential Training on Scientific Waste Management for Health Inspectors and Junior Health Inspectors -3200 Officials participated.

- Two Days Residential Training on Scientific Waste Management for Village Extension Officers -840 Officials participated.
- Door darshan Reality Show- Media Workshop -75 Persons participated.
- State & District Level Training for Nehru Yuva Kendra Volunteers From November 2016 in all districts- 840 persons participated.
- Three Days Residential Training for Master Masons (ODF) -80 persons participated.
- One Day Orientation Workshop for State Level Key Resource Persons- 85 persons participated.
- Three Days Residential Training on Waste Management for State Level Key Resource Persons -85 persons participated.
- Two days Technical Training for Technical consultants from all District Suchitwa Mission- 14 officials participated.
- State level Technical Training for the Usage of Mobile App for Key Resource Persons of Suchitwa Mission- 85 persons participated.
- Two days Residential training for State level key Resource Persons - 85 persons participated.
- Review Meeting with one day orientation for- District Suchitwa mission team -72 officials participated.
- Master Faculty Workshop - 45 officials participated.

#### 2017-18

- Orientation for NGOs and District Coordinators -100 persons participated.
- One Day Training for Master Trainers on -70 officials participated.
- One Day Workshop on Pre-monsoon campaign for State Level officials of various Departments- 100 officials were participated.
- Two days Training for Waste Management Beacon municipality- Health standing committee chairpersons & Senior Health Officers - 49 persons were participated.
- 1<sup>st</sup> Phase field visit for Suchitwa Mission Officials (Programme Officers & Technical consultant of 14 Districts) at Varkala Municipality & Thiruvananthapuram corporation-14 persons participated.
- One day workshop on Haritha Keralam- Waste management campaign for Mayors and chairpersons of Beacon Municipalities - 80 persons participated

- 2<sup>nd</sup> Phase field visit for suchitwa Mission Officials (Assistant Cordinator SWM & IEC of 14 Districts) at Varkala Municipality & Thiruvananthapuram corporation- 11 persons participated
- Two Days Training on City Sanitation Plan preparation for selected -40 persons participated
- Two days Residential Workshop on Haritha Keralam- Waste Management Submission for State & District Level officials of Suchitwa Mission -125 persons participated
- DDFS Induction Training to Employees of State Suchitwa- 40 persons participated
- MIS Training to District Suchitwa Mission Officials -42 persons participated
- One Day workshop on ODF by QCI for ULB Officials -200 persons participated
- Training on Waste Management campaign for Officials & Green Army of Tvm Corporation- 600 persons participated
- Freedom from Waste campaign one day workshop for State level Resource Persons - 110 persons participated.
- Training on Waste Management campaign for Officials & Green Army of Tvm Corporation - 156 persons participated.
- Two Days Training on City sanitation Plan Preparation for 13 ULBS - 35 persons participated.
- Three days Residential Training on Waste Management for the Green Technicians of Punalur Municipality - 75 persons were participated.
- Training on Modern Slaughter House construction for Engineers & Health Officers - 42 Persons participated.
- Workshop on Swachh Survekshan 2018 for Mayors, Chairpersons & secretaries -200 Persons participated.
- Two Days Residential Training – State/District Level Official & Resource Persons of Suchitwa Mission& Haritha Keralam Mission - 85 Persons participated.
- Two Days Residential Training for selected Local Body Elected Representatives & Officials -140 persons participated.
- Two Days Residential Documentation Workshop in connection with Nov. 1<sup>st</sup> Campaign - 300 persons participated.
- Three Days residential (ToT) for Haritha Karma Sena -145 persons participated.
- Two Days Training for City Sanitation Plan -45 persons participated.

- PFMS Training to State & District Mission Employees - 38 persons participated.
- Two days Training on City Sanitation Plan preparation for selected ULBs- 60 persons participated.
- Green Office- State Level Two Days Residential Training for Resource -168persons were participated

2018-19

- Orientation to Govt. Secretaries & Department Heads regarding Green Office - 48 officials participated.
- Jagradolsavam- Two Days State Level Residential Training for Resource persons of Haritha Keralam Mission and Suchitwa Mission -150 Resource persons participated.
- Zero waste on Ground - One day FAQ Workshop for Experts & Technical persons - 67 persons participated.
- Green Office- One Day training for State Level Nodal Officers - 147 persons participated.
- Star Rating for Garbage Free cities - One Day workshop for Mayors, Municipal Chairpersons, LB Secretaries & Officials of Suchitwa Mission -200 persons participated.
- Green Office-Orientation Programme for State Level Employees of Directorate/ Commission rate/ Other Govt. Institutions- 1400 officials participated.
- "Clean campus -Green campus"- One Day Training Programme for N.S.S Officers & Resource Persons -50 persons participated.
- Two Days Training for District Suchitwa Mission Officials on Liquid Waste Management Techniques - 35 persons participated.
- Review Meeting for State Level Green Protocol Nodal Officers - 100 officers participated.
- Review Meeting for Suchitwa Mission District Coordinators - 32 persons participated.
- 3 Day orientation Workshop for DPR Preparation for ULB Secretaries, Health standing committee chairperson, Municipal Engineers, SBM- Nodal officers -153 persons participated.

- One Day Orientation workshop for HarithaShayasthapanam- Post flood activities -57 persons participated
- Two Day Orientation workshop on Write Shop for Technical consultants of District Suchitwa Mission - 20 persons participated.
- One Day Workshop on Launching of Swachh Survekshan-2019 for Chairman, Chairperson, ULB Secretaries & District coordinators of Suchitwa Mission -200 persons participated.
- One Day Meeting on the Establishment of STP in Selected Hospitals for LSG Officials, Hospital superintend, State and District Suchitwa Mission Officials - 60 persons participated.
- One Day Meeting on the Establishment of STP in Selected Hospitals for LSG Officials, Hospital Superintendents, State and District Suchitwa Mission Officials -60 persons participated.
- Two Days Orientation workshop on DPR Preparation for 37 Municipalities on Solid Waste management - 80 persons participated.
- Meeting of Agencies for the Advances technology toilets suitable for the water logged areas- Alappuzha - 50 persons participated.
- One Day Training on Waste management devices for Housekeeping Employees of Govt. Offices -50 persons participated.
- PFMS Hands on Training on Swachh Bharath Mission (Gramin) for Accounts & Data Entry Operators of Suchitwa Mission -32 persons participated.
- One Day workshop for the preparation of Training -15 officials participated.
- One day workshop for Haritha Kerala Mission, Clean Kerala Company, District Coordinator, UNICEF on Rebuild Kerala Development Plan - 50 Officials participated.

108

**Details of Segregation of Solid Waste in Urban Local Bodies**

**Corporations (6 Nos.)**

SI No	Name of Corporation	Total No. of wards	No of wards where 100% segregation is done	Percentage	No. of wards where 100% segregation not done	Percentage
1	Kozhikode Corporation	75	55	73.33	20	26.67
2	Thiruvananthapuram Corporation	100	50	50.00	50	50.00
3	Kannur Corporation	55	21	38.18	34	61.82
4	Kollam Corporation	55	3	5.45	52	94.55
5	Kochi Corporation	74	2	2.70	72	97.30
6	Thrissur Corporation	55	0	0.00	55	100.00
<b>TOTAL</b>		<b>414</b>	<b>131</b>	<b>31.64</b>	<b>283</b>	<b>68.36</b>

**District Headquartes & Towns with 1 lakh population**

SI No	Name of ULB	Total No. of wards	No of wards where 100% segregation is done	Percentage	No. of wards where 100% segregation not done	Percentage
1	Palakkad	52	52	100.00	0	0.00
2	Thalassery	52	52	100.00	0	0.00
3	Malappuram	40	25	62.50	15	37.50
4	Ponnani	51	20	39.22	31	60.78
5	Kalpetta	28	7	25.00	21	75.00
6	Kasaragod	37	8	21.62	29	78.38
7	Alappuzha	52	8	15.38	44	84.62
8	Kottayam	52	2	3.85	50	96.15
9	Pathanamthitta	32	0	0.00	32	100.00
10	Thodupuzha	35	0	0.00	35	100.00
<b>TOTAL</b>		<b>431</b>	<b>174</b>	<b>40.37</b>	<b>257</b>	<b>59.63</b>

**Urban Agglomeration (Kochi)**

SI No	Name of ULB	Total No. of wards	No of wards where 100% segregation is done	Percentage	No. of wards where 100% segregation not done	Percentage
1	Thrikkakara	43	43	100.00	0	0.00
2	Aluva	26	26	100.00	0	0.00
3	Eloor	31	30	96.77	1	3.23
4	Tripunithura	49	1	2.04	48	97.96
5	Maradu	33	0	0.00	33	100.00
6	Kalamassery	42	0	0.00	42	100.00
<b>TOTAL</b>		<b>224</b>	<b>100</b>	<b>44.64</b>	<b>124</b>	<b>55.36</b>

**Urban Agglomeration (Kozhikode)**

SI No	Name of ULB	Total No. of wards	No of wards where 100% segregation is done	Percentage	No. of wards where 100% segregation not done	Percentage
1	Feroke	38	38	100.00	0	0.00
2	Quilandy	44	42	95.45	2	4.55
3	Ramanattukara	31	0	0.00	31	100.00
	<b>TOTAL</b>	<b>113</b>	<b>80</b>	<b>70.80</b>	<b>33</b>	<b>29.20</b>

**Other Urban Local Bodies**

SI No	Name of ULB	Total No. of wards	No of wards where 100% segregation is done	Percentage	No. of wards where 100% segregation not done	Percentage
1	Varkala	33	33	100.00	0	0.00
2	South Paravoor	32	32	100.00	0	0.00
3	Punalur	35	35	100.00	0	0.00
4	Kottarakkara	29	29	100.00	0	0.00
5	Thiruvalla	39	39	100.00	0	0.00
6	Vaikom	26	26	100.00	0	0.00
7	Chavakkad	32	32	100.00	0	0.00
8	Kunnamkulam	37	37	100.00	0	0.00
9	Ottapalam	36	36	100.00	0	0.00
10	Chittur-Thathamangalam	29	29	100.00	0	0.00
11	Cherpulasserry	33	33	100.00	0	0.00
12	Tirurangadi	39	39	100.00	0	0.00
13	Kondotty	40	40	100.00	0	0.00
14	Vadakara	47	47	100.00	0	0.00
15	Payoli	36	36	100.00	0	0.00
16	Sulthan Bathery	35	35	100.00	0	0.00
17	Mattannur	35	35	100.00	0	0.00
18	Thaliparamba	34	34	100.00	0	0.00
19	Payyannur	44	44	100.00	0	0.00
20	Panoor	40	40	100.00	0	0.00
21	Anthur	28	28	100.00	0	0.00
22	Neelewsaram	32	32	100.00	0	0.00
23	Mukkam	34	33	97.06	1	2.94
24	Shornur	33	31	93.94	2	6.06
25	North Paravur	29	26	89.66	3	10.34

26	Nedumangad	39	23	58.97	16	41.03
27	Koduvally	36	19	52.78	17	47.22
28	Attingal	31	14	45.16	17	54.84
29	Pala	26	11	42.31	15	57.69
30	Perinthalmanna	34	14	41.18	20	58.82
31	Piravam	27	10	37.04	17	62.96
32	Nilambur	60	22	36.67	38	63.33
33	Kodungallur	44	14	31.82	30	68.18
34	Koothuparambu	28	7	25.00	21	75.00
35	Chalakkudy	36	8	22.22	28	77.78
36	Iritty	33	4	12.12	29	87.88
37	Angamaly	30	3	10.00	27	90.00
38	Vadakkancherry	41	3	7.32	38	92.68
39	Chenganur	27	1	3.70	26	96.30
40	Sreekandapuram	30	1	3.33	29	96.67
41	Neyyattinkara	44	0	0.00	44	100.00
42	Karunagappally	35	0	0.00	35	100.00
43	Adoor	28	0	0.00	28	100.00
44	Pandalam	33	0	0.00	33	100.00
45	Kayamkulam	44	0	0.00	44	100.00
46	Mavelikkara	28	0	0.00	28	100.00
47	Cherthala	35	0	0.00	35	100.00
48	Haripad	29	0	0.00	29	100.00
49	Changanassery	37	0	0.00	37	100.00
50	Erattupetta	28	0	0.00	28	100.00
51	Ettumanoor	35	0	0.00	35	100.00
52	Kattappana	34	0	0.00	34	100.00
53	Muvattupuzha	28	0	0.00	28	100.00
54	Kothamangalam	31	0	0.00	31	100.00
55	Perumbavoor	27	0	0.00	27	100.00
56	Koothattukulam	25	0	0.00	25	100.00
57	Irinjalakkuda	41	0	0.00	41	100.00
58	Guruvayoor	43	0	0.00	43	100.00

111

59	Pattambi	28	0	0.00	28	100.00
60	Mannarkkad	29	0	0.00	29	100.00
61	Tirur	38	0	0.00	38	100.00
62	Kottakkal	32	0	0.00	32	100.00
63	Manjeri	50	0	0.00	50	100.00
64	Valancherry	33	0	0.00	33	100.00
65	Tanur	44	0	0.00	44	100.00
66	Parappanangadi	45	0	0.00	45	100.00
67	Manathavadi	36	0	0.00	36	100.00
68	Kanhangad	43	0	0.00	43	100.00
	<b>TOTAL</b>	<b>2372</b>	<b>1015</b>	<b>42.79</b>	<b>1357</b>	<b>57.21</b>

<b>Total No of wards</b>	<b>3554.00</b>	<b>Percentage</b>
<b>No of wards where 100% segregation is done</b>	<b>1500.00</b>	<b>42.21</b>
<b>No. of wards where 100% segregation not done</b>	<b>2054.00</b>	<b>57.79</b>

**Details of Municipal Solid Waste generated per day and other related details**

District	Total no of ULBs	Total quantity of waste generated per day( in ton)	No. of ULBs where mandatory segregation of waste at source is being done	No. of ULBs where source level composting facility (aerobic or anaerobic) for the processing of biodegradable waste (Household / Institution /Community level) is available	No of ULBs where such facility is not available	No of ULBs where door to door collection of non-biodegradable waste from all sources is available	No of ULBs where such facility is not available	No of ULBs where captive waste management system is enforced for the bulk waste generators in ULBs	No of ULBs where Haritha Karmma Sena is formed, trained and started functioning	No of ULBs having dumping areas where heaps of accumulated solid waste on streets and public places	Quantity of waste accumulated in such areas (in ton)	No of ULBs where Material Collection Facility (MCF) is available	No of ULBs where Resource Recovery Facility (RRF) is available
Thiruvananthapuram	5	726	Seperately attached	5	0	5	0	4	4	2	0.5	4	7
Kollam	5	464		4	1	5	0	2	4	1	0.3	5	5
Pathanamthitta	4	362		4	0	4	0	2	2	0	0	3	3
Alappuzha	6	379		4	2	5	1	1	3	0	0	4	4
Kottayam	6	464		4	2	5	1	2	5	0	0	3	1
Idukki	2	187		2	0	2	0	2	1	0	0	2	2
Ernakulam	14	758		8	6	10	4	6	6	2	12	7	6
Thrissur	8	426		6	2	6	2	5	4	2	2.25	4	6
Palakkad	7	394		6	1	6	1	1	6	3	21.52	6	6
Malappuram	12	387		11	1	11	1	11	7	0	0	6	2
Kozhikode	8	526		7	1	6	2	2	8	2	5.05	6	2
Wayanad	3	259		1	2	2	1	2	1	0	0	2	0
Kannur	10	482		9	1	7	3	8	10	3	42	8	7
Kasaragod	3	162		3	0	3	0	2	1	0	0	2	2
	93	5976		74	19	77	16	50	62	15	83.62	62	53

**Details of Municipal Solid Waste generated per day and other related details**

District	No of ULBs where centralised waste management facility is available	The fine imposed for the dumping of waste in public places and water bodies	No. of ULBs having public protest	Are the waterbodies clean	Septage Treatment Plant	Sewerage Treatment Plant
Thiruvananthapuram	1	284600	0	(No) 4	0	1
Kollam	1	650124	1	(No) 3	1	1
Pathanamthitta	1	116450	0	(No) 5	0	0
Alappuzha	0	279430	0	(No) 5	0	0
Kottayam	0	158100	0	(No) 5	3	3
Idukki	0	169705	0	(No) 1	0	0
Ernakulam	2	345470	1	(No) 10	1	0
Thrissur	4	392470	1	(No) 4	0	3
Palakkad	3	285500	0	(No) 7	0	0
Malappuram	3	1095660	0	(No) 10	0	1
Kozhikode	1	80250	1	(No) 5	0	0
Wayanad	1	164100	0	(No) 3	0	0
Kannur	3	844670	0	(No) 8	0	1
Kasaragod	1	90000	0	(No) 2	0	1
	21	4956529	4		5	11

## Gramapanchayat wise details of Solid Waste generation and related matters

District	Number of Grama Panchayats	Total quantity of waste generated per day (in ton)	Number of Panchayats where mandatory segregation of waste at source is being done	No. of Panchayats where such segregation facility is not available	Number of Panchayats where source level composting facility (aerobic or anaerobic) for the processing of biodegradable waste (Household/institution/community level) is available	No of panchayats where such facility is not available .	Number of Panchayats where facility to door to door collection of non biodegradable waste from all sources is available	Details of Panchayats where such facility is not available	No of Panchayats where captive waste management system is enforced for the bulk waste generators in respective Panchayats	No. of Panchayats where Hariitha Karmma Sena is formed, trained and started functioning	Whether there is dumping areas where heaps of accumulated waste on streets and public places	Quantity of waste accumulated in such dumping areas (in ton)	No of Panchayats having public protest,	No of Panchayats where Material Collection Facility (MCF) is available	No of Panchayats where Resource Recovery Facility (RRF) is available
Thiruvananthapuram	73	787	39	34	73	0	39	34	25	41	No	0	0	11	5
Kollam	68	392	42	26	34	34	66	2	23	51	No	0	0	19	6
Pathanamthitta	53	342	38	15	50	3	51	2	27	50	Yes	0.51	1	40	3
Alappuzha	72	265	39	33	46	26	45	27	16	20	Yes	26	0	32	4
Kottayam	71	296	43	28	59	12	58	13	21	41	Yes	1	0	43	8
Idukki	52	65	19	33	38	14	30	22	9	16	Yes	3	0	26	4
Ernakulam	82	445	58	24	64	18	37	45	30	34	Yes	6	2	36	4
Thrissur	86	390	22	64	64	22	36	50	0	22	Yes	0.47	0	0	9
Palakkad	88	268	11	77	28	60	12	76	10	31	Yes	70	1	27	5
Malappuram	94	206	66	28	59	35	31	63	0	22	No	0	0	0	3
Kozhikode	70	287	57	13	69	1	66	4	32	70	No	0	1	29	2
Wayanad	23	82	13	10	14	9	11	12	7	10	No	0	0	19	2
Kannur	71	216	63	8	67	4	66	5	22	66	No	0	0	67	8
Kasaragod	38	77	14	24	18	20	14	24	0	10	No	0	0	15	1
TOTAL	941	4118	524	417	683	258	562	379	222	484		107	5	364	64

District	Fine imposed (local bodywise) for the dumping of waste in public places and water bodies.	Are the water bodies clean? (no solid waste thrown into water bodies)	No of Panchayats where waste management facility is available
Thiruvananthapuram	75000	No	0
Kollam	31600	No	0
Pathanamthitta	0	Yes	0
Alappuzha	3000	No	0
Kottayam	6000	Yes	4
Idukki	101000	Yes	9
Ernakulam	55151	No	13
Thrissur	0	No	0
Palakkad	30000	No	3
Malappuram	0	Yes	0
Kozhikode	272600	No	0
Wayanad	31600	Yes	0
Kannur	353900	Yes	3
Kasaragod	52000	Yes	0
TOTAL	1011851		32

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH: NEW DELHI.**

Application No.581 of 2018  
(Earlier O.A.No.302 /2013(SZ)(THC))

BETWEEN:

The Edayar Resident's Association,  
Edayar, Thiruvallom Post,  
Muttathara Village,  
Thiruvananthapuram – 695 027

...Applicant

Vs.

The Government of India,  
Rep by the Secretary, MoEF, New Delhi  
And 17 others.

...Respondents

AFFIDAVIT OF 2<sup>ND</sup> RESPONDENT

I, Tom Jose, son of Joseph Thomas, aged about 58 years, the Chief Secretary to the Government of Kerala having office at Thiruvananthapuram, do hereby solemnly affirm and sincerely state as follows.

1. I am the 2<sup>nd</sup> respondent herein functioning as the Chief secretary to the Government of Kerala and fully conversant with the facts of the case.

2. As per the order dated 25.01.2019 of this Hon'ble Tribunal, I remain present before this Hon'ble Tribunal.

3. It is most respectfully submitted that the action plan and action taken report are being filed before this Hon'ble Tribunal.



*Tom Jose*

It is therefore humbly prayed that this Hon'ble Tribunal may be pleased to take on record the facts adduced in this report and thus render justice.



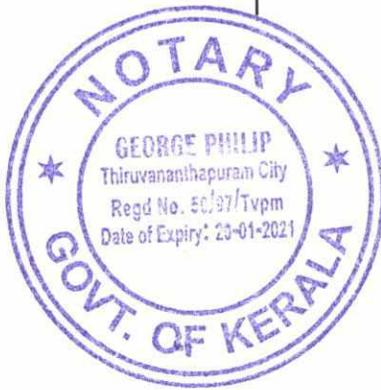
*Tom Jose*  
**TOM JOSE**  
Chief Secretary  
Government of Kerala  
Thiruvananthapuram

Solemnly affirmed at *Thiruvananthapuram* on |  
this the *22<sup>nd</sup>* day of *April* 2019 |  
and signed his name in my |  
presence. |

Before me,

*George Philip*

Advocate **GEORGE PHILIP**  
Advocate & Notary  
K/345/1975  
Trivandrum-695 035



**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL  
PRINCIPAL BENCH: NEW DELHI.**

Application No.581 of 2018  
(Earlier O.A.No.302 /2013(SZ)(THC))

BETWEEN:

The Edayar Resident's Association,  
Edayar, Thiruvallom Post,  
Muttathara Village,  
Thiruvananthapuram – 695 027

...Applicant

Vs.

The Government of India,  
Rep by the Secretary, MoEF, New Delhi  
And 17 others.

...Respondents

**VERIFICATION**

I, Tom Jose, son of Joseph Thomas, aged about 58 years, having office at Thiruvananthapuram, do hereby solemnly affirm and sincerely state as follows.

1. I am the 2<sup>nd</sup> respondent herein in the above matter. I know the facts and circumstances of the case as revealed from the records maintained in the office. The factual submissions made in the above paragraphs in the Action plan and Report are true and correct to the best of my knowledge, information and belief. In this circumstances, it is just and necessary that this Hon'ble Tribunal may be pleased to accept the accompanying Affidavit on file and it is humbly prayed in the interest of justice in this case.

Date :  
Place :



*Tom Jose*  
Chief Secretary  
State of Kerala  
**TOM JOSE**  
Chief Secretary  
Government of Kerala  
Thiruvananthapuram