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JUSTICE A.V. RAMAKRISHNA PILLAI
(Former Judge, High Court Of Kerala)
CHAIRMAN

State Level Monitoring Committee, Kerala

(An authority constituted by the
National Green Tribunal)

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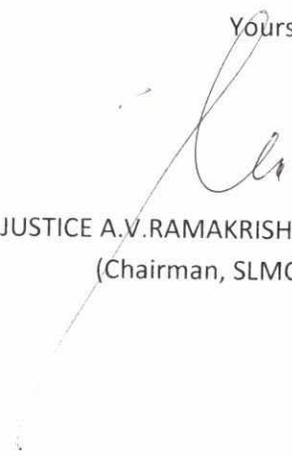
30.07.2019

Dear Registrar,

Kindly see the appended report in O.A.No.606/2018 regarding to the progress of implementation of Environmental Laws in the State of Kerala, prepared in compliance of the order dated 25.4.2019.

The report may kindly be placed before the Hon'ble Tribunal for consideration.

Yours Sincerely,


JUSTICE A.V. RAMAKRISHNA PILLAI,
(Chairman, SLMC, KERALA)

To
The Registrar,
National Green Tribunal,
Principal Bench, Faridkot House,
Copernicus Marg, New Delhi-110001.

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REPORT

Noticing the wide gap between the steps taken and steps required to be taken to remedy the unsatisfactory state of environment, this Hon'ble Tribunal had an interaction with the Chief Secretary of the State on 25.4.2019 where in the following main directions were given.

- i. At least three cities and three towns in the State and at least three Villages in every District of the State may be identified within two weeks and earnest and demonstrable endeavor be made to make them fully compliant in respect of environmental norms within six months. Remaining State may be made fully compliant within one year.
- ii. A quarterly report be furnished by the Chief Secretary, every three months. First such report shall be furnished by July 30, 2019.
- iii. The Chief Secretary may personally monitor the progress, at least once in a month, with all the District Magistrates.
- iv. The District Magistrates may monitor the status of compliance of environmental norms, at least once in two weeks.
- v. The District Magistrates or other Officers may be imparted requisite training.
- vi. Estimate of value of environmental degradation and cost of restoration be prepared and compensation be planned and recovered from polluters for environmental restoration and restitution on that basis.
- vii. Performance audit of functioning of all regulatory bodies may be got conducted and remedial measures be taken, within six months.
- viii. Introduction of a policy of giving ranking, based on performance on the subject of environment and giving of rewards or other incentives on that basis to individual areas, localities, institutions or individuals may be considered. This may also include encouraging students or other citizens significantly contributing to the cause of environment. The best practices may be evolved, if necessary, in the light of experiences on the subject. This may help in educating and involving public at large which may help in enhancing of environmental laws.

- ix. The Chief Secretary may remain present in person before the Tribunal with the status of compliance in respect of various issues mentioned in para 22 as well as any other issues discussed in the above order on 06.11.2019. It is made clear that Chief Secretary may not delegate the above function and the further requirement of appearance before this Tribunal to anyone else. However, it will be open to him to change the date, by advance intimation by e-mail at ngt.filing@gmail.com to adjust their convenience.

In the light of the above, Local Bodies were identified, to be made fully complaint in respect of environmental laws within the time specified and the list was approved by the State Level Monitoring Committee (SLMC for short). The local bodies so identified are the following:

A. Corporations

1. Thiruvananthapuram.
2. Thrissur
3. Kozhikode.

B. Municipalities

1. Attingal in Thiruvananthapuram District.
2. Punalur in Kollam District.
3. Kunnankulam in Thrissur District.

C. Villages

1. Thiruvananthapuram District
 - a. Karakulam
 - b. Poovachal
 - c. Parassala
2. Kollam District
 - a. Kadakkal
 - b. Chavara
 - c. Perinad
3. Pathanamthitta District
 - a. Kulanada
 - b. Aranmula
 - c. Thumpamon

4. Alappuzha District
 - a. Aaryad
 - b. Mararikkulam North
 - c. Thamarakkulam

5. Kottayam District
 - a. Moonnilavu
 - b. Kadaplamattom
 - c. Poonjar
6. Idukki District
 - a. Adimali
 - b. Nedumkandam
 - c. Kumaly
7. Ernakulam District
 - a. Pampakuda
 - b. Chottanikara
 - c. Kalady
8. Thrissur District
 - a. Manalur
 - b. Parappukkara
 - c. Peringanam
9. Palakkad District
 - a. Muthuthala
 - b. Sreekrishnapuram
 - c. Vellinezhi
10. Malappuram District
 - a. Maranchery
 - b. Chaliyar
 - c. Thuvvur
11. Kozhikode District
 - a. Kunnummel
 - b. Kuttiyadi
 - c. Meppayur

12. Wayanad District

- a. Meenangadi
- b. Muttill
- c. Vythiri

13. Kannur District

- a. Pariyaram
- b. Padiyur
- c. Udayagiri

14. Kasaragod District

- a. Kinanoor - Karinthalam
- b. Bedadukka
- c. Madikkai

The Department of Environment, Government of Kerala as per G.O.(Rt)No.45/2019/ENVT dated 31.5.2019 published the list of such local bodies which is appended as Exhibit-X1. The location maps of those Model Local Bodies are appended as Exhibit-X1 (a)-series.

After identifying the local bodies as above, a workshop cum training programme was arranged for the Secretaries of the said local bodies, by the Kerala State Pollution Control Board on 01.06.2019. The copy of the minutes of the said workshop is appended as Exhibit-X2. The hard copy of the presentation on Environmental Rules made in the said workshop is appended as Exhibit-X2(a).

Even before arranging the aforesaid training, the Additional Chief Secretary, Local Self Government Department, convened a meeting in his chambers on 25.04.2019 for enlightening the Secretary of Thiruvananthapuram Municipal Corporation, the same being the capital city. (It is one of the model corporations). In the said meeting, the following directions were given to the Thiruvananthapuram Municipal Corporation.

1. An action plan be prepared within a week, showing the details so far undertaken by the Corporation for solid waste management, the details regarding the programs intended to be implemented immediately, the suggestions for improvement of the existing waste management system, the details regarding the MCFs in the city, the details of wards where new

MCFs, are to be established and the details regarding the locations where the RRFs are to be established.

2. The following pieces of information shall be published in the website of the Corporation for the public.
 - a. Details of locations at which bio-degradable waste treatment bins are placed.
 - b. The dates on which non-biodegradable waste would be collected and centers of such collection.
 - c. The locations where MCFs and RRFs are functioning.
 - d. The details of agencies engaged by the Corporation on ward basis for the collection of wastes.
 - e. The details regarding the locations where the waste so collected would be treated.
 - f. The methods of collection of non-biodegradable waste and the locations where the said waste is treated.
 - g. The details of waste treatment plants.
3. The Corporation shall examine how the service of Clean Kerala Company be made use of for treatment of non-biodegradable waste and e-waste.
4. Legal action be initiated against open burning of non-biodegradable waste and dumping of waste in water bodies.
5. Steps shall be taken to establish MCFs in all wards and RRFs at least in six wards.
6. An action plan be prepared for developing a business model for effective treatment of waste.
7. Identity Cards be issued to all workers engaged in waste collection.
8. Necessary training be imparted to the workers engaged in waste collection.
9. If possible, non-degradable waste other than plastics should be collected, one or two days during every month.

In addition to above, the SLMC had issued the following directions also to the Thiuvananthapuram Municipal Corporation.

- a. Necessary action should be taken to prevent the discharge of waste water from the Central Jail to the washing ghat at 'Melarannur'.

- b. If necessary, arrangements for land acquisition and rehabilitation should be done for laying septage pipelines, in coordination with Revenue Department.
- c. Necessary action should be taken for door to door collection, segregation, treatment, disposal of solid waste in a scientific manner.
- d. Necessary action should be taken to avoid open dumping and burning of un-segregated solid waste including plastic, near 'Attakulangara'.
- e. The deposit of waste on roads and other public places has to be prohibited. Segregation of wastes shall be insisted upon before disposal.
- f. As it was brought to the notice of the Committee that waste collecting employees are not sufficiently protected from health hazards, they shall be given adequate protective equipments namely, gumboots, gloves, masks etc., and those workers shall be compelled to wear the same while on duty.
- g. The waste transporting vehicles of the Corporation are to be provided with adequate cover, leach ate collection tank and log book. The Health Supervisor of Corporation shall allow only those vehicles having aforesaid specifications for transportation of waste. The permit of defaulting vehicles shall be cancelled.
- h. Plastic carry bags of thickness below the tolerance limit should be banned as per the Rules. The violators shall be proceeded against under law for penalization.
- i. As it is brought to the notice of the Committee that even segregated plastic are not disposed of properly, methods are to be evolved for effective disposal of plastics. Plastics shall not be disposed of by burning under any eventuality.
- j. A rendering plant for poultry waste shall be established. The land for its establishment shall be identified. This has to be done in a time bound manner.
- k. Disposal of sewage, septage and chicken waste in the water resources in the district has to be brought to an end by proceeding against the violators under the law.
- l. The technical specifications and performance data of solid waste disposal facilities shall be made available in public domain.

- m. Requisition shall be submitted to the District Collector and Revenue Department for acquisition of suitable land for installation of solid waste treatment plant.
- n. Facilities for waste management should be ensured while issuing occupancy certificate.
- o. Strict action shall be initiated against Institutions who violate the permit conditions.
- p. Report on illegal sand reclamation of water body observed at two places near 'Aakkulam' Boat Club shall be submitted.

To make the implementation of the various environmental laws more effective at the grass root level, District Level Monitoring Committees (DLMCs for short) were formed in all districts with the District Collector (District Magistrate) as the Chairman and the following as its Members.

- (a) District Police Chief.*
- (b) District Medical Officer.*
- (c) Deputy Director of Panchayath in the District.*
- (d) A senior officer of the KSPCB from its District Office.*
- (e) A representatives of the District Legal Services Authority preferably its Secretary duly nominated by the Chairman, DLSA (District Judge) with the approval sought by the Chairman SLMC from the Hon'ble Chairman, KELSA.*
- (f) A representative of Suchitwa Mission in the District.*
- (g) A representative of Haritha Kerala Mission in the District.*
- (h) A senior official of the Collectorate to act as the Nodal officer cum Secretary of the DLMC.*
- (i) A senior officer of the Forest Department in Districts, where there are forests areas.*
- (j) Deputy Director of Education.*
- (k) Representative of Irrigation Department.*
- (l) Representative of Water Authority.*
- (m) Representative of PWD Roads as well as Buildings Division.*
- (n) Representative of Urban Affairs.*
- (o) LSGD Engineer of the locality.*
- (p) Senior most officer of Animal Husbandry in the District.*

(q) Any other authority or person who, in the opinion of the District Collector is necessary for the proper implementation of the activities of the DLMC.

Thereafter, start up meetings were held in all the districts and the Chairman, SLMC addressed the Members in those meetings, inviting their attention to the directions of this Tribunal in the order dated 25.04.2019. In the said meeting, the need for circulating the aforesaid directions among all the officials concerned especially, the Secretaries of the various local bodies in each district for the implementation of the aforesaid directions as well as the various provisions of environmental legislations in letter and spirit in a time bound manner, was pointed out by the Chairman. The following general directions were given by the Chairman, SLMC to the Members of the DLMCs.

1. The District Collector (District Magistrate) shall monitor the progress and status of compliance of environmental norms by all concerned especially the local bodies in the district at least once in two weeks. The District Collector has to personally oversee the waste management activities in the district.
2. After collecting data through the aforesaid monitoring, the DLMC shall be convened once in three weeks for reviewing the progress and for suggesting remedial measures to achieve better results.
3. Monthly progress report on the basis of the above shall be prepared and the same shall be forwarded to the Chief Secretary with a copy to SLMC in the e-mail ID slmckerala2019@gmail.com, so that the details in the said report could be made use of for preparing the quarterly report to be submitted before the Hon'ble National Green Tribunal.
4. Training programs shall be arranged for the Secretaries of the Local Bodies in the District on environmental laws with special references to their powers and duties as well as the technical aspects on the subject. The training programs shall be arranged jointly by the District Legal Services Authority, Pollution Control Board, Suchithwa Mission and Haritha Keralam Mission. The copy of presentation included in the notes circulated by the Chairman, SLMC among the Members of the Committee was directed to be made use of, for guidance in the future training programs in the district.

5. Awareness programs shall be arranged in educational institutions in the district by the District Legal Services Authority with the assistance of Education Department, Haritha Keralam Mission and Suchithwa Mission.
6. The District Legal Services Authority shall conduct social audit for assessing the problems faced by the public on issues of environmental protection and also for assessing the final result of each activity undertaken by the DLMS.
7. Cleaning programs shall be undertaken by the local authority not only during pre-monsoon season but also throughout the year.
8. Door to door collection of segregated waste shall be arranged by the local bodies within their limit. The local bodies can insist for payment of user fee by the waste generators. The possibility of realizing user fee along with property tax from those who are refusing to pay the same can be explored. However, people below poverty line may be exempted from paying user fee.
9. Local bodies shall install waste segregation plants within their local limits. They have to make sure that proper working condition and personal protective devices are available to the cleaning workers.
10. Local bodies shall ensure that industrial waste as well as wastes from hotels and restaurants are not being dumped into drains and water bodies.
11. Local bodies shall install cameras to identify persons dumping waste in public places and water bodies. Environmental degradation shall be assessed and compensation shall be levied from culprits.
12. As plastic wastes from industrial units are more or less homogeneous in nature, they shall be collected separately and sent to units for shredding or recycling.
13. Major commercial establishment/industrial units shall be directed to have their own plastic shredding units as it requires only a small area for operation.
14. The land for providing common treatment facility for bio-medical and solid waste as well as the land for a common rendering plant for poultry waste shall be identified by the District Administration with the help of local authority. District administration shall provide high priority for identifying land for establishing common treatment facilities for solid waste

- management, waste water treatment, bio-medical waste as well as a common rendering plant for animal poultry waste.
15. Directorate of Panchayath and Urban Directors shall collect details with respect to status of waste handling in village and urban local bodies respectively. An action plan for faster improvement and strict compliance of Solid Waste Management Rule, 2016 shall be prepared.
 16. The Police Department shall line the department in action, in the event of report of unauthorized waste dumping. In such cases, the copy of the FIR shall be forwarded to the District Legal Services Authority and the Kerala State Pollution Control Board so as to facilitate realization of compensation from the violators on 'polluter pays' principle.
 17. The value of environmental degradation on account of violation of environmental laws shall be estimated and cost of restoration shall be assessed and compensation shall be fixed by the Pollution Control Board and the same shall be recovered from the violators for restoration and restitution. The District Legal Services Authority shall render necessary assistance in assessing the damage and fixing the compensation.
 18. Sanitation facilities are to be improved in hospital premises. The handling and disposal of food waste in hospitals can be improved if the sources of generation of wastes are controlled. If arrangements are made in the hospital itself for the preparation of food for patients and bystanders according to specified standards with the help of public support, food from outside can be curtailed gradually as experienced in District Hospital, Ernakulam. However, proper preparation and distribution of food to the patients and bystanders as well as the continuity of the same shall be ensured before enforcing total ban on food from outside.
 19. Successful models like Taluk Head Quarters Hospital, Punalur, Primary Health Centre, Kadirur, Community Health Centre, Keechery, Primary Health Centre, Thrikkakkara as well as District Hospital, Ernakulam can be adopted by similar institutions in the district.
 20. The Forest Department shall ensure that concrete wastes, electronic wastes, liquor bottles, etc., are not dumped or littered in forest areas. Necessary surveillance shall be arranged for this purpose. If any such dumping in

forest areas are noticed it shall be informed to the DLMC so that immediate remedial measures can be taken.

21. All the forest check posts in the District shall be directed to closely monitor the loaded heavy vehicles coming to the forest area from outside, to ensure that no waste from outside is transmitted to forest area.
22. The District Legal Services Authority shall render necessary assistances for coordinating the activities of the DLMC to avoid stumbling blocks.
23. The nodal officer of the DLMC shall collect information for preparing progress report, arrange meetings of the DLMC as per the schedule, forward the copies of the report to the SLMC and Chief Secretary and bring the communications from the Government and SLMC in the matter to the knowledge of the District Collector without fail.
24. The DLMC shall have link with website of SLMC (www.krslmc.in) so that the reports, minutes etc. can be uploaded in the website for public information.
25. Copies of these minutes signed by the Chairman, DLMC shall be circulated among all the members for future guidance. The representative of the District Panchayath shall circulate of the copies of these minutes to the Secretaries of the local bodies in the district without fail.
26. The action plan prepared by the Kerala State Pollution Control Board for rejuvenating the polluted river stretches in the district shall be implemented by all concerned departments.
27. Green Protocol Policy shall be implemented strictly during religious festivals. Awareness programs shall be arranged among devotees for promoting green practices by Suchitwa Mission.

Noticing the order of this Tribunal dated 15.7.2017 in O.A.No.710/2017 and connected cases, all the District Collectors (District Magistrates) were directed to prepare district environmental action plans, and to place the same along with the Constitutions of the District Committee, on the website of the district and to keep those details on the web site for a period of one year. The necessity of forwarding monthly report of monitoring to the Chief Secretary was also insisted upon.

A random selection, of few local bodies from the southern, middle and northern parts of the State, was made by the Chairman, SLMC for an

interaction with Secretaries of those local bodies to know where those local bodies actually stand in the matter of implementation of the Environmental laws. The following are the details collected during such interaction.

1. Thiruvananthapuram District.

a. Secretary, Municipal Corporation, Thiruvananthapuram (Model Corporation).

Waste burning at Attakulangara has been stopped. Waste bins have been provided for the collection of dry leaves. Bins have been provided at Sasthamangalam for collecting segregated non- Bio degradable waste. Bio bins have been supplied to 15600 residences and project for another 50,000 has been taken. Inoculum is being given at subsidized rate. Calendar has been drawn up for collection of non-bio degradable waste. Thirty three service providers and Junior Health Inspectors have been engaged for supervision. Government have been addressed to allocate land for the construction of rendering plant.

b. Secretary, Attingal Municipality (Model Municipality)

Solid Waste Management Plant is functioning. Approximately Thirteen tons of waste is being processed every day. Door to Door collection is being done but it is not complete. Haritha Karma Sena is in place. Userfee is not being remitted regularly by the waste generators. Clean Kerala is not taking the plastic waste regularly for the reason that it is not as per specification. Schools have been provided with biogas plant. Sixty percent compliance on waste management is achieved in the Municipality. Forty percent more has to be attained. Regarding liquid waste treatment, at present there is no empanelled list existing with Suchitwa Mission.

c. Secretary, Karakulam Panchayath (Model Village)

Haritha Karma Sena with forty seven members is functioning in the Panchayath. MCFs have been established. Plastic waste collection has been started in twenty three wards but there is scarcity of space for stocking the collected plastic. This problem can be solved only when the shredding unit in Nedumangad Block Panchayath starts functioning.

Door to door collection of bio degradable waste would be started with the help of self help men's group who have already been given training. 'Thumboor moozhi' model treatment facility has been established for treating the collected bio degradable waste. Six roads in the Panchayath have been tarred using collected plastic. Network of CCTVs have been established and a sum of Rs. 22,000/- has been levied towards fine from persons who had deposited waste illegally. Illegal discharge of septage directly to Killiyar via pipeline through PWD Drain from the septic tank of a chitty company was identified and the same was stopped and a case was registered against the offender. Twenty five percent compliance is achieved in waste management.

d. Secretary, Parassala Panchayath (Model Village)

Haritha Karma Sena is functioning. Door to Door collection has been started. Mass awareness program is planned. Bailing unit is existing. There is difficulty in taking action against violators due to difference of opinion among Panchayath members. Fine is being levied from offenders. Three MCFs are functional. Twenty Five percent compliance in waste management is achieved.

e. Secretary, Poovachal Panchayath (Model Village)

Haritha Karma Sena is functioning. RRF is functioning. Three MCFs are existing and two more MCFs will be completed by this month. Five numbers of 'Thumboor Moozhi' plant for bio degradable waste treatment is functioning. User fee is being collected. Twelve campaigning programs were conducted. Site for bio degradable waste treatment has been identified. As the proposed site is in illegal possession of a private person, steps were taken for the acquisition of the same. Matter is pending in appeal before the High Court of Kerala. Forty percent compliance is achieved in waste management.

2. Palakkad District

a. Secretary, Sreekrishnapuram Panchayath (Model Village)

Material Collection Facilities are in operation. Shredded plastic waste has been handed over to agencies. Green Protocol is insisted in all public

places, auditoriums, festivals etc. Difficulty is being faced in disposing the plastic waste properly. The plastic waste is not removed by the contractors in time and the same is not being properly utilized in road construction. Reluctance on the part of people in paying user fee is another serious problem. Dumping of waste by unidentified persons on the sides of the road stretch passing through forest area as well as near the walls of Govt. Engineering College, Sreekrishnapuram were reported.

b. Secretary, Vellinezhi Panchayath (Model Village)

Implementation of Material Collection Facility, framing of bye-law, organizing Grama Sabhas and arrangements of collection of e-waste are progressing.

c. Secretary, Muthuthala Panchayath (Model Village)

Plastic shredding and material collection facility are yet to be started. Difficulties are experienced in collecting user fee. Grama Sabhas will be convened soon for explaining the implementation of Environmental laws.

d. Secretary, Cherpulassery Municipality

Reported 70% to 80% achievement in implementation of Solid Waste Management Rules.

e. Secretary, Chittur-Thathamangalam Municipality

Reported 80% achievement in implementation. Door to door collection, waste processing facility, material collection and resource recovery facilities are implemented. Ban on plastic carry bags has been achieved.

f. Secretary, Mannarkkad Municipality

Reported that steps for acquiring land for solid waste processing facility are in progress.

g. Secretary, Ottapalam Municipality

Reported 60% achievement in implementation.

h. Secretary, Palakkad Municipality

Reported that central processing facility including MCF and decentralized processing facilities in selected regions, as well as door to door collection are implemented.

i. Secretary, Shornur Municipality

Reported that the management of solid and liquid waste from Shornur Junction railway station is posing problems.

j. Secretary, Pattambi Municipality

Reported that door to door collection will commence soon. Formation of Haritha Karma Sena has been completed.

3. **Kannur District**

a. Secretary, Pariyaram Panchayath (Model Village). It was informed that

Haritha Karma Sena of twenty members is working in the Panchayath. About 65% of the population is paying user fee. One MCF is functioning and a project is proposed for two mini MCFs. One RRF is functioning in Thaliparambu Block but the capacity achievement of is very low. This has to be enhanced. The Secretary stated that there is an overall achievement of 75% in solid waste management. He also requested that a common bye law be prepared expeditiously, so that imposition of fine on violators can be done smoothly. It was also pointed out that another project for cleaning of the sides of the National Highway with the help of Kudumbasree workers under the project named 'Pathayoram-Harithayoram' was undertaken by the Panchayath.

b. Assistant Secretary, Padiyoor- Kalliyad Panchayath (Model Village): It

was informed that MCF is installed in the Panchayath and door to door collection is being done. Cloth bags are distributed to the school children so as to avoid use of plastic carry bags. Plastic carry bags are being seized. The Secretary reported 70% achievement in Solid Waste Management.

c. Secretary, Udayagiri Panchayath (Model Village): It was reported that

Haritha Karma Sena is functioning in the Panchayath covering all most 98% of the houses. Vigilance Squad has been formed for taking necessary action against dumping of waste in public places including road sides. A project for making paper bags from old newspapers is functioning in the panchayath. Green Protocol is strictly followed in all public functions as well as auditoriums. The Panchayath has registered an overall achievement of 70% in solid waste management.

- d. Secretary, Mattannoor Municipality: It was informed that there is a trenching ground in the Municipality. RRFs, MCFs and Bio-gas plants are functioning. Haritha Karma Sena is working in all wards. Rendering plant has started functioning in the Municipality. Bio gas plants/ring compost has been made available to all houses in the panchayath. As a part of Green Protocol, the Municipality has procured four thousand steel plates and glasses which are hired out to avoid use of single use plates and glasses.
- e. Corporation HS, Kannur Municipal Corporation: It was informed that Waste to Energy plant is proposed at Chelora in the Corporation. A septage treatment plant having a capacity of 5MLD is coming up which can cater to the need of whole district. Also 'Thumpoormoozhi' model treatment plants, bio-gas plants, pipe compost (around 2000 nos) are functioning in the Corporation. Door to door collection is being carried out in twenty one wards. Three MCFs and Plastic shredding unit are also functioning. Ten bottle booths are installed in the Corporation.

4. Kasaragod District

- a. Secretary, Madikai Grama Panchayath (Model Village): It was informed that the panchayath has registered 60% progress in solid waste management. MCF facility is provided at Chalakkadavu. Haritha Karma Sena is in operation in collecting waste. User fee is being collected properly and regularly. There are no major problems regarding waste management.
- b. Chairperson, Health and Education, Bedadka Grama Panchayath (Model Village): It was informed that 'Suchithwa Pathayathra' is being organized by the panchayath on 15th August of every year. This is create awareness among the public. Notices are distributed during the Pathayathra. User fee is being collected from households and shops. Mini MCFs are functioning in all wards. Bottle booths are provided in all towns. The overall achievement is 70%.
- c. Secretary, Kinanoor-Karinthalam Grama Panchayath (Model Village): The panchayath had achieved 50% progress in solid waste management. Problems are experienced in collecting user fee.

d. Health Supervisor, Kanhangad Municipality: Municipality is facing problem in the disposal of insulin syringes, Diaper and used Napkins.

In this context, the earnest efforts taken by the revenue administration of Kozhikode district in the field of waste management is worth mentioning.

Sri. Seeram Sambasiva Rao IAS, District Collector, Kozhikode informed that, envisaging 'Zero Waste Kozhikode', collection of waste at grass root level and recycling of the same are carried out in the district. It was informed that already 20% of the MRFs and 50% of the MCFs are functioning in Kozhikode. Action plans for waste management, water management and public health including model comfort stations are already prepared. Bio-degradable wastes are disposed off through 'Thumboormuzhi' model compost pits. Beautification of public places is planned with the involvement of public. Initiative was taken to solve the Environmental pollution from the Medical College, Kozhikode and is in progress. Corporation has a project proposal for waste to energy for the solid wastes dumped in Njeliyanparambu. However, the District Collector has pointed out there is lack of technical support for proper treatment and disposal of legacy waste dumped at Njeliyanparambu. Considering the need pointed out by the District Collector, immediate instructions were given to the Kerala State Pollution Control Board to render all necessary technical support to the district administration in solving the environmental issues. The District Collector has further pointed out that a rendering plant for proper treatment of poultry and slaughter wastes is functioning in the district.

The district co-ordinator of Haritha Keralam Mission in Kozhikode district has made available the details of activities under taken by them in the district. The details of campaign activities done by the Mission called 'Haritha Niyamavali Campaign', the details of status of MRF units in various local bodies in the district and the waste management plan prepared for the district are appended as Exhibits-X3 to X5 to this report.

On the basis of the directions of this Tribunal in the order dated 25.04.2019 to submit the progress report by 31.07.2019, the KSPCB on behalf of the government has prepared a progress report covering the technical aspects, which is appended as Exhibit-X6.

CONCLUSION

Generally, waste can be broadly classified into (a) Bio-degradable (BD) which can be composed aerobically (to manure) or an-aerobically (to bio-gas) or to be used in animal feed. (Eg. Vegetable and non-vegetable waste) (b) clean and recyclable non-biodegradable (NBD) waste which can be reused or recycled (Eg. glass, paper, metal, plastic, rubber, leather etc.) (c) soiled NBD and bio-hazardous waste which has to be incinerated (d) chemical waste like paints, insecticide, lab chemicals etc., which are to be caped in hazardous waste facility and (e) demolition waste which has to be used in land fill or re-used in construction.

Solid Waste Management Rules, 2016 clearly provides that waste has to be segregated at source, BD waste has to be composted, recyclable NBD waste has to be recycled and only those cannot be recycled be sent to incineration or land fill.

Now the State Government has taken a decision to install waste to energy (WTE) plants in six different districts in the State, the first of which it is expected to be accomplished in the near future in Brahmapuram within the limits of Municipal Corporation of Kochi. However, what could be discerned from the feed back received from different sources is that the aforesaid announcement has created scenario where all the stake holders have started thinking that there is no necessity of segregation of waste as all the materials can be incinerated.

In this context it may be pointed out that lack of segregation may result in multiple problems. Presence of organic matter with plastic, paper, rubber etc. will create a mix of toxic gases the treatment of which would be impossible. To ward of the same, though the operators may initially put few scrubbers and absorbents in place. However, they would become saturated within few weeks. This happened in Delhi where the CPCB had to climb chimmeny several times to ensure that toxic gasses like DIOXIN is not produced.

The BD waste contains moisture more than 60% of its total weight. Let us assume that 300MT of waste including BD waste comes to a WTE plant per day (actually it may be more than that) and 60% of the same is BD waste ie.,180MT. Approximately 80% of BD waste would be moisture ie.,144MT. That means

nearly half of the waste reaching the WTE plant is water. Out of the NBD waste only plastic, the maximum of which may be 20% ie., 60MT has the calorific value which provide energy to create steam. If proper segregations happens at source, approximately half of this ie., 30MT can be sent for recycling. Thus only 30MT of incinerate-able waste would be remaining to be used in the WTE plant.

If non-segregated waste including bio-degradable waste is used in WTE plant, the captive energy required to dehydrate the biodegradable waste will make the project highly unviable due to the huge expenditure involved and the local bodies would be driven to the risk of bridging the viability gap.

It is learnt that the company entrusted with the task of establishing WTE plants in Kerala has given an explanation that BD waste should be dehydrated by simply covering the waste in heaps with semi permeable membrane/molecular sieves (reportedly the Cochin University of Science and Technology has developed such a material) that will allow to emit the moisture. However, according to technical experts, this may lead to other problems.

Firstly, the membrane may permit escape of small molecules like hydrogen sulphide and ammonia which are sure to be produced under anaerobic conditions.

Secondly, Kerala has a high humid climatic condition. The dehydration of materials in ambient temperature below 50 degree C during almost all months, is an impossibility. Even though heat is likely to develop in the compose, the vapour will not be sufficient to evaporates water into air.

Thirdly, the space required for the aforesaid process will be 1Sq.M/1MT approximately. If the waste coming to the plant per day is 300MT the space required for dehydration 300Sq.M. If it is assumed that it would take two months to dry up the materials the total area required would be 18,000Sq.M.

Lack of segregations will result in valuable reusable and recyclables ending in incineration. Kerala is now an emerging swap shop region where those things not useful are used by someone thereby enhancing the life cycle. However, recycling of plastic, glass, paper, metal, rubber, cloth etc. can happen only if segregation happens at source.

WTE plant is an effective solution in the field of waste management. But such plants should not incinerate BD waste or recyclable NBD waste. The

incineration in WTE plants shall be confined to soiled NBD waste, sanitary waste and hospital waste.

In Kerala, the Government, Haritha Keralam Mission, Suchitwa Mission and PCB are trying to promote waste reduction, Green Protocol, source level composting, organic cultivation etc. At the same time, the plan for establishment of WTE plants which is a centralised waste management has created an impasse among the stake holders at least in Ernakulam District and in some other districts. As a result the decentralised waste management activities promoted by Haritha Keralam Mission and Suchitwa Mission is being delayed due to improper followup. However, it is otherwise in the northern districts of the State where the activities of the aforesaid two bodies is in full swing resulting in comestible achievements.

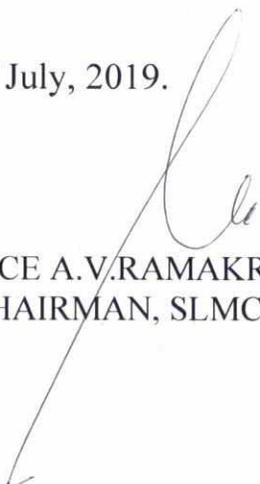
The most effective solution for waste management is to reduce waste. Unfortunately, there is failure on the part of stake holders to insist for the same. It is also distressing to note that the local economy which is the best solution for waste management is sidelined or rather ignored while the waste management issues are piling up. Right from Mahatma Gandhi, local economy was suggested as the solution for many social issues. In the field of waste management, local economy can reduce packaging. Now, milk produced in villages are transported to a centralised facility where it is packed and brought back. This can happen locally within a radius of 5 km. without packaging. Same is the case with eggs groceries and snacks. However, the policy of the governments to support big companies in the process of easier economic growth numbers, local economy is killed gradually.

Another reason for the decline of the local economy is the proliferation of pseudo hygiene consciousness. Products of local origin were sidelined sighting un-hygienic packaging and quality issues. However, the products from the centralised facilities have been constantly under radar for adulteration, artificial ingredients and lack of utility. Best example is toothpaste now having carbon and salt which was considered abrasive when charred rice barn and powdered salt were used in olden days for tooth cleaning.

SUGGESTIONS

- a. The stake holders should consider REDUCTION as the primary object of waste management.
- b. As far as practicable waste generators must take care of their own bio-degradable waste with the support of Haritha Keralam Mission and Suchitwa Mission.
- c. Source level composing of BD waste has to be promoted.
- d. Proper segregation of waste should happen at source.
- e. The use of BD waste and recyclable NBD waste in WTE plants be discouraged.
- f. An anaerobic digester of 100 tpd capacity should be installed at the sites of WTE plants. The capacity of the same can be increased with the installation of additional digesters if required. The wet waste (BD waste) not composted at source having low calorific value, being an unviable fuel for WTE plants now planned in the State can be treated in the anaerobic digester which will allow the treatment of wet waste without creating order, smell or leach ate.
- g. The National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram, working under CSIR have the facility to check the Dioxin emission. They have analysed the Dioxin emission in the recent fire incident at Brahmapuram. They are to be tagged with WTE plants. What has to be studied is the residual Dioxins that would have settled around WTE plants within a radius of few kilometers, when mixed waste is incinerated in such plants.
- h. Green Protocol has to be initiated throughout the State as per the guidelines of Haritha Keralam Mission.

Dated this 30th day of July, 2019.


JUSTICE A.V. RAMAKRISHNA PILLAI
CHAIRMAN, SLMC, KERALA

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



GOVERNMENT OF KERALA

Abstract

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

ENVIRONMENT(B)DEPARTMENT

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

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

ORDER

Pollution and waste management have been burning issues all over the country. The lack of proper waste management plans has resulted in environmental damage and outbreak of serious diseases which resulted in National Green Tribunal (NGT) taking a suomotu case No OA 606/2018. Following the Chief Secretary's appearance before NGT to present the status of waste management in the State, NGT pronounced the order on 25.4.2019, directing the State to identify at least three cities and three towns in the State and at least three villages in every District within two weeks and to make them fully compliant in respect of environmental norms within six months and the remaining State to be made fully compliant within one year and to furnish quarterly reports every three months, of which the first report is to be furnished by **July 30, 2019**. Further, Chief Secretary has to be present before NGT on 6.1.2019 to report on the status of compliance of the order.

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

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

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

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

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

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

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

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

(By order of the Government)
DR. USHA THIRUVANANTHAPURAM
PRINCIPAL SECRETARY

To:

The Registrar, National Green Tribunal(SZ), Chennai
The Advocate General , Kerala, Ernakulam.
The Director, Department of Urban Affairs , Thiruvananthapuram.
The Director, Panchayath Department, Thiruvananthapuram.
Chairman, Kerala State Pollution Control Board
Executive Director, Suchitwa Mission ,Thiruvananthapuram.
Chairman, Central Pollution Control Board
Local Self Government Department

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

Forwarded /By order


Section Officer

EXHIBIT X(a) Series 520

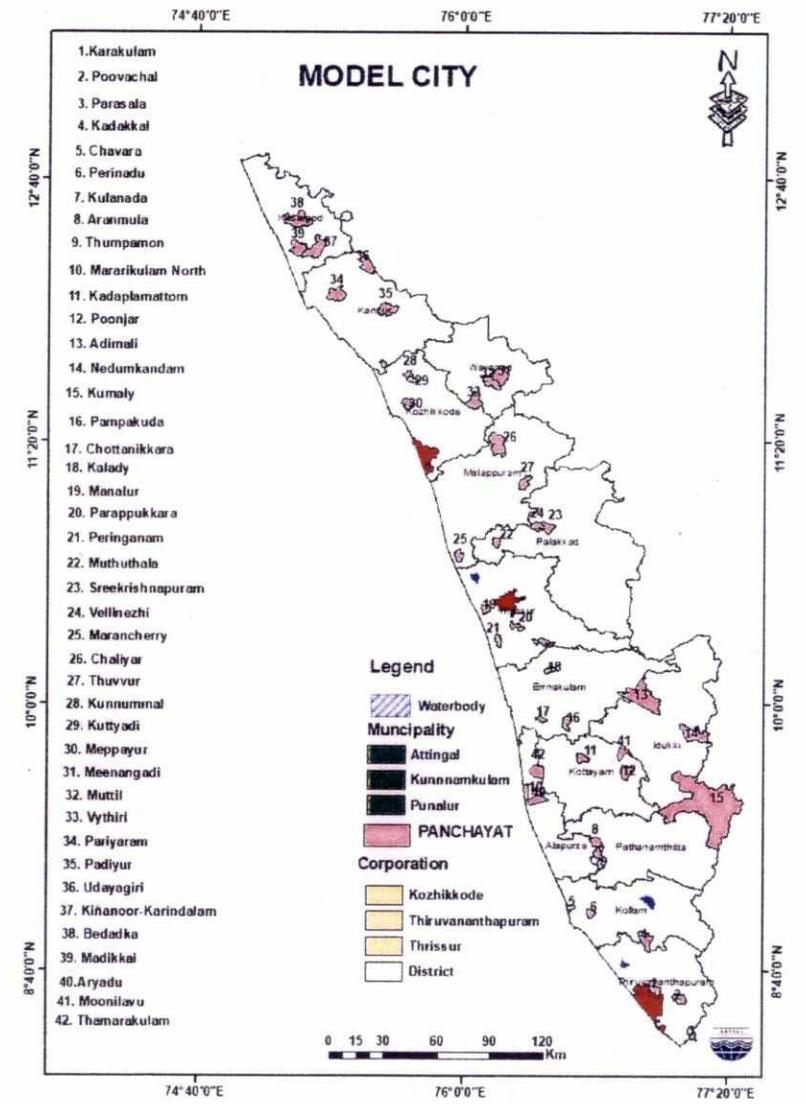
**MODEL CITIES, TOWNS AND
VILLAGES SELECTED AS PER THE
ORDER OF NATION GREEN
TRIBUNAL IN OA NO 606/2018**

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MODEL CITIES OF ALL DISTRICTS

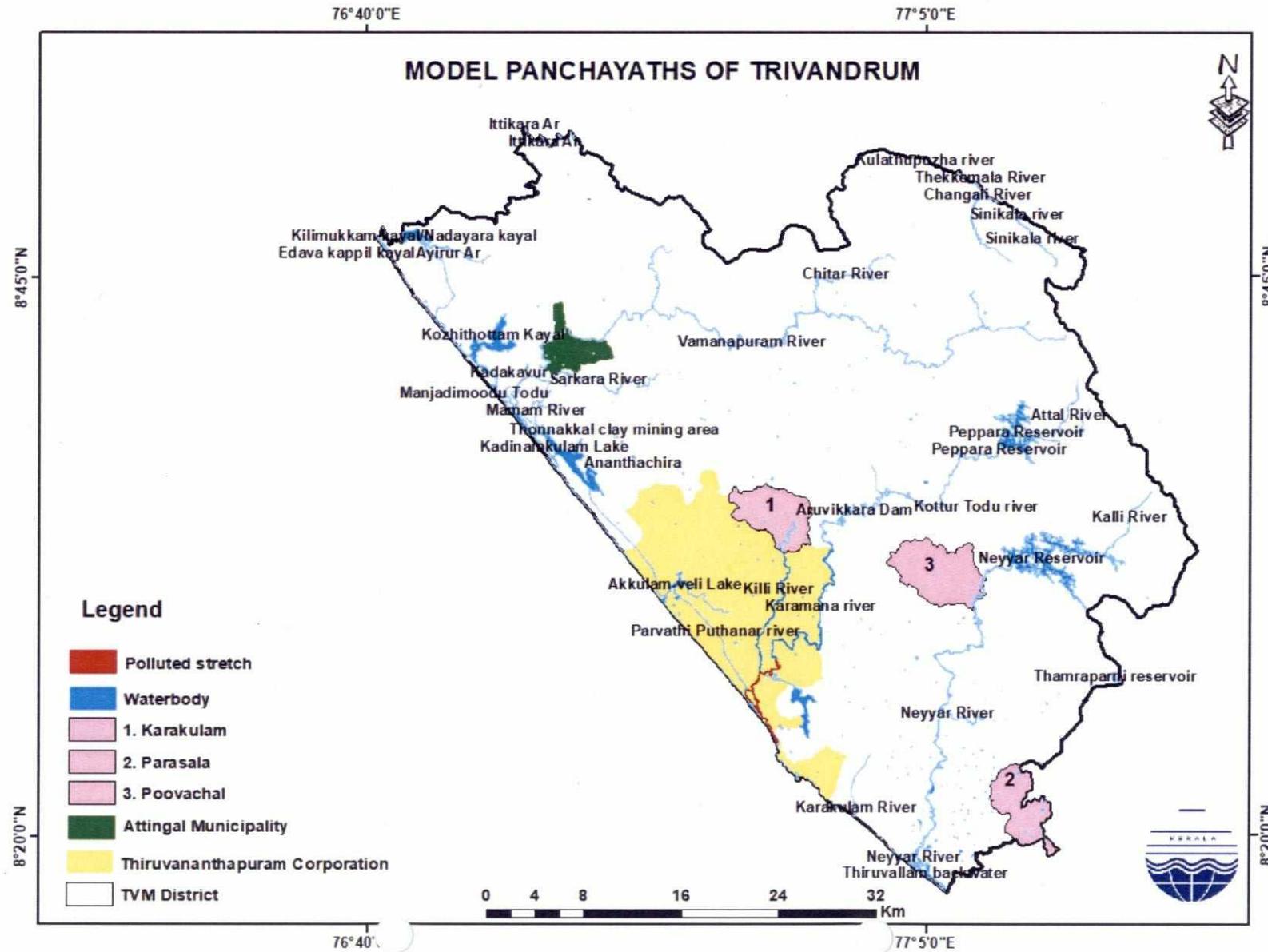


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MODEL CITY/TOWN/VILLAGES IN THIRUVANANTHAPURAM

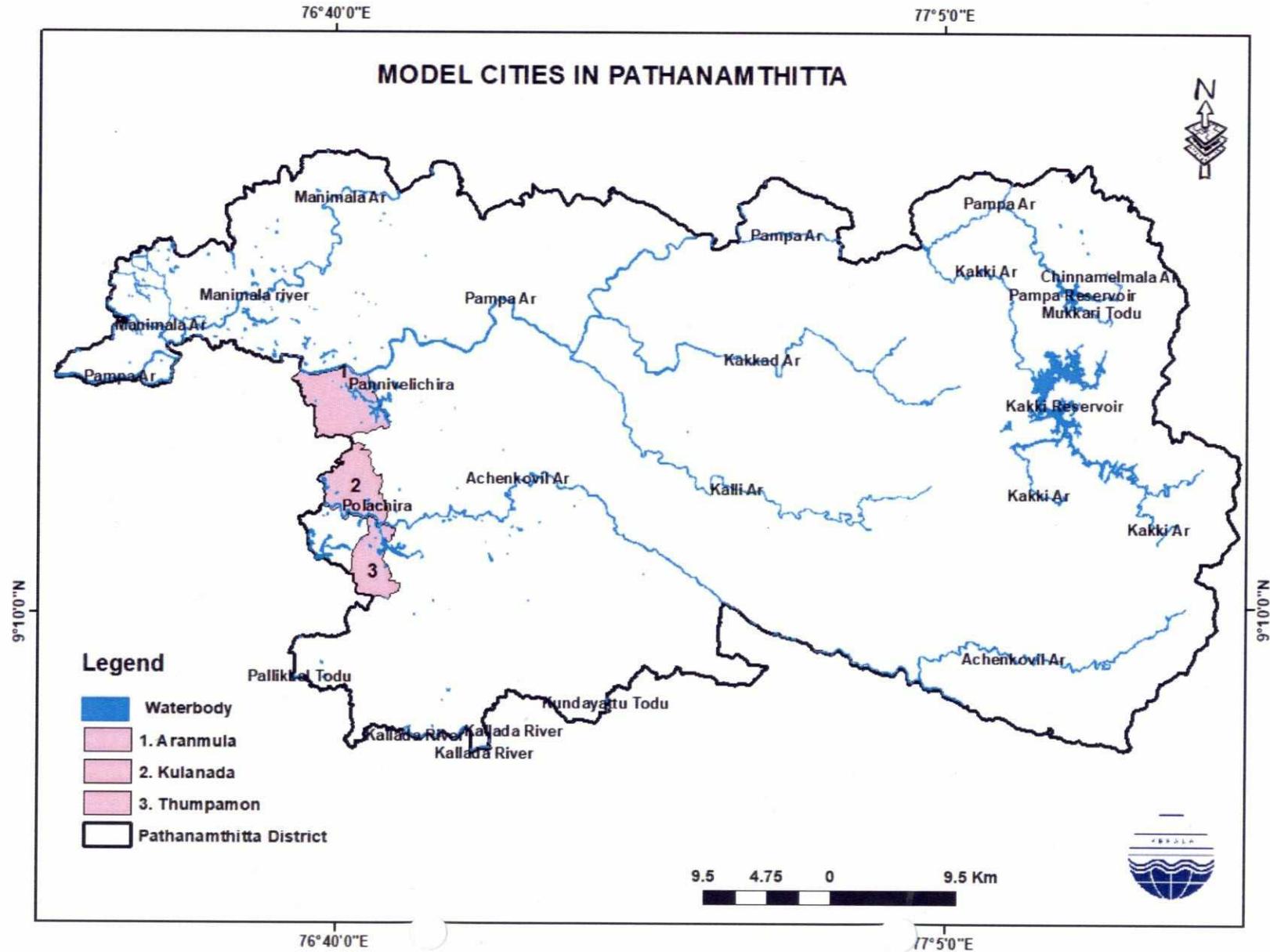


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MODEL VILLAGES IN PATHANAMTHITTA

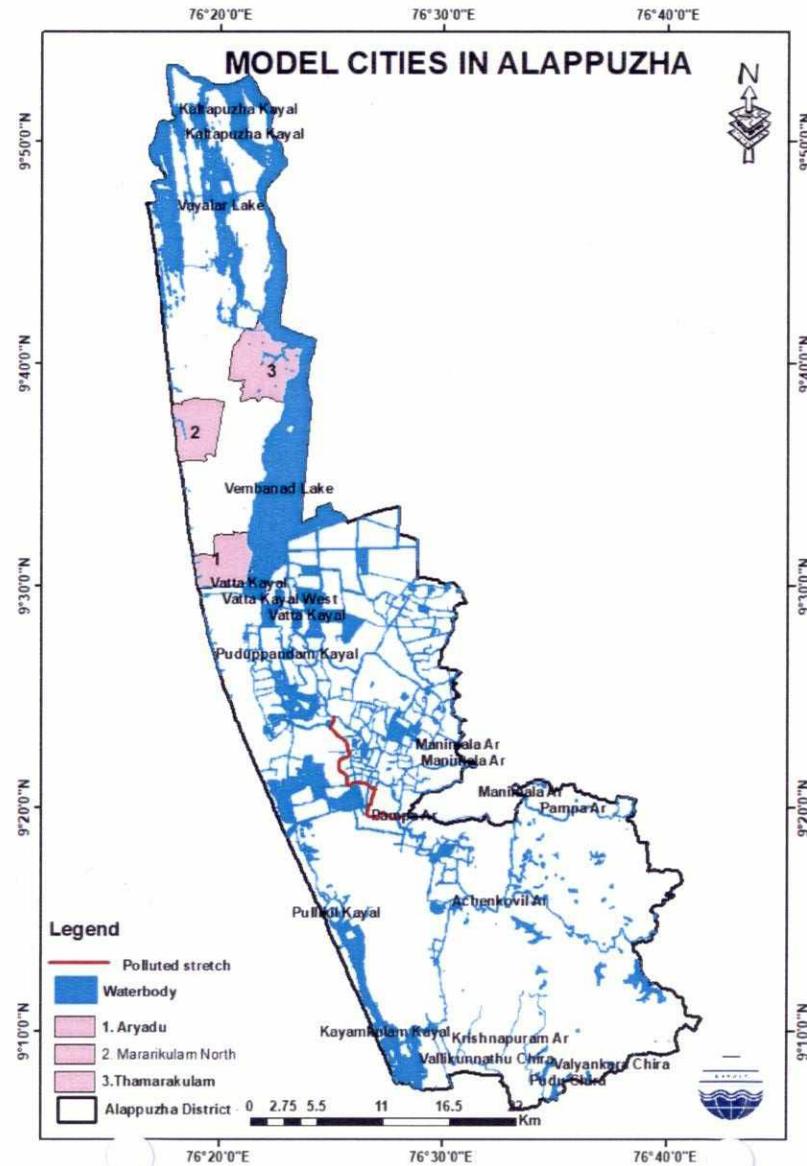


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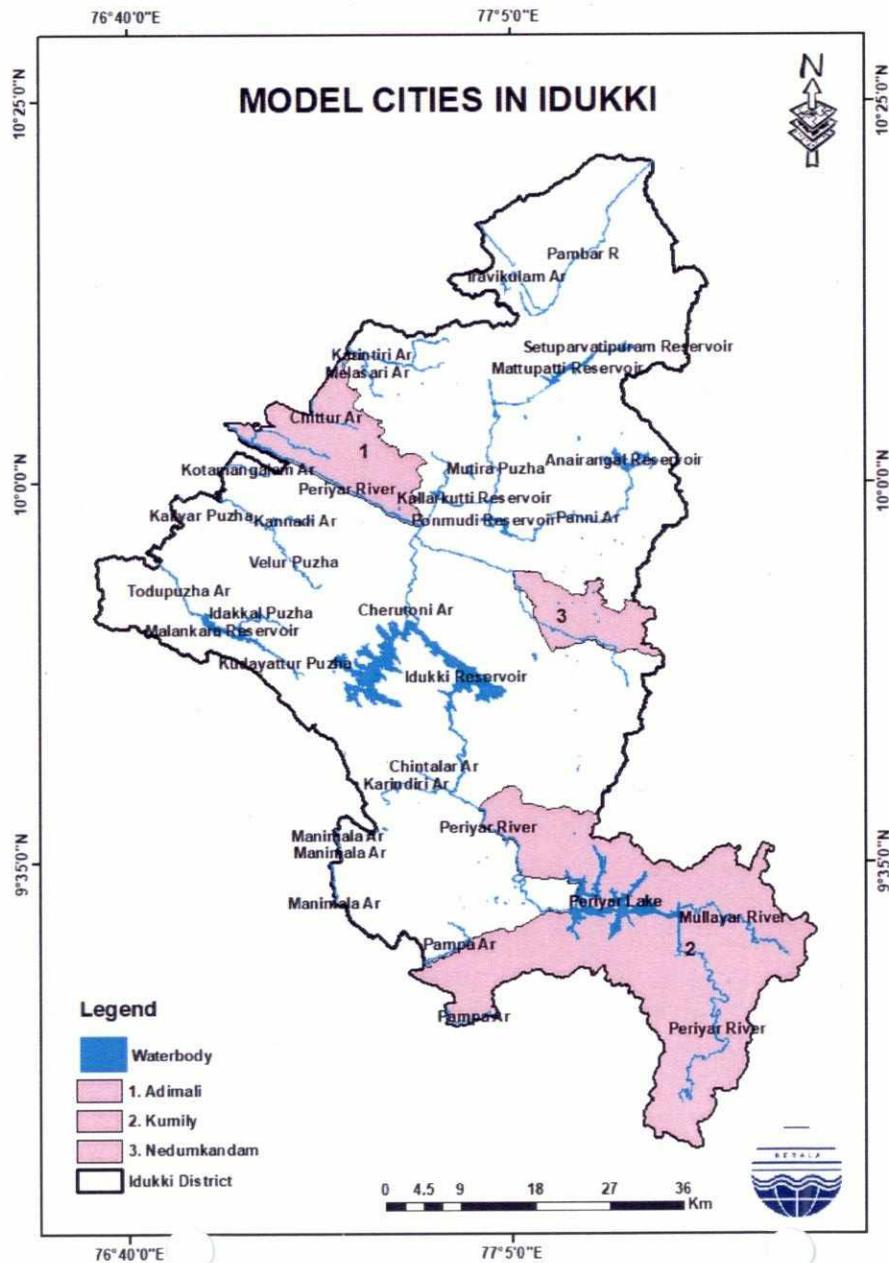
MODEL VILLAGES IN ALAPPUZHA



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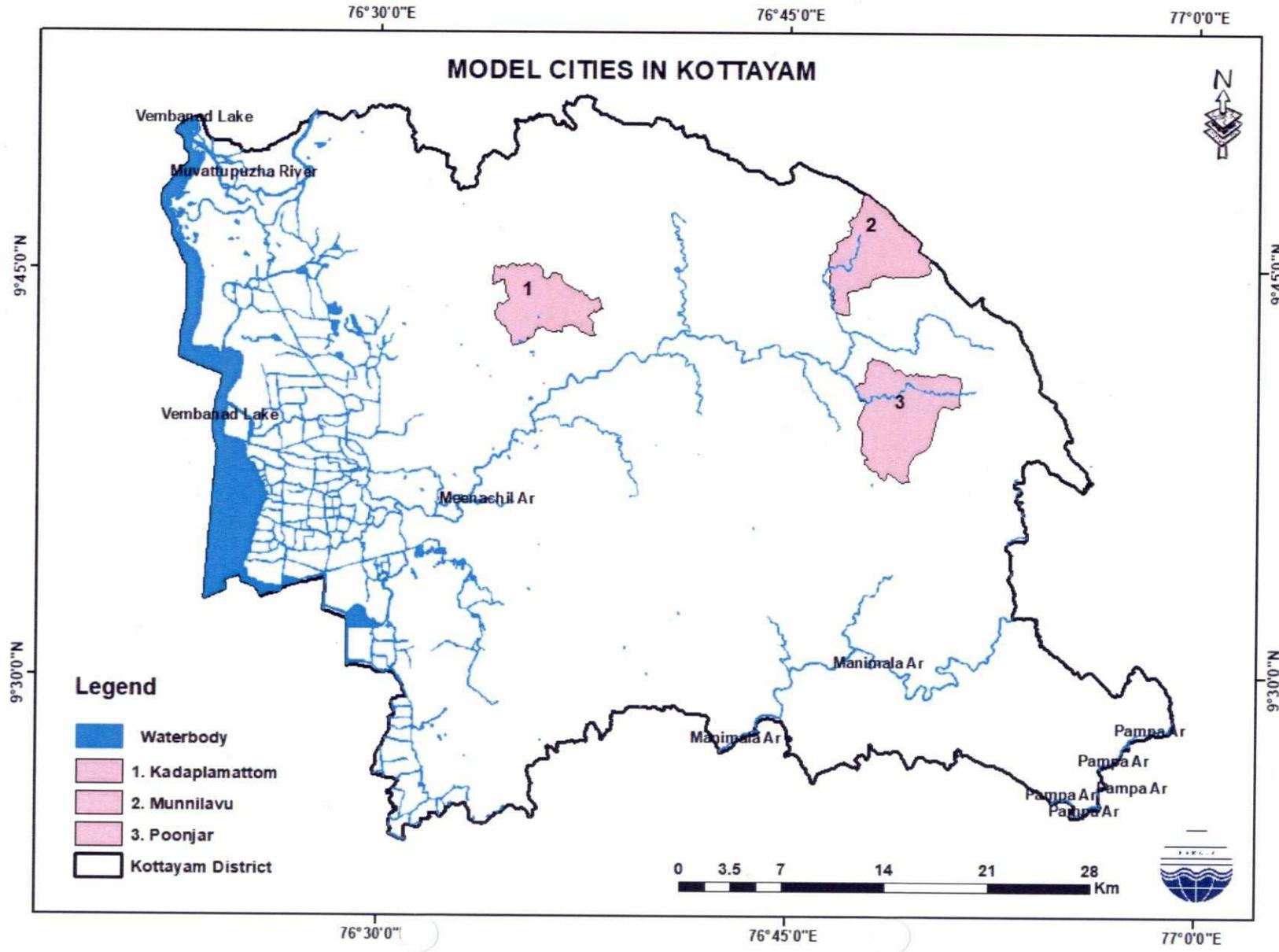
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MODEL VILLAGES IN IDUKKI



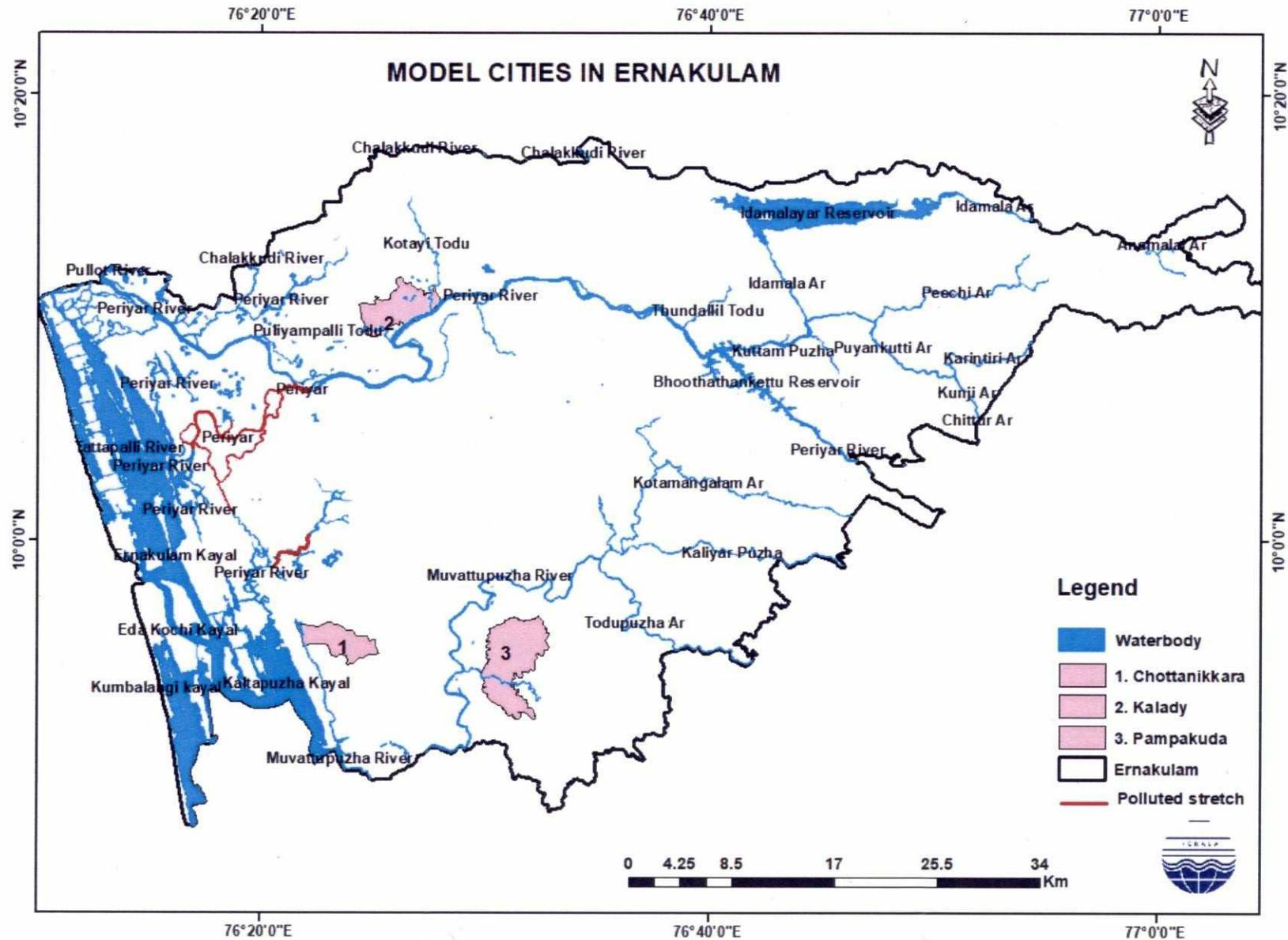
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MODEL VILLAGES IN KOTTAYAM



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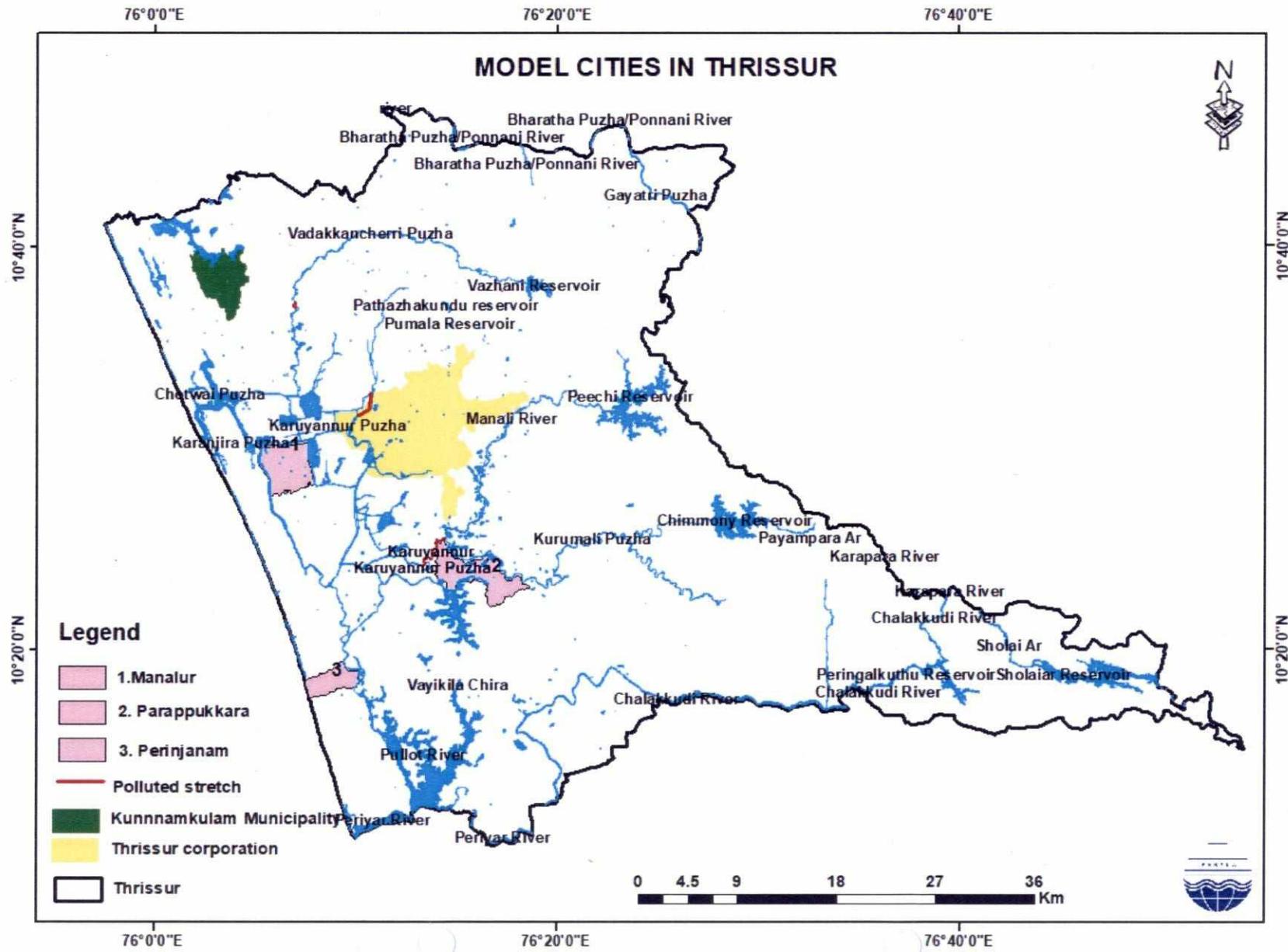
MODEL VILLAGES IN ERNAKULAM



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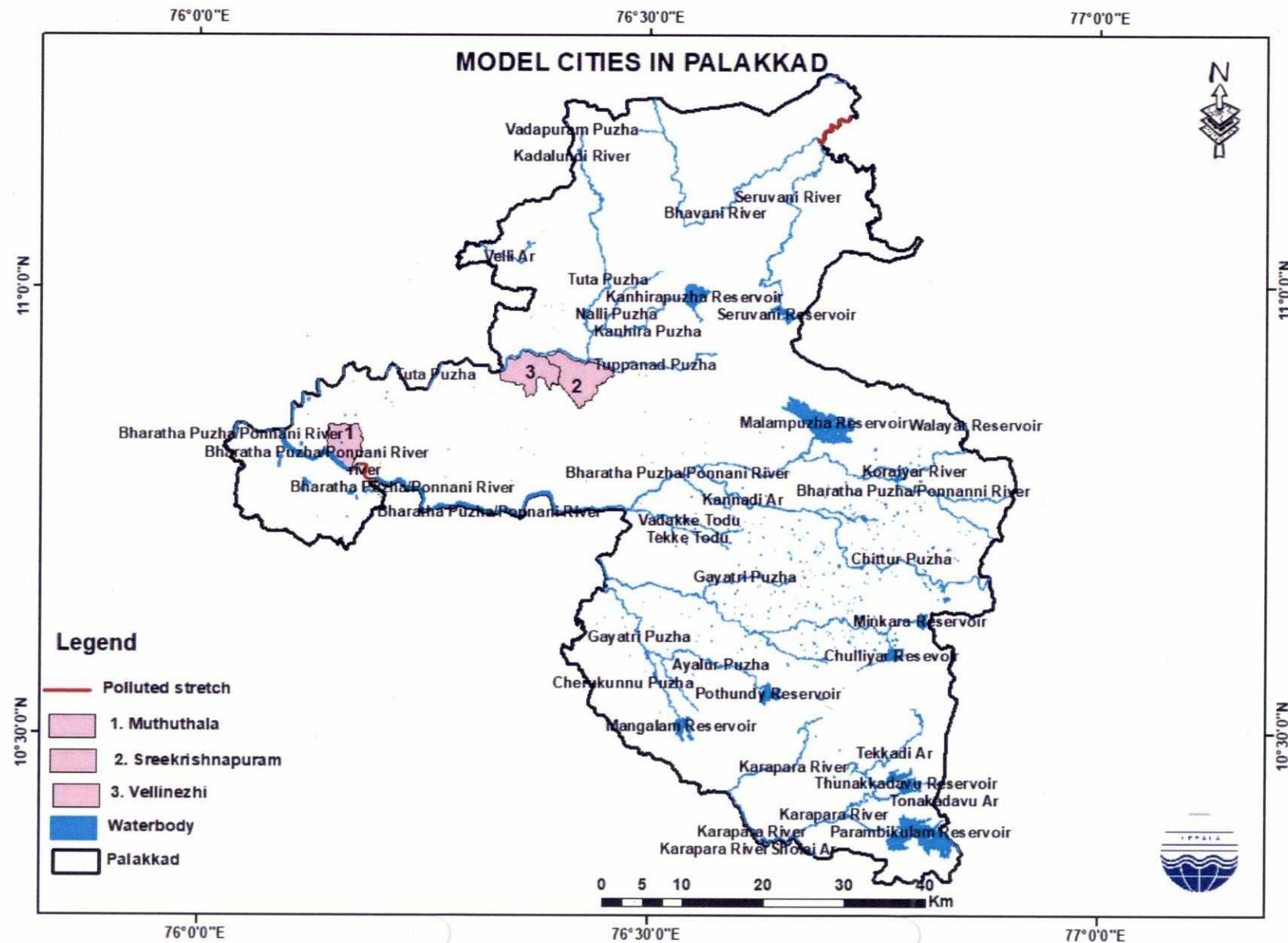
MODEL CITY/TOWN/VILLAGES IN THRISSUR



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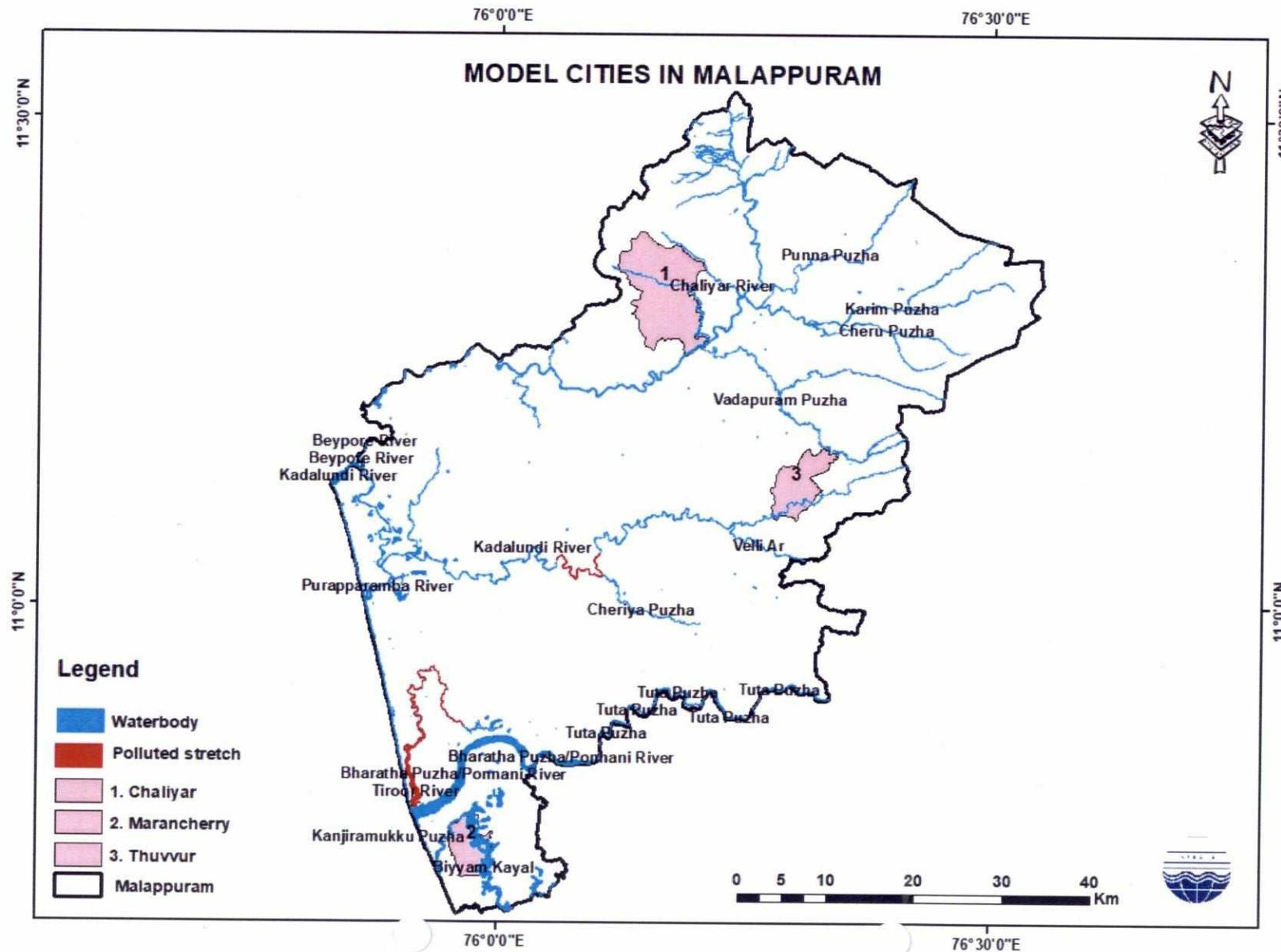
MODEL VILLAGES IN PALAKKAD



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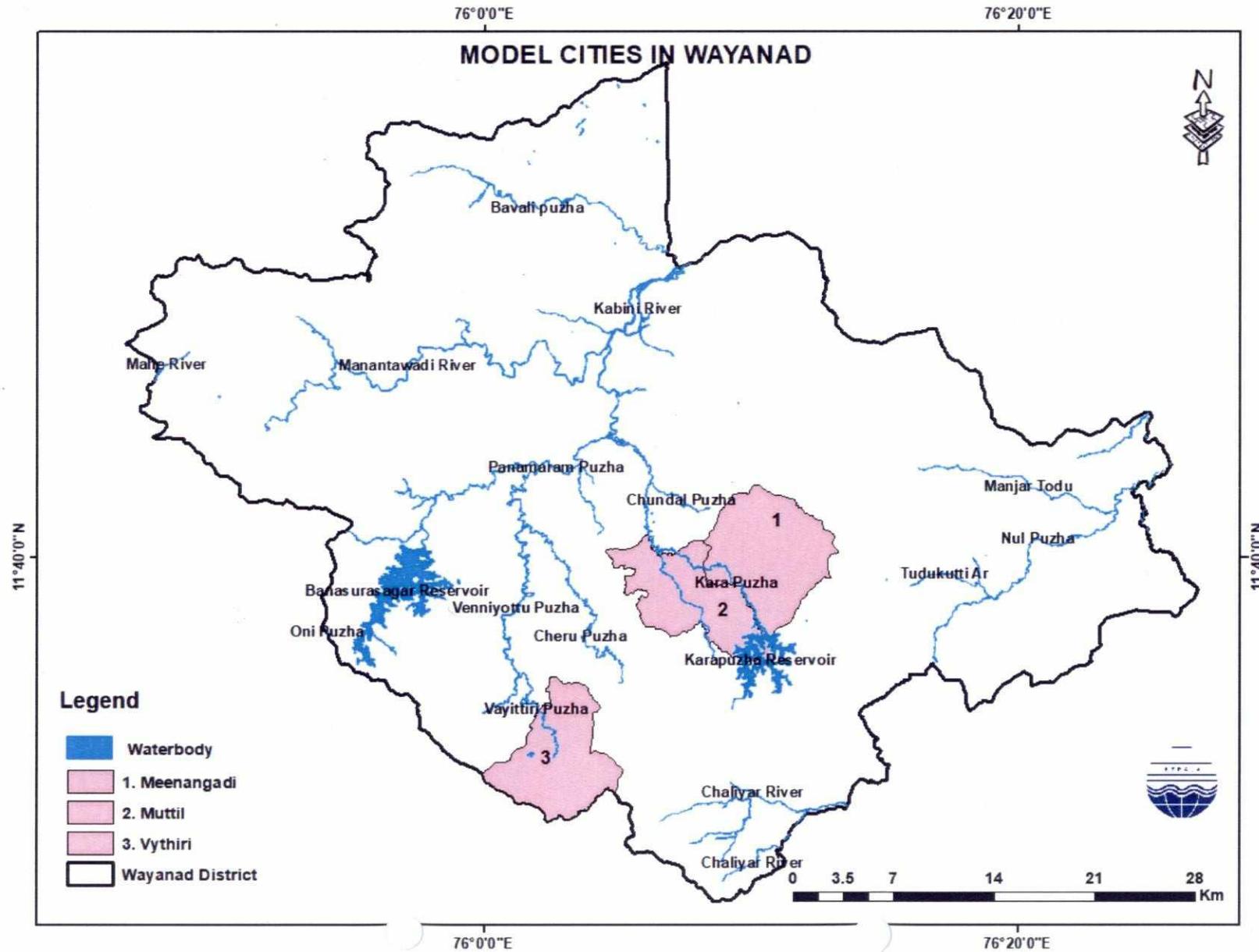
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MODEL VILLAGES IN MALAPPURAM



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MODEL VILLAGES IN WAYANAD

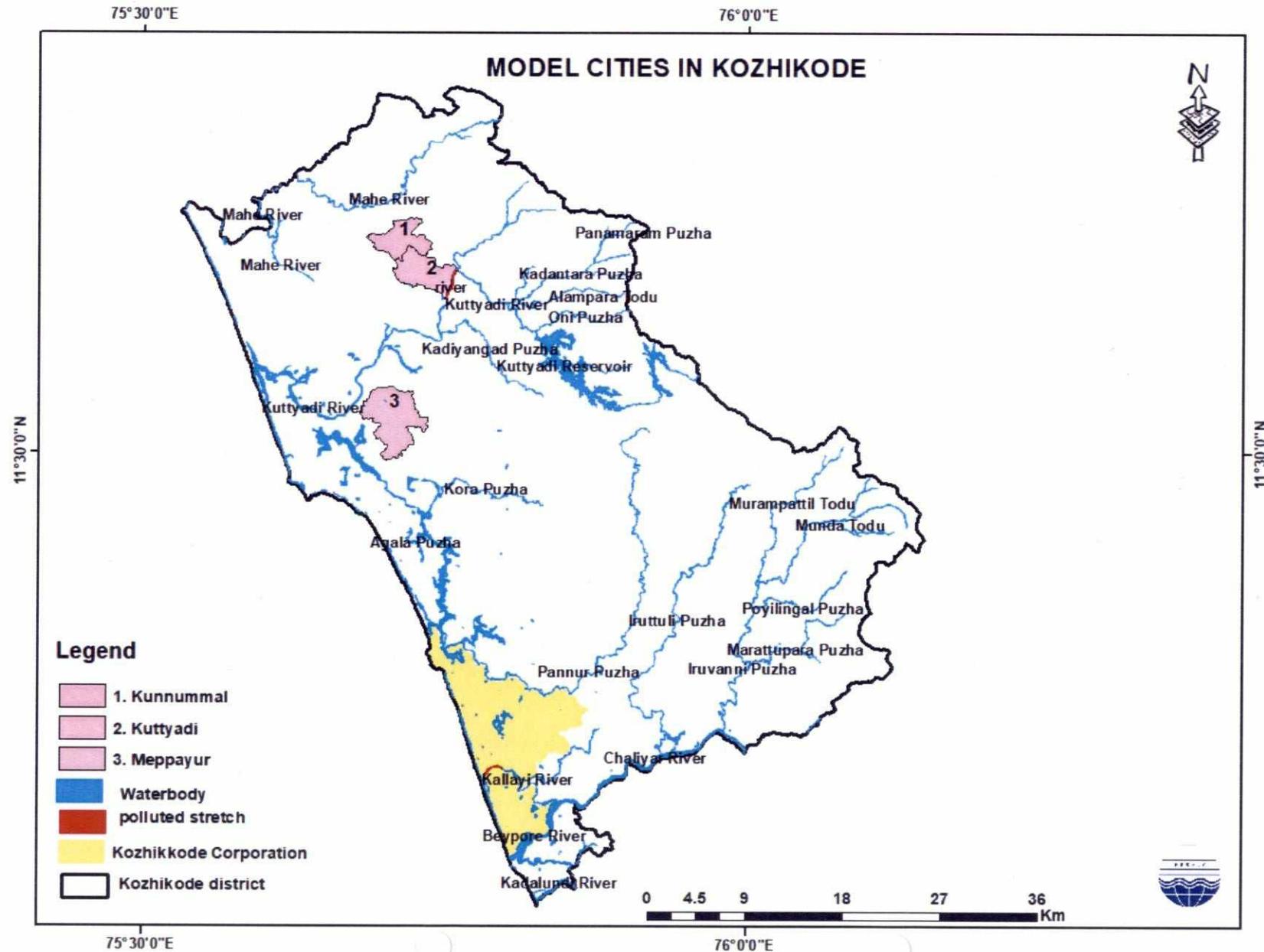


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MODEL CITY/VILLAGES IN KOZHIKODE



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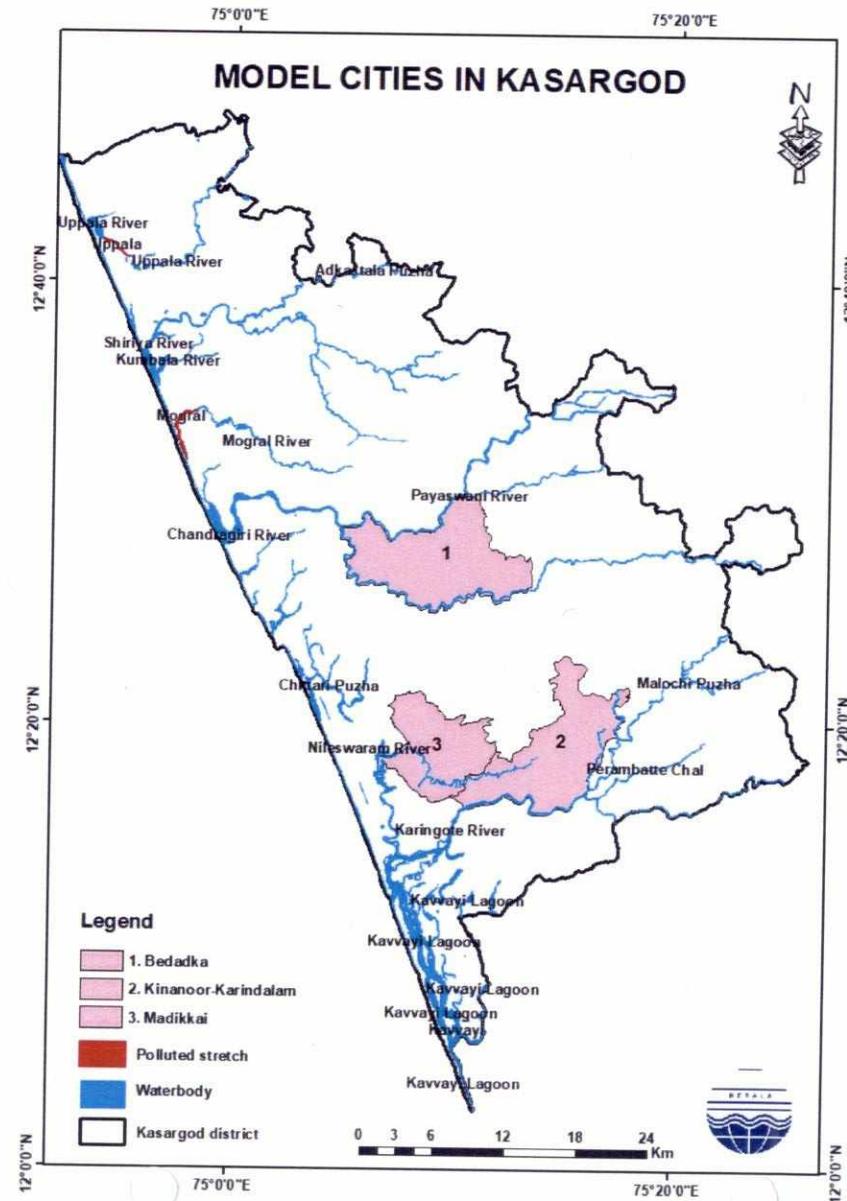
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MODEL VILLAGES IN KASARGOD



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

Background

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

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

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

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

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

Workshop on 1-6-2019

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

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

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

Best practices followed

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

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

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

Actions to be taken

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

A. Solid waste management

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

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

A2 Statutory requirements on Authorisation and Annual report

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

A3. Action plan

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

B. Liquid waste management

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

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

The workshop came to an end at 3.30pm.

Dated : 10-6-2019

Apil Handas
CHAIRMAN

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EXHIBITS X2(a)

ENVIRONMENTAL ACTS AND RULES TO BE COMPLIED BY LOCAL BODIES

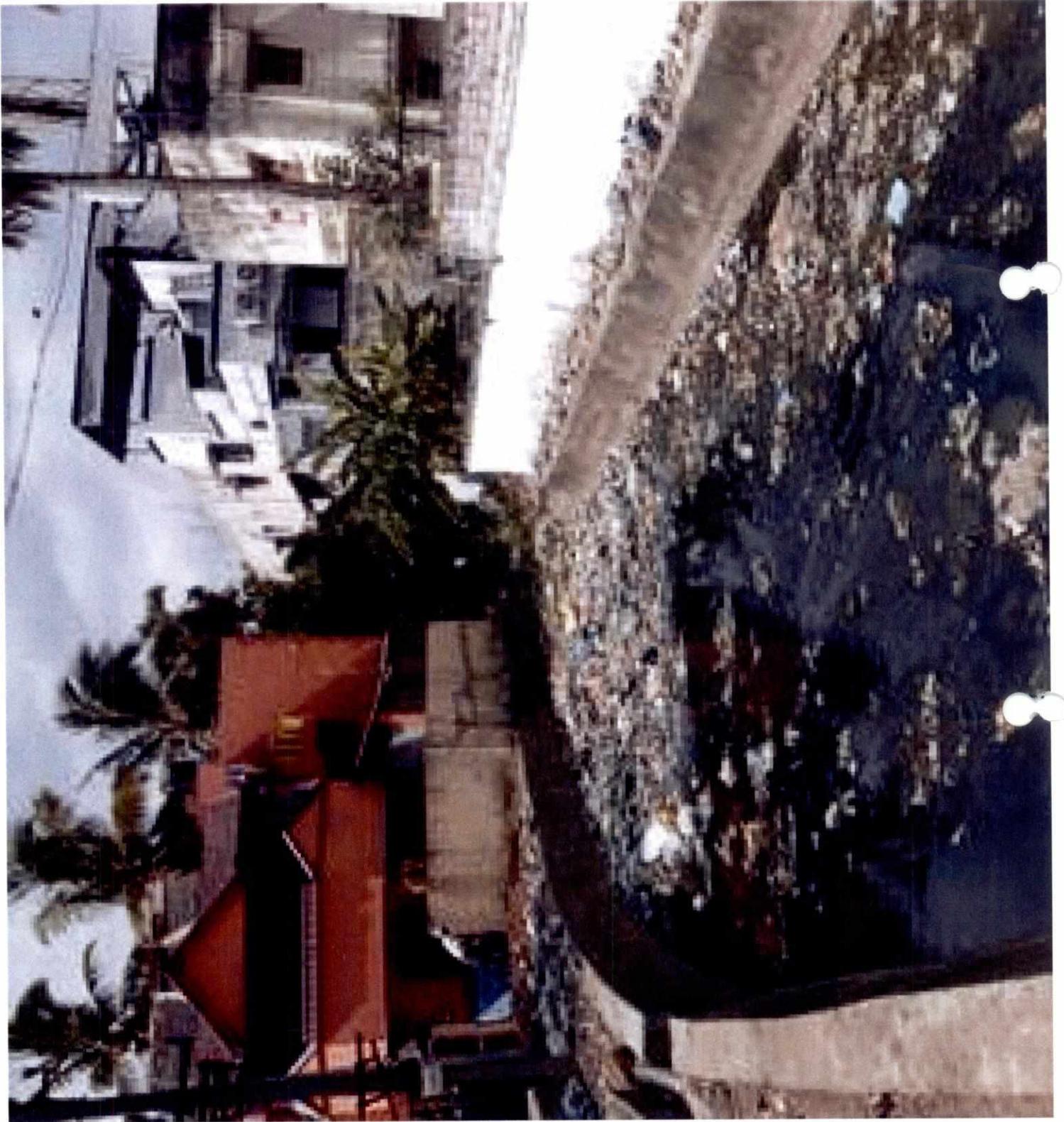
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Pollutants

- **Waste Water-Domestic**, industrial, agricultural
- **Emission** – Industrial, **vehicular**, **construction**
- **Solid waste** – **Biodegradable**, non
biodegradable, domestic hazardous
waste
- **Plastic waste**
- **Construction and demolition waste**
- **Biomedical waste**
- **Hazardous waste**
- **Battery**
- **E-waste**
- **Noise**

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- **Water (Prevention and Control of Pollution) Act, 1974**
- **Air(Prevention and Control of Pollution) Act, 1981**
- **Environmental Protection Act, 1986**
 - ✓ **Solid waste Management Rules, 2016**
 - ✓ **Plastic Waste Management Rules, 2016**
 - ✓ **E-waste Management Rules, 2016**
 - ✓ **Construction and demolition Wastes Management Rules, 2016**
 - ✓ **Bio-medical Waste Management Rules, 2016**
 - ✓ **Hazardous Waste Management Rules, 2016**
 - ✓ **Battery Waste Management Rules, 2016**

1. Water (Prevention and Control of Pollution) Act, 1974

- To control pollution due to sewage and effluent
- Establishment of Kerala State Pollution Control Board
- Consent to establish and consent to operate
- For authorizing outlet, restricting quantity of effluent, mode of disposal, prescribing standards for treated effluent/sewage
- Industries/establishments having pollution potential red, orange, green and white category
- Hotels, Hospitals, commercial establishments

Pollution Control Measures for houses

- **Water consumption** : ≈ 150 litre / head / day
- **Waste water** : 80% of consumption
- **Composition** : Sullage and sewage
 - Sullage** : Wash water, waste water from kitchen, laundry
 - Sewage** : Toilets

Septic tank

Anaerobic suspended growth process

IS 2470:1985 (Part 1)

Size based on number of users

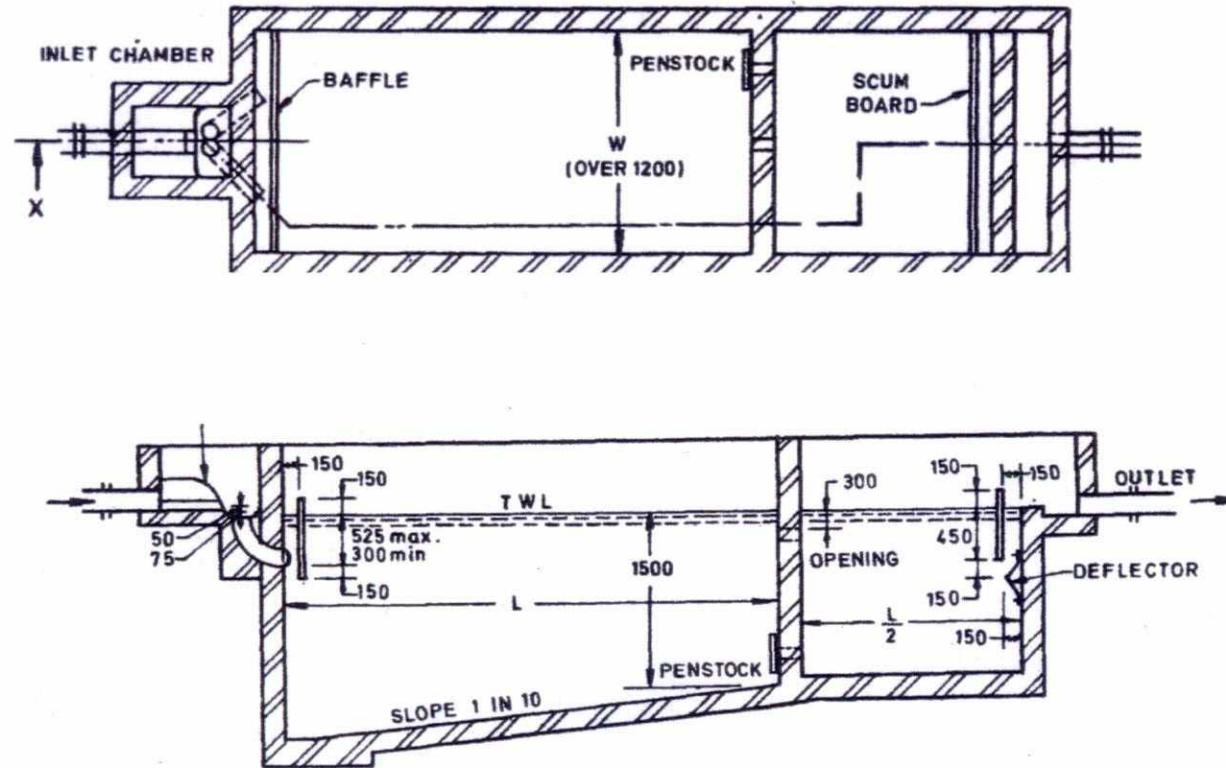
Detention period: 24 -48 hours

Minimum width: 0.75 m;
minimum depth: 1m

Length: 2 to 4 times width

Q.B.S

Septic tank : IS Code 2470 (Part 1)



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SECTION XX

All dimensions in millimetres.

FIG. 4 TYPICAL SKETCH OF TWO COMPARTMENT SEPTIC TANK FOR POPULATIONS OVER 50

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Septic tank (IS Code 2470 Part I)

No. of users	Length	Breadth	Liquid depth Cleaning interval of	
			Once in a year	Once in two years
5	1.5	0.75	1	1.05
10	2.0	0.90	1	1.4
15	2.0	0.9	1.3	2
20	12	2.3	1.1	2

LS5

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IS : 2470 (Part 1) - 1985

A-2. Recommended sizes of septic tank for housing colonies (up to 300 persons) and for hostels and boarding schools are given in Table 6 and 7 respectively.

TABLE 6 RECOMMENDED SIZES OF SEPTIC TANKS FOR RESIDENTIAL COLONIES

No. OF USERS	LENGTH	BREADTH	LIQUID DEPTH (CLEANING INTERVAL OF)	
			1 Year	2 Year
(1)	(2)	(3)	(4)	(5)
	m	m	m	m
50	5.0	2.0	1.0	1.24
100	7.5	2.65	1.0	1.24
150	10.0	3.0	1.0	1.24
200	12.0	3.3	1.0	1.24
300	15.0	4.0	1.0	1.24

NOTE 1 — A provision of 300 mm should be made for free board.

NOTE 2 — The sizes of the septic tank are based on certain assumptions (see 3.4) while choosing the size of septic tank, exact calculation shall be made.

NOTE 3 — For population over 100, the tank may be divided into independent parallel chambers for ease of maintenance and cleaning.

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Soak pit (Balance treated water)

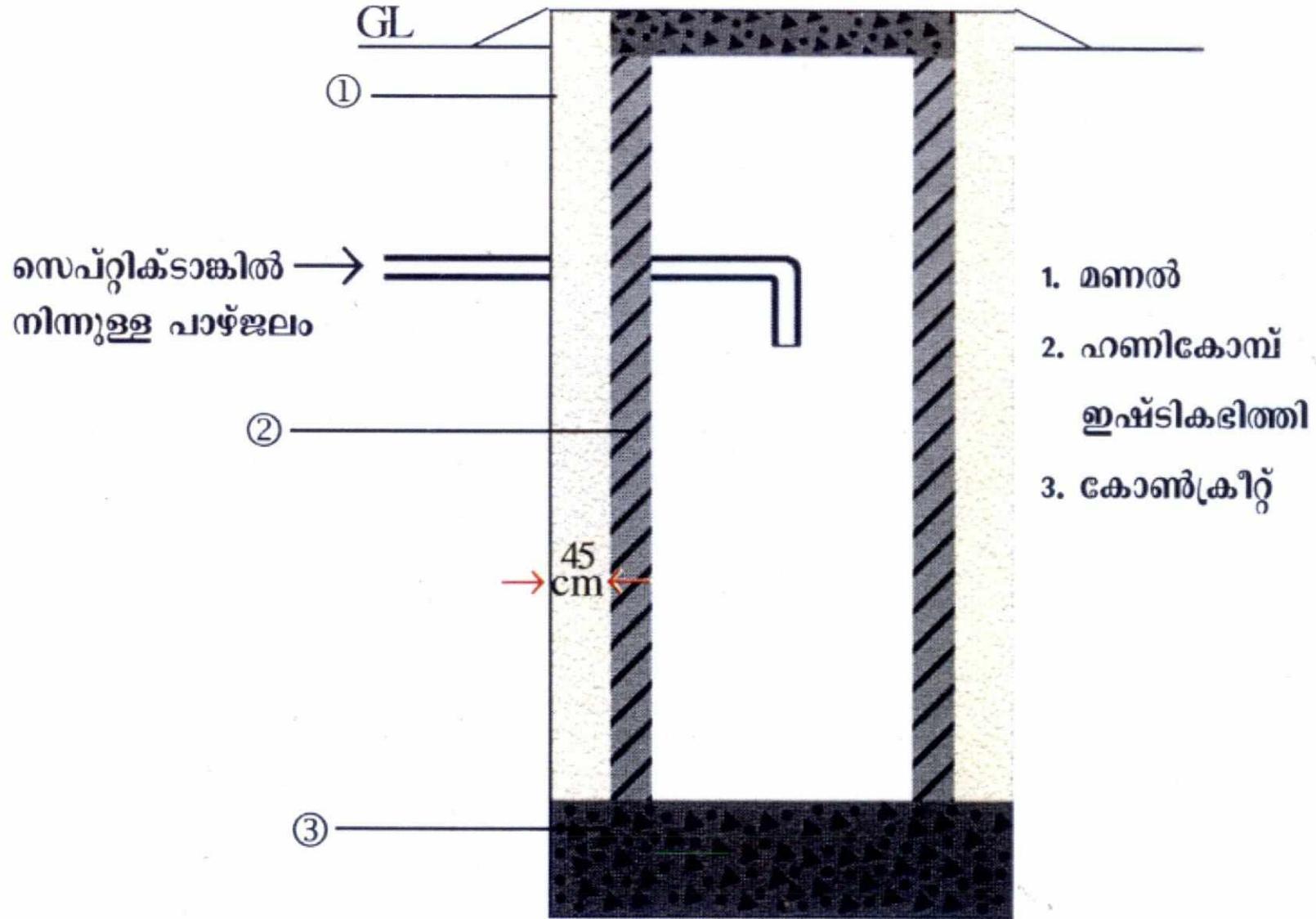
**Concreted bottom, honeycomb brick
work or perforated ring side wall**

and

**60 cm to 100 cm thick 2 mm sand envelope
around**

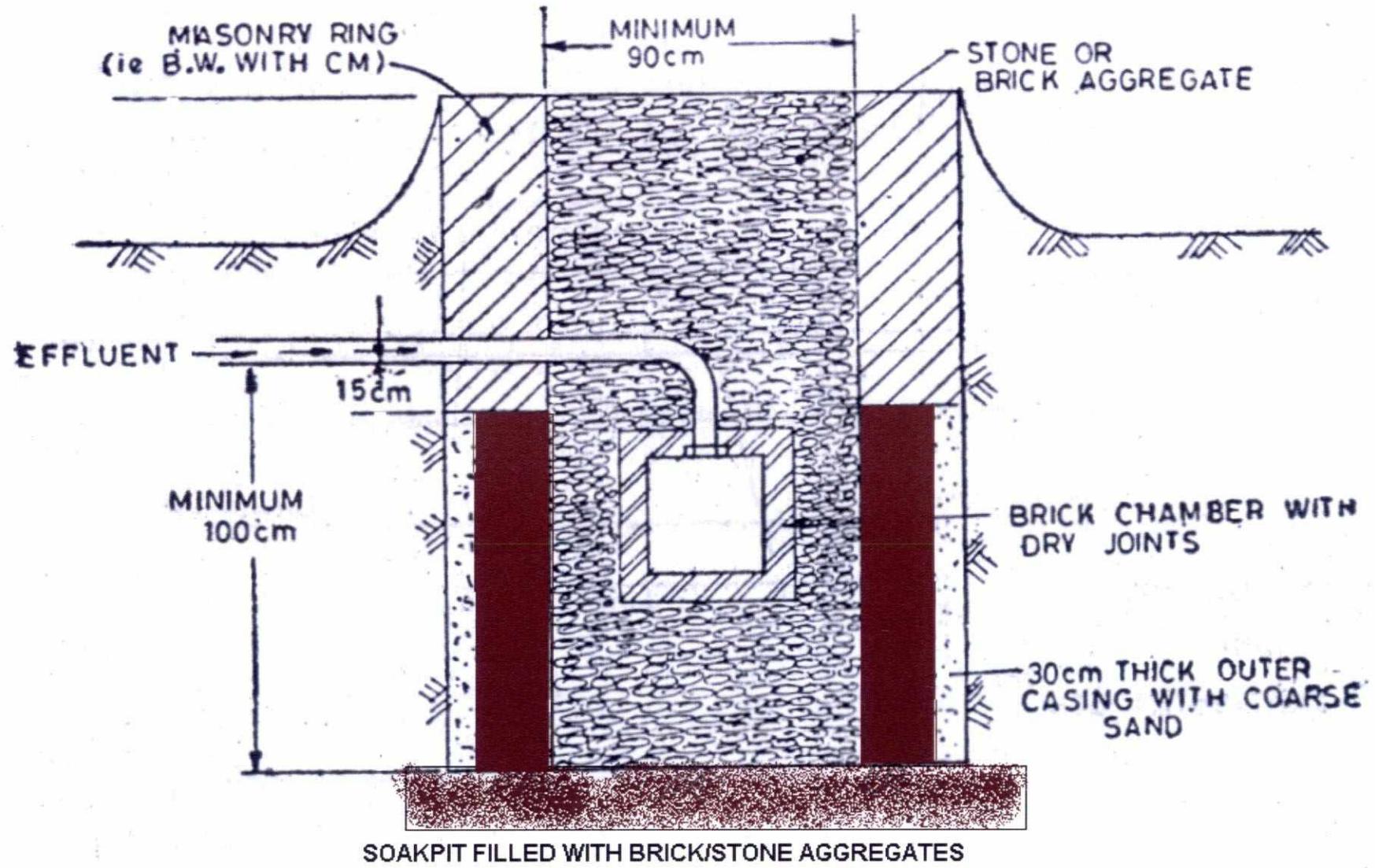
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SOAK PIT



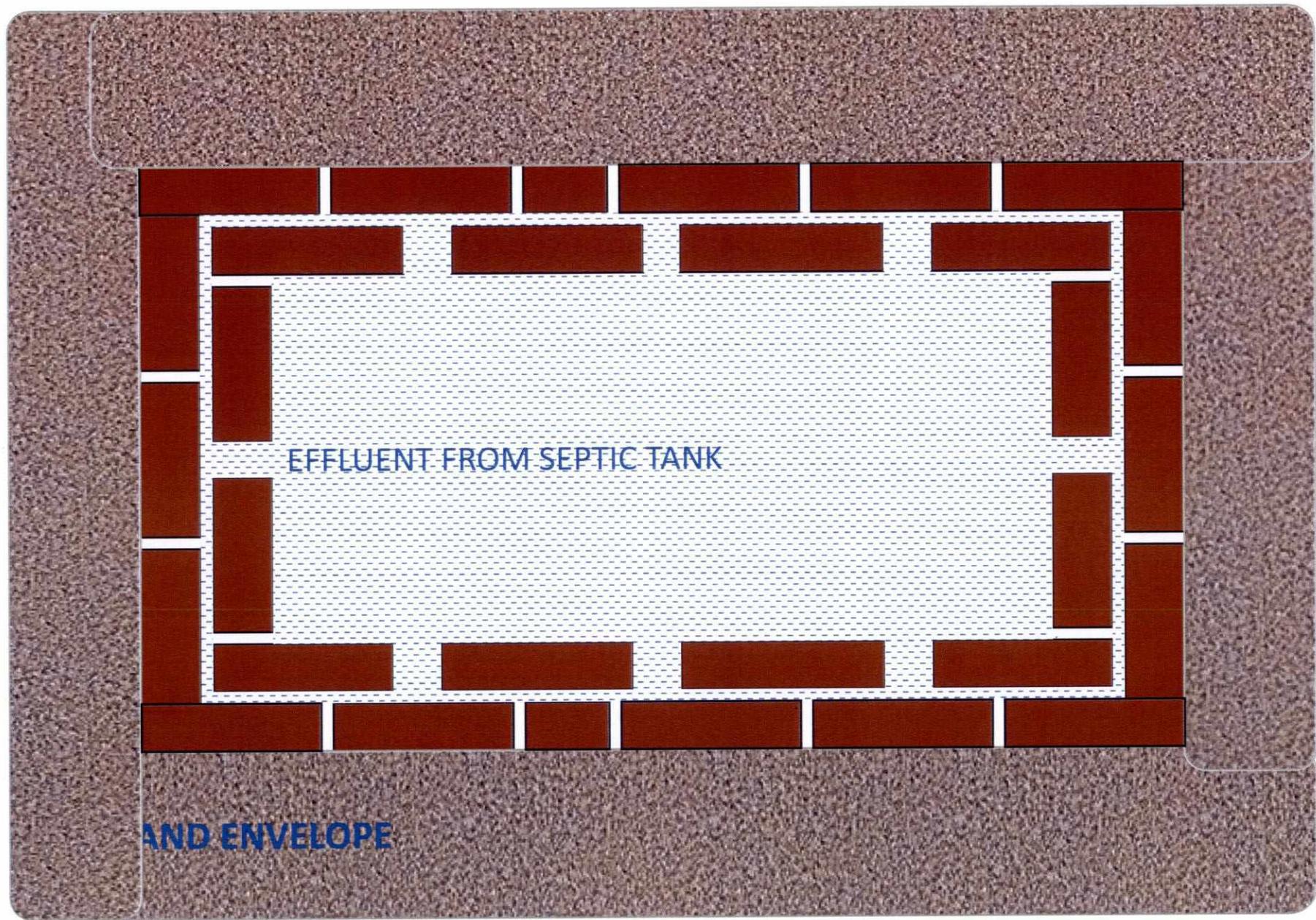
58 p

SSS



59/4

955



EFFLUENT FROM SEPTIC TANK

AND ENVELOPE

60 ft

3/19



t.s.s

855

2. Solid Waste Management Rules, 2016

Duties of waste generators (Rule 4)

- **Segregate and store** the waste generated in **three separate streams** namely biodegradable, 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** (Rule 4(1)a)

Domestic hazardous wastes: tubelights, CFL bulbs, broken mercury thermometer, used batteries, expired medicines, used needles, used syringes etc generated at household level

62/6

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655

Tube light destroyer at HW land fill at Kerala Enviro Infrastructure Limited, Ambalamedu, Ernakulam



Kerala Enviro
Infrastructure Limited
FACT CD Campus,
Ambalamedu,
Ernakulam - 682 303
Phone - 0484-2722241
Mob - 9495465796

63

8

37 49



560

195

- 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 biodegradable waste.** (Rule 4(1)(b)).

- **GUIDELINES FOR MANAGEMENT OF SANITARY WASTE BY CENTRAL POLLUTION CONTROL BOARD**

65/19

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695

- **Store separately construction and demolition waste, as and when generated, **in his own premises** and shall dispose off as per the Construction and Demolition Waste Management Rules, 2016(Rule 4(1)(c)).**

- ✓ Waste generation addresses those sources generating more than **20 tons** or more in one day or **300 tons** per project in a month of installed capacity.
- ✓ **GUIDELINES ON ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION & DEMOLITION (C & D) WASTES**

66/14

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568



Rang

Range 40-50 kg per sq.m of building repair,

Range 300-500 kg per sq.m for demolition of buildings

Give incentive for recycling

67/6

- **Store horticulture waste and garden waste** generated from his premises separately in his own premises and disposed of as per the direction of the local body from time to time (Rule 4(1)(d)).
- **No waste generator shall throw, burn or bury the solid waste generated by him, on streets, on open public places outside his premises or in the drain or water bodies** (Rule 4(2)).

565

- All waste generators shall pay such user fee for solid waste management as specified in the by-laws of local bodies(Rule 4(3)).
- No person shall organize an event or gathering of more than one hundred (100 persons) 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 (Rule 4(4)).

69 7

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- 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 dispose such waste at waste storage depot or containers or vehicle as notified by the local body(Rule 4(5)).

70

567

Resident welfare and market associations; Gated communities and institutions with more than 5000 sq.m., Hotels and restaurants (Rules 4(6), (7) and (8))

As on 8-4-2017, in partnership with the local body, **ensure segregation of waste at source** by the generators as per 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 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.

14

Rule 15 -Duties and responsibilities of the local authority and village panchayath

- Prepare **solid waste management plan** within six months from date of notification of state policy and strategy and to submit to Govt(Rule15(a)).
- Arrange for **door to door collection of segregated solid waste from all households including slums, informal settlements, commercial, institutional and other non residential premises** (Rule 15(b)).

695

Design for Tvm Corp

Tvm
Masterpl
an 2012
data

Capacity	400TPD
Truck: Front Load compactor	23
Drivers/assistants	51
Auto: tipper	220
Auto drivers	248
Collectors	497

67 of 100 wards covered by D2D

40 small trucks

25

922 permanent

732 Kudumbasree

CAPITAL COST	Rs. 14.55 crore
OPEX	Rs. 26.95 cr/y
CAPEX	Rs. 3.56 cr/y

4 transfer stations

COST PER KG COLLECTED Rs. 2.09

73

- Facilitate **formation of Self Help Groups**, provide identify cards and thereafter **encourage integration of these authorized waste pickers and waste collectors** to facilitate their participation in solid waste management including door to door collection of wastes (Rule 15(c)).
- **Frame bye-laws** incorporating provisions of these rules **as on 8-4-2017**(Rule 15(d)).

145

- Prescribe from time to time user fee as deemed appropriate and collect fee from waste generators on its own or through authorized agency.
- Direct waste generators not to litter, bury or burn wastes
- Set up material recovery facility or storage facility with sufficient space for sorting of recyclable materials to enable informal or authorised waste pickers or waste collectors to separate recyclables from the waste and to provide easy access to waste pickers
- Biodegradable waste –green; recyclable waste shall be printed white and shall be printed black

145

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- Establish **waste deposition centers for domestic hazardous waste** and give direction to waste generators to deposit domestic hazardous waste at this centre. Ensure safe storage and disposal to Hazardous waste disposal facility.
- Provide **training to waste pickers** and waste collectors
- Collect waste from **vegetable, fruit market, meat, poultry market, fish market** and promote setting up of **decentralized compost plant or biomethanation plant at suitable locations in the market** ensuring hygienic condition

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

- Collect horticulture, parks and garden waste separately and process in the parks and gardens as far as possible
- Transport segregated biodegradable waste to the processing facilities like compost plant, biomethanation plant or any such facility. Preference shall be given for on site processing of such waste
- Transport non biodegradable waste to the respective processing facility or material recovery facility or secondary storage facility

575

- Transport construction and demolition waste as per the provisions of **Construction and Demolition Waste Management Rules, 2016**
- **Involve communities in waste management** and promotion of home composting, biogas generation, decentralized processing of waste at community level subject to odour control and maintenance of hygienic condition

79/6

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- 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; (Rule 15 U).

475

- Facilitate construction, operation and maintenance of solid waste processing facilities and associated infrastructure on their own with private sector participation or through any agency for optimum utilization 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 the 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-stabilisation 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(Rule 15 V).

81/16

- Undertake on their own or through any other agency construction, operation and maintenance of **sanitary landfill** and associated infrastructure as per Schedule I for **residual wastes as per rules**;
- Make adequate provision of funds for capital investments as well as operation 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 the rules; (Rule 15 X).

- Make an **application in Form 1 for grant of authorization for setting up waste processing, treatment or disposal facility**, if the volume of waste exceeding five metric tones per day including sanitary landfills from the State Pollution Control Board or the Pollution Control Committee as the case may be; (Rule 15 Y).
- Submit application for renewal of authorization at least sixty days before the expiry of the validity of authorization; (Rule 15 Z).

- Prepare and submit annual report in Form IV on or before the 30th April of the succeeding year to the Commissioner or Director, Municipal Administration or designated Officer; (Rule 15 ZA).
- The annual report shall then be sent to the Secretary-in-charge of the State Urban Development or village panchayat or rural development department and to the respective State Pollution Control Board or Pollution Control Committee by the 31st May every year; (Rule 15 ZB).

- 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; (Rule 15 ZC).
- Ensure that the operator of a facility provides personal protection equipment including uniform, fluorescent jacket, hand gloves, raincoats, appropriate foot wear and masks to all workers handling solid waste and the same are used by the workforce; (Rule 15 ZD).

- 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; (Rule 15 ZE).
- 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; (Rule 15 ZF).

- Create public awareness through information, education and communication campaign; (Rule 15 ZG).
- Stop land filling or dumping of mixed waste soon after the timeline as specified in rule 23 for setting up and operationalisation of sanitary landfill is over; (Rule 15 ZH).

- **Allow only the non-usable, non recyclable, 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 described objective of zero waste going to landfill; (Rule 15 ZI).

- Investigate and analyze all old open dumpsites and existing operational dumpsites for their potential of **bio-mining and bio-remediation** and wherever feasible, take necessary actions to bio-mine or bio-remediate the sites; (Rule 15 ZJ).
- In absence of the potential of **bio-mining** and bio-remediation of dumpsite, it shall be **scientifically capped as per landfill capping norms** to prevent further damage to the environment; (Rule 15 ZK).

Compliance of Rule 22(1)

1. **Identification of suitable sites for setting up solid waste processing facilities** (Rule 22(1))- 8-4-2017
2. **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 facilities or standalone sanitary landfill facilities by all local authorities having a population of 0.5 million or more(Rule 22(2)) 8-4-2018

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3. Procurement of suitable sites for setting up solid waste processing facility and sanitary facilities 8-4-2018
4. Enforcing waste generators to practice segregation of biodegradable, recyclable, combustible, sanitary waste domestic hazardous and inert solid waste at source 8-4-2018
5. Ensure door to door collection of segregated waste and its transportation in covered vehicles to processing or disposal facilities 8-4-2018

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6. Ensure **separate storage, collection and transportation of construction and demolition wastes** 8-4-2018

7. Setting up solid waste processing facilities by all local bodies having 100000 or more population 8-4-2018

8. Setting up solid waste processing facilities by local bodies and census towns below 100000 population 8-4-2019

9. **Setting up common or stand along sanitary landfills** by or for all local bodies having 0.5 million or more population having 0.5 million or more population for the disposal of only such residual wastes from the processing facilities as well as untreatable inert waste as permitted under the Rule, 8-4-2019

10. **Setting up common or regional sanitary landfills** by all local bodies and census town under 0.5 million population for the disposal of permitted waste under the rules
11. Bio-remediation or capping of old and abandoned dump sites

95
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Plastic Waste Management Rules, 2016



165

Plastic Waste Management Rules, 2016

- Carry bag made of virgin or recycled plastic, shall not be less than fifty microns in thickness –Rule 4(c)
- The provision of thickness shall not be applicable to carry bags made up of compostable plastic. Carry bags made from compostable plastics shall conform to the Indian Standard: IS 17088:2008 titled as Specifications for Compostable Plastics, as amended from time to time. The manufacturers or seller of compostable plastic carry bags shall obtain a certificate from the Central Pollution Control Board before marketing or selling – Rule 4(h)

Plastic waste management by urban local bodies-Rule 5

- Plastic waste, which can be recycled, shall be **channelized to registered plastic waste recycler** and recycling conform to IS 14534:1998
- Local bodies shall encourage the use of plastic waste (preferably the plastic waste which cannot be further recycled) **for road construction** as per Indian Road Congress guidelines or energy recovery or waste to oil etc.
- Process and disposal of **thermoset plastic** as per CPCB guidelines
- **Inert from recycling or processing facilities** of plastic waste shall be disposed of in compliance with the **Solid Waste Management Rules, 2000**

9/18

Plastic waste management by urban local bodies-Rule 6

- **Development and setting up of infrastructure** for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its **own** or **by engaging agencies or producers**
- (2) Setting up, operationalization and co-ordination of the waste management system. The associated functions are:**

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- **Ensuring**
 - Segregation, collection**, storage, transportation, processing and disposal of plastic waste;
 - No damage to environment**
 - Channelization** of recyclable plastic waste fraction to recyclers;
 - Non-recyclable fraction** of plastic waste as per CPCB guidelines
- **Creating awareness among all stakeholders** about their responsibilities;
- **Engaging civil societies or groups working with waste pickers**; and
- **No open burning of plastic waste**

99/10

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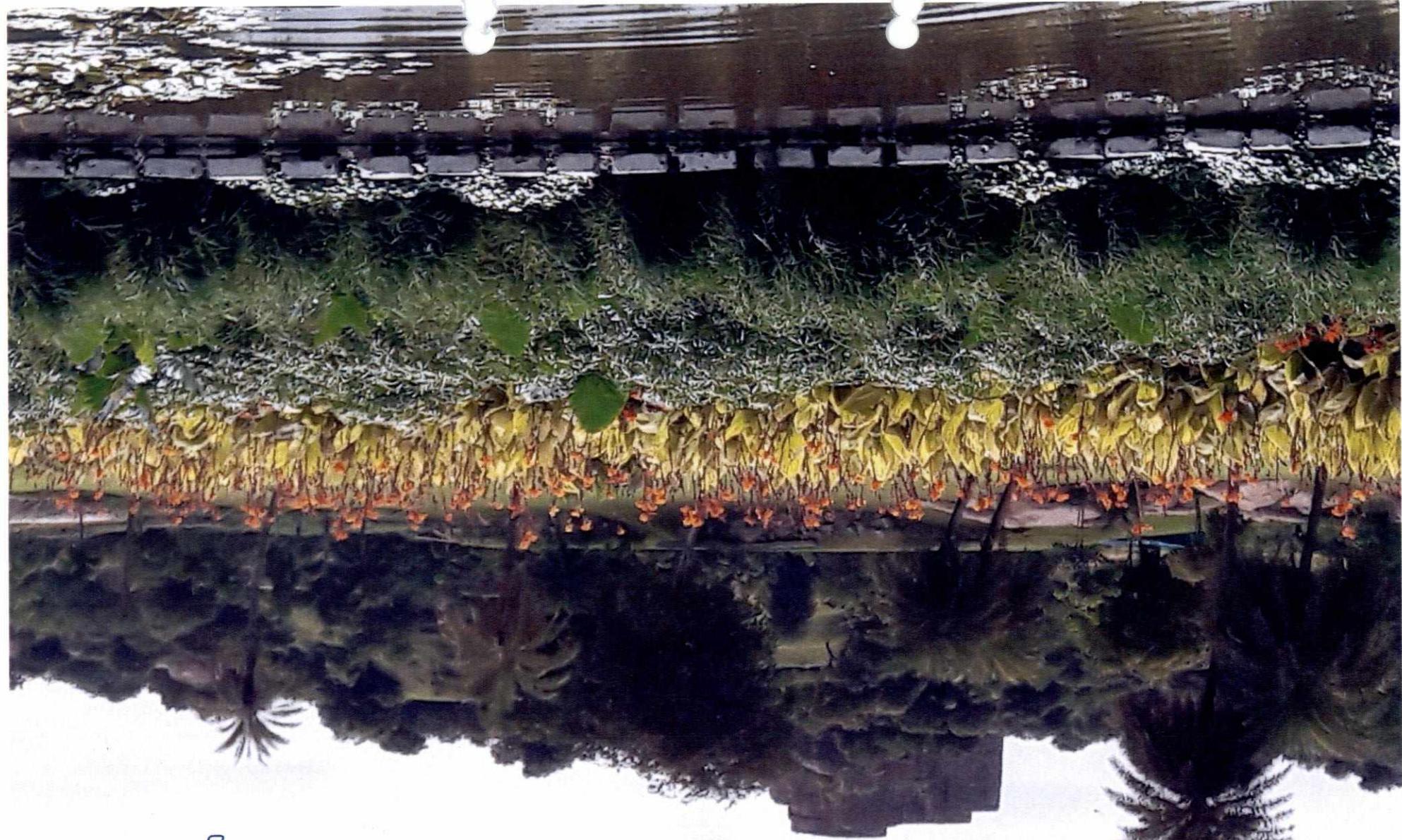
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Marking or labelling

- (1) Each plastic carry bag and multilayered packaging shall have the following information printed in English namely,- (a) name, registration number of the manufacturer and thickness in case of carry bag;
 - (b) name and registration number of the manufacturer in case of multilayered packaging; and
 - (c) name and certificate number [Rule 4(h)] in case of carry bags made from compostable plastic
- (2) Each recycled carry bag shall bear a label or a mark “recycled” as shown below and shall conform to the Indian Standard: IS 14534: 1998 titled as “Guidelines for Recycling of Plastics”, as amended from time to time;

Conclusion

- Obtained authorization?
- Submitted annual returns by 30th April ?
- User fee for solid waste management specified in Bye-law of the local body?
- Compliance of Rule 22 of Solid Waste Management Rules?
- Facilities for sewage and garbage?



Thank you

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to

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Campaign activities for supporting Enforcement of laws related to waste management and Prevention of Pollution in water bodies.

Harithakeralam mission has taken a campaign to promote enforcement of laws and the programme is named "**Haritha Niyamavali Campaign**"

The activities conducted so far as follows:

1. Harithakeralam mission with the help of Pollution control board, Legal Services authority, Food safety department, Health and Police department, District Suchithwa mission and Local bodies initiated the campaign followed by several cordinated meetings at state level. A booklet containing important laws was published and released a state function on 2019 January 26, on Republic day at Ernakulam.
2. Kozhikode District level programme conducted on 2019 January 28 and inaugurated by District Panchayath President Sri. Babu Parassery. District Legal Services Authority Chairperson , District and Sessions Judge Smt. M.R.Anitha Madam gave key note address in the presence of Harithakeralam Mission Executive Vice chairperson Dr.T N Seema as Chief guest.
3. State level training for Trainers was conducted on 2019 February 12 and 13 at KILA Thrissur.
4. Haritha Niyamavali training for representatives of local bodies including President, Vice President ,Health and Education Standing Committee chairpersons was conducted on 2019 February 28 and 2019 March 5 in two batches at Planning Secretariat Conference hall Civil Station Kozhikode.
5. After that, due to the General election process, the next level trainings were stalled and now again started with the following schedule

Action Plan for Haritha Niyamavali Training and campaign			
Sl No	Events	Date	Venue
1	Discussions with various Dept Heads	2019 July 2nd	Thiruvananthapuram
2	District level training Planning by District Coordinators of HKM and KILA	2019 July 16	Thiruvananthapuram
3	State level faculty training(for the selected Retd. Panchayath Secretaries/ Municipality Secretaries)	2019 July 29, 30	Thiruvananthapuram
4	One day training programme for Panchayath Secretaries, President	2019 Aug 2	DPC Hall, Kozhikode
5	Training programme for Mayor, Municipal Chairpersons and Secretaries	2019 Aug 6	KILA Thrissur
6	Two days training programme for Asst. Secretaries/ Head Clerks, Health Inspectors	2019 Aug 8,9	DPC Hall, Kozhikode, Jilla Panchayat Hall
6	Two day training for Municipal level officers (Health Supervisors, Health Inspectors)	2019 Aug 12, 13	Regional Centre
7	One day training for LSG level Resource Persons (One RP for two wards)	2019 Aug 12,13,14	Block Centres
8	Convention and training for Merchants and industrial units	2019 Aug 12,13,14	At respective LSG's
9	Training for 100 people from each ward of Panchayath and Municipality (2 Trainings per ward @ 50 Nos / Training)	2019 August 15 to Oct 2	Wards of LSG's
10	"Freedom from Waste"- Declaration to Implement Haritha Niyamam in each LSG	2019 Aug-15	LSG Level

Haritha Niyamam Training for Children			
Sl No	Events	Date	Venue
1	Meeting with Heads of NCC, SPC, NSS, Scout & Guides		Thiruvananthapuram
2	State level faculty training(5 Persons of each Dept from Dist)	2019 August 5	KILA, Thrissur/ Thiruvananthapuram
3	Dist Level Faculty Training		Dist Centres
4	Training for Children		School Level
Haritha Ayalkkootam in Association with Kudumbasree Mission			
Sl No	Events	Date	Venue
1	Finalization of Handbooks		
2	Kudumbashree- Haritha Keralam Mission meeting		Thiruvananthapuram
3	Worshop for Training module preparation		Thiruvananthapuram
4	State level Faculty Training		KILA, Thrissur
5	Dist Level Faculty Training		Dist Centres
6	CDS Level training		At LSGD's
7	First phase declaration of Haritha Ayalkkootam		At LSGD's

Green Protocol			
Sl No	Events	Date	Venue
1	Representative's meeting of Suchithwa Mission, Haritha Keralam Mission, KILA, Haritha Sahaya Sthapanam		Thiruvananthapuram
2	Drafting letters to all the Dept. Heads, Dist Collector, Dist Panchayath President		From Haritha Keralam Mission
3	Orientation programme for State level officers		Thiruvananthapuram
4	Dist level orientation		At District
5	Evaluation of the Audit team formed at State-Dist Level		Thiruvananthapuram, Different Districts
6	Evaluation and Audit of State level, Dist level offices		Thiruvananthapuram, Different Districts
7	Evaluation and Audit of Block level, Panchayath level and Municipality		At LSGD's
8	Declaration of Green protocol and certificate distribution		Thiruvananthapuram(State Level), At Districts

Prakash P
District Co-ordinator
Harithkeralam Mission
Kozhikode

HARITHA KERALAM MISSION, KOZHIKODE

Sl. No.	Name of Block / ULB	Staus of MRF
1	Vadakara	Working now. Onchiyam and Chorod GP decided to give plastic waste to Block MRF. Azhiyur Panchayath has its own shreading unit, Eramala panchayath has own waste management plant.
2	Kozhikode	MRF Construction completed, function not started.
3	Chelannur	Land identified at Thalakulathoor panchayath, and 28 lakh project is kept for super MRF but due to protest the work is not started.
4	Baluserry	Block MRF proposed at koorachundu Panchayath but not started due to public protest.
5	Koduvally	Construction completed, trail run conducted, Inauguration being fixed shortly.
6	Panthalayani	Building under Construction. Public protest exist.
7	Meladi	Land identified for construction in Keezhariyoor.
8	Kunnummal	MRF situated at Maruthonkara panchayath, construction completed, Construction of well remaining.
9	Kunnamangalam	Land identified in Chathamangalam Panchayath, But work could not be started due to public protest.
10	Thodannur	Work in the land identified could not be started due to public protest
11	Perambra	Work in the land identified at Changaroth panchayath could not be started due to public protest.
12	Thuneri	Work in the land identified could not be started due to public protest
13	Kozhikode Corporation	Shreading unit functioning at West Hill Managed by NIRAVU. 4 numbers of shreading unit proposed.
14	Vadakara Municipality	MRF Functioning, Second Shed under construction.
15	Payyoli Municipality	Work in the land identified could not be started due to public protest
16	Koyilandi Municipality	Temporary MCF functioning, machinery could not be installed in the site identified for MRF due to public protest.
17	Ramanattukara Municipality	MRF Construction completed, yet to start functioning.
18	Feroke Municipality	MRF Building Construction completed, Machinery not installed.
19	Mukkam Municipality	Temporary MCF functioning, machinery not installed.
20	Koduvally Municipality	MRF under construction, Temporary MCF working.

HARITHAKERALAM MISSION, KOZHIKODE
Waste Management Plan for the District - Objectives and Activities

Sl.No	Objectives and Activities	Responsibility	Phy. Target	Funds Available	Time line		Activities done so far	Achiievements		Balance to be Achieved
					Starting Time	period of Completion		Phy	Fiinancial and %	
1	Creation of Models / Beacon LSG's on Waste Management									
a)	Completion of all components in Waste management Cycle in the model / Beacon LSG's									
b)	Organic Waste management infrastructure in House holds and in Institutions									
c)	Establishment of Community Composting Units									
d)	Collection and Disposal of Non degradable waste and the organizational set up for the same - HKS, MCF, MRF									
e)	Activities to reduce the quantity of waste generated									

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EXHIBIT X5

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f)	Promotion of Alternate products like cloth bags, paper bags, such production units etc									
g)	Green Protocol Campaign - in all govt offices, Kalyana Mandapams, Public places , in festivals etc									
h)	Enforcement of laws relating to Waste management									
i)	Haritha Ayalkootam Campaign through Kudumbasree									
j)	Establishment of Swap shops									
2	Ensuring People Participation for all the Waste management Campaigns - Activity Oriented Public Education Programs									
2.1	Conversion of Waste Heaps to Mini Gardens									
a)	Identification of such waste heaps and formulation of an Action Plan for it's removal									

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b)	Removal of Waste heaps in public places and conversion of such places to mini gardens or rest places		Atleast one per LSG - 78 Nos							
c)	Planning of such a campaign in association with Merchant's organization, clubs, NGO's in the leadership of LSG's									
2.2	Hariitha Auditing - Survey to determine the cleanliness and saniitation of selected offices, houses and public places through students under NCC, SPC, Scouts & guides, JRC etc in association with the Education Mission									
2.3	Waste Management in Hospitals									
a)	Preparation of a Waste Management Plan for Hospitals in convergence with Ardrum Mission - in Medical college, District Hospital, Taluk Hospitals and FHC's	Health Dept, Ardrum Mission, LSG's, PCB, Suchitha Mission, KHRWS	MCH - 1, Dist Hospital - 1, Taluk Hospiitals - , FHC's -							
b)	Cleaning Campaign									

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c)	Establishment of Sustainable infrastructure for Waste Management									
2.4	Waste management in Hotels, Resturants, Catering Agencies - Grading based on this - Making them "Clean & Green" - Ensuring clean and safe drinking water, clean souroundings, safe food following safety satandards, clean toilets facilities willing to provide it for public, waste bins for waste management, and handing over them to Haritha Karama Sena paying user fee. Establishment of Sustainable infrastructure for Waste Management									
a)	Joint Inspection by LSG's, Suchitha Mission, Depts of Health & Food Safety, PCB - Ensuring the infrastructure for waste management and that the stanadards are followed									
b)	Determiination of Waste Management Infrastructure iin Place by systematic survey									

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c)	Determination of Time line for corrective measures									
d)	Sanitation Grading - Suchiitha Mission									
2.5	Zero Waste in Tourism Destinations	Tourism Dept, Responsible Tourism, LSG's								
a)	Studies for Situational Analysis of waste Management in Selected Tourist Destinations									
b)	Preparation of Action Plan for Waste management									
c)	Implementation of the Plan									
2.6	Waste management Plan for Selected markets	LSG's, Suchitha Mission								
a)	Studies for Situational Analysis of waste Management in Selected Markets									
b)	Preparation of Action Plan for Waste management									
c)	Implementation of the Plan									
d)	Implementation of the Plan - Target - One market from each LAC/ Block, Municipality, Corporation		20 Markets							
2.7	Creating Model Wards/ Residence Associations in Waste Management									

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a)	Creating Models for waste Management in Residence Associations, Flats, gated Colonies, Wards									
b)	Selection of Such Target groups									
c)	Preparation of Action Plan for Waste management									
d)	Organization of Trainings									
e)	Implementation of the Plans									
2.8	Kudubasree Haritha Ayalkootam Campaign - Campaign for Haritha Bhavanam through Kudumbasree, focussing on components of Waste Management, Agriculture, Energy management, Water Mangement, Animal Husbandary & Dairy Development									
a)	Transforming NHG's to Haritha NHG's wiith source level segregation of waste, composting at source, recycling of grey water, Vegetable cultivation, energy conservation	Kudumbasree Mission, Suchitha Mission, HKM								

to
M4

b)	Formulation of guidelines for training									
c)	Formation of Team of Resource Persons at ADS Level									
d)	Kudumbasree Mission to coordinate the activities									
2.9	Educating School children Waste segregation lessons in association with Education Mission - Development of the methodology, training									
3	Establishment of Plants for Processing Chicken Waste in association with Private sector - Preparation of Project Proposals, Facilitation of the Project Implementation									
4	Linking of the Recycling units to the Plastic waste management of LSG's									
a)	Capacity determination of the recycling units									
b)	Linking to MRF units									
5	Finding suitable agencies for handling items which can't be recycled	CKCL								

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6	Formulation of Protocol and guidelines for Scrap units									
a)	Preparation of guidelines- PCB, Suchitha Mission, HKM									
b)	Making it an official one									
c)	Training									
d)	Ensuring that scrap units works on such guidelines - in association with LSG's									
7	Promotion of Green Enterprises - such alternate materials like cloth bags, paper bags and other green protocol services - Kudumbasree Mission to lead									
a)	Kudumbasree to promote formation of such green enterprises									
b)	Evaluation of the existing units and determination of new ones									
c)	Upgradation of the existing ones with capacity expansion, new technology etc									
d)	Linking the existing success models for others to emulate									

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e)	identification of New entrepreneurs									
f)	Formation of new green enterprises									
8	Organization of Mass legal education campaign prior the enforcement measures to prevent waste deposition in Public places, water bodies, water sources etc is implemented	LSGD, Health, Police, PCB, KLSA								
a)	District level Workshop for LSG secretaries, Health Inspectors									
b)	preparation of a handbook on laws relating to waste management									
c)	Joint meetings of the agencies at various levels									
d)	Classes in association with Residence Associations, clubs, Kudumbasree, Youth organizations, NGO's etc									
e)	Enforcement in Action									
9	Performance Audit of the waste management Plans of the LSG's	LSGD Performance Audit Wing, Suchitha Mission, HKM								

	Development of Performance Audit parameters									
	Perdormance Improvement Monitoring									
10	Social Auditing of waste management of LSG's	LSGD Perdormance Audit Wing, Suchitha Mission, HKM								
a)	Formulation of Social Audit guidelines									
b)	Formation of Social Audit Team									
c)	Training for the Team									
d)	Social Audit of the Waste Management Projects									
11	Training to Cleaning staff of Govt offices, Govt Agencies and other semi govt institutions	Suchitha Mission, HKM								
a)	Formulation of Protocols for Cleaning Operations									
b)	Preparation of a module for Training									
c)	Training of Cleaning staff									
d)	Evaluation of the Quality improvement in their work									

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12	Creating models of waste management in Govt offices - green protocol campaign	Office Heads, Suchitha Mission, HKM								
a)	Establishment of Infrastructure for composting of organic waste									
b)	Non Bio degradables - Efforts to reduce the quantity generate, collection and handing over for recycling									
c)	Team formation for Office Inspection, module preparation									
d)	Declaration as Haritha Office and campign for the same									
e)	Institution of Awards for the best offices									
13	Green Protocol - Second stage Activities									
a)	Energy Conservation	ANERT, Energy Management Centre								
b)	Water conservation, Water Literacy	Water Resources Sub Mission								

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14	Support for the implementation of Waste Management Projects of the LSG's									
a)	Timely technical sanction of the projects - Facilitation and Monitoring									
b)	Convergence of schemes/funds under Suchitha Mission, NREGS for waste mangement									
c)	Making available the expertise and support of Haritha Sahaya Sthapanam's									
d)	IEC Activities and Legal measures to tide over the local protests against such projects									
15	Selection of Best Performing Panchayats and Municipalities at District Level and institution of Awards for the same									
a)	Development of a methodology of selection									
b)	Evaluation of the performance based on the set criteria									
16	Freedom from Waste - Second Phase Campaign									

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a)	A People campaign for freedom from waste - Team formation for evaluation									
b)	Inspection and evaluation of the methodologies employed for organic waste management at source									
c)	Evaluation of the segregation process done at house holds, shops and establishments and institutions									
d)	Collection and Disposal of Non degradable waste									
e)	Evaluation of Cleanliness of Public places and Public Offices									
f)	Identification of Green NGO's and Organization for cleaninf and maintenance of Public places									
g)	Mapping of all the Water bodies and formulation of an action plan to clean them, and subsequent maintenance by Green NGO's / Organizations									
17	Suchitha Saksharatha									
a)	Preparation of the training module and Video									

b)	Preparation of Booklet									
c)	Training of Resource Persons at District Level									
d)	Training of Teachers									
e)	Training of Facilitators at Block level									
f)	Certificate and Sticker Printing									
g)	Development of Mobile App, Website									
h)	Training of Facilitators at Panchayat, Municipality, Corporation ward level									
i)	Training and Positioning of Green Ambassadors									

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(21)

**Quarterly Progress 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
Order Dated 19-2-2019 in O.A. No. 593/2017
and
Order dated 25-4-2019 in O.A. No.606/2018

19th July, 2019

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List of Acronyms

Acronym	Expansion
AMC	Annual Maintenance Contract
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy
BMWM	Bio-Medical Waste Management Rules
CAAQMS	Continuous Ambient Air Quality Monitoring Station
CBMWTF	Common Biomedical Waste Treatment Facility
CC	Closed Circuit
CEPI	Comprehensive Environmental Pollution Index
CETP	Common Effluent Treatment Plant
CPA	Critically Polluted Area
CPCB	Central Pollution Control Board
D2D	Door to Door
DG	Diesel Generator
EPR	Extended Producer Responsibility
ETP	Effluent Treatment Plant
GKA	Greater Kochi Area
GO	Government Order
HCI	Health Care Institutions
HKS	Haritha Karma Sena
IEC	Information Education and Communication
IMAGE	Indian Medical Association Goes Eco-friendly
KIFB	Kerala Infrastructure Investment Fund Board
KINFRA	Kerala Industrial Infrastructure Development Corporation
KSIDC	Kerala State Industrial Development Corporation
KWA	Kerala Water Authority
KWIL	Kerala Waterways and Infrastructure Development Ltd
MCF	Material Collection Facilities
MGNREGA	Mahatma Gandhi National 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

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

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 treated¹. 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 are²:-

- Waste segregation at source is mandatory. Waste generators have to segregate waste into three streams - Organic or Biodegradable waste, Dry waste (Plastic, Paper, Metal, Wood, etc.) and Domestic Hazardous waste (diapers, napkins, mosquito repellants, cleaning agents etc.). Further, bulk waste generators such as hotels, hospitals etc. are expected to treat organic waste either onsite or by collaborating with the urban local body.
- Municipalities and urban local bodies have been directed to include informal waste pickers and rag pickers into their waste management process. Thus, this is the first time that national policy has acknowledged and included the informal sector into the waste management process.
- FMCG product manufacturers that use non-biodegradable packaging for their products must put in place a system to collect the packaging waste generated due to their production.
- Urban local bodies have been given a provision to charge bulk generators a user fee to collect and process their waste, additionally spot fines may be levied on user's burning garbage or throwing it in a public place.
- No non-recyclable waste having a calorific value of 1,500 Kcal/kg or more should be disposed in the landfills. It should either be utilized for generating energy or can be used for preparing refuse derived fuel or it can be used for co-processing in cement or thermal power plants.

It is estimated that Kerala generates 3.7 million tonnes of municipal solid wastes annually³. 45% is generated by the Municipalities, 41% by the GPs, and 14% by the City Corporations. 77% of the

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

² SWM Rules, 2016

³ Sectoral status study on solid waste management sponsored by the Water and Sanitation Project - South Asia (World Bank)

wastes are biodegradable, 18% are non-biodegradable, and 5% are inert⁴. 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 source¹.
- Establish door to door collection of non-biodegradable waste.
- Establish procedure for handling domestic hazardous waste and promote its implementation.
- Promote usage of storage bins for dumping wet and dry waste by all vendors and institutions.
- Enforce captive waste management systems for the bulk waste generators.
- Promote modern centralized waste processing facilities in major cities using state-of-the-art technologies.
- Make use of the enabling environment created under the Haritha Keralam Mission to integrate the use of treated waste products, enhance organic agriculture and upkeep of fragile ecosystems.
- Develop regional sanitary landfill facility to dispose of ultimately unusable materials.
- Undertake appropriate IEC campaigns.
- Implement appropriate capacity building programmes for stakeholders.
- Network with academic and research & development institutions for upgrading of technologies and application protocols.

The NGT Order O.A. No. 606/2018 highlighted serious deficiencies in the implementation of waste management initiatives, as reported by various States in their annual reports⁵. The NGT conducted discussions with the relevant officials of the States and UTs on the following matters:- (i) Preparation of State-wise Action Plan with timelines and budgetary support/provision for management of MSW, (ii) Coverage of each city/town/urban local body under the said Plan and individual Action Plan with timelines and budgetary provisions, (iii) Time fixed to completely comply with the provisions of the Rules, 2016, and (iv) Main constraints leading to non-compliance of Rules, 2016. During the discussions by NGT, it was realized that, with few exceptions, most of the States and Union Territories, including Kerala, are lagging behind in compliance of the Rules, 2016. In many cases, Action plans have yet not been prepared even after more than 2 years after the Rules, 2016 have been in operation and in spite of binding directions in the Judgment of the Tribunal vide order dated 22.12.2016.

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

⁵ <http://www.greentribunal.gov.in>

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

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

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

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

2.The Status of Implementation of Interventions

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

The colour coding for the cases is presented below:

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

Sl. No.	Cases	Status	Page No.
2.1.	Status of compliance of order dated 25-4-2019 of the Hon'ble NGT in O.A.No. 606/2018 on model city/town/village	The State has identified three cities, three towns, and three villages in each district (42 villages) and in total 48 model city/town/villages have been identified in the State. Earnest and demonstrable endeavor has been taken to bring those model city/town/villages fully compliant in respect of environmental norms.	10
2.2	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.	11
2.3	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 ensured compliance to Rules 16 and 17, and has set up monitoring committee and regulatory mechanisms.	24
2.4	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.	28
2.5	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.	33
2.6	Status of Hazardous Wastes Management Rules, 2016	The State has complied with Rule	34
2.7	Status of Batteries Waste Management and Handling Rules, 2001	The State has complied with Rule	35

2.8	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.	36
2.9.	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) 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)	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.	36
2.10.	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.	37
2.11.	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
2.12.	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

2.13.	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
2.14.	Status of identification and development of Model Cities and Towns in the State in the first phase which can be replicated later for other cities and towns of the State Item (h) of para 40 of order dated 16-1-2019 in 606/2018	As in Sl. No. 1 above	
2.15.	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 up to March 2019 have been submitted.	55

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

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

the survey using this application.

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

2.2 Status of implementation of Solid Waste Management Rules, 2016

The Government of Kerala has taken efforts to implement the Solid Waste Management Rules, 2016 in the State. There are 6 Corporations, 87 Municipalities and 941 GPs in the State. The Kerala State Pollution Control Board (KPSCB) issued repeated directions to all local bodies to ensure compliance of the Solid Waste Management Rules, 2016. 3831.6 TPD of solid waste is generated from the cities and towns.

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

2.2.1 Compliance of the Rules

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

2.2.2 Activities and Action Taken

(a) Activity - Identification of suitable **sites for setting up 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	<ul style="list-style-type: none"> Retendered the waste to energy project through e-tendering portal on 6-6-2019. Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. Further follow-ups were being done to evince their interest in the project. SLAC directed to clear the site and to do the biomining. 	2 years from the date of obtaining environmental clearance.
b)	Ernakulam	Brahmapuram (Govt. land)	20	<ul style="list-style-type: none"> Work awarded to M/s G.J Eco Power Pvt. Ltd. Public hearing held on 10-6-2019 Draft EIA report is modified based on the minutes of the public hearing and will be submitted to SEIAA soon. KSREC has accorded sanction and the power purchase agreement between G.J. Eco Power Pvt Ltd and KSEB was executed on 19-6-2019. 	2 years from the date of obtaining environmental clearance.
c)	Palakkad	Kanjikode (Land taken over from Kerala State Electricity Board Ltd. in advance possession)	15	<ul style="list-style-type: none"> Retendered the waste to energy project through e-tender portal on 6-6-2019. Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. Details of successful bidders in other WtE plants were collected and the tender 	2 years from the date of obtaining environmental clearance.

Sl. No	Corporation/ Municipality	Identified site	Area (acre)	Status	Completion date
				documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project	
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	<ul style="list-style-type: none"> • After the completion of tendering process, the work awarded to Zonta Infratech Private Limited. • Letter of intent issued to Zonta Infratech Pvt Limited on 27-5-2019 as per the tender procedure detailed in the RFP. • M/s. Zonta Infratech Pvt Limited communicated the acceptance of LOI vide their letter dated 10-6-2019. • M/s.Zonta Infratech Pvt Limited filed documents before Registrar of Companies (RoC) and the RoC allotted the name "Zonta Malabar Waste Management Pvt Limited" to the SPV, which is a fully owned subsidiary of the lead bidder, Zonta Infratech Pvt Limited with an initial share capital of Rs. 10 crores and it is expected that SPV could be incorporated before 10-7-2019. 	2 years from the date of obtaining environmental clearance.
e)	Kannur	Chelora (Govt. Land)	9.7	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to evince their interest in the project 	2 years from the date of obtaining environmental clearance.

f)	Wayanad	Sulthan Bathery (Govt. Land)	0.5	Construction of the plant is going on.	Expected to be commissioned by August 2019.
g)	Thiruvananthapuram	Peringamala (Govt. Land)	15	Alternate land is being identified for the solid waste processing plant. The feasibility for setting up the plant at Valiyathura is being explored.	2 years from the date of obtaining 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	<ul style="list-style-type: none"> Decided to award the work to M/s AG Dauters Waste Processing Pvt. Ltd. Decision taken by State Level Advisory Committee to issue final notice to M/s AG Dauters Waste Processing Pvt. Ltd to take action as per the agreement executed and to submit applications with sufficient details to the concerned departments and also if they fails to adhere to directions and statutory provisions within thirty days, action is to be taken to terminate concession agreement and tender the project to find a private partner for setting up processing plant. Sanction was given to Munnar Grama Panchayath to clear the legacy waste from the site. 	2 years from the date of obtaining environmental clearance.

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

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

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

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

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

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

Action Taken –

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

bulk waste generator.

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

*Haritha Karma Sena (HKS), an enterprise group formed through the State Poverty Eradication Mission (Kudumbasree). The enterprise group is designed to have two persons for each ward for door-to-door collection of non-biodegradable waste on a regular basis and help in managing the household- institutional-community systems for composting biodegradable waste.

- The user fee is fixed by the respective local government depending on the services rendered and based on the guidelines issued vide G.O(Rt)No.2420/2017/ LSGD dated 15.07.2017.
- In order to sustain the operation of the door-to-door collection system, Government provided a Viability Gap Fund (VGF) support initially for 6 months so as to make up the shortage of user fee collection in the initial stages such that each member of the group get atleast minimum wage decided by the government.
- The VGF support is extended for 6 more months at half the rate of that provided during the first six months in order to ensure that the HKS operation is sustainable in financial terms. In order to improve the sustainability of HKS, actions are also being taken to include more value-added household level services in the functioning of HKS.
- The HKS is to be trained and their operation ensured through a technical support mechanism namely Haritha Sahaya Sthapanam (HSS), a Green Support Organization mostly drawn from non-governmental organizations having experience in waste management services.
- There are 36 HSS deployed in the State at the ULB and Block Panchayat level. All the 941 Gram Panchayats (GP) have taken actions to form HKS. HKS is now functional in 484 GPs for door to door collection of segregated non-biodegradable waste.

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

Action Taken

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

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

Action Taken

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

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

Action Taken - Government has accorded sanction for establishing Waste to Energy plants in the following 8 sites 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	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Pre bid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE 	2 years from the date of obtaining environmental clearance

				<p>plants were collected and the tender documents were forwarded to each of them.</p> <ul style="list-style-type: none"> • Further follow-ups were being done to evince their interest in the project. • SLAC directed to clear the site and to do the bio mining. 	
b)	Ernakulam	Brahmapuram (Govt land)	20	<ul style="list-style-type: none"> • Work awarded to M/s G.J Eco Power Pvt. Ltd. Public hearing held on 10-6-2019. • Draft EIA report is modified based on the minutes of the public hearing and will be submitted to SEIAA soon. • KSREC has accorded sanction and the power purchase agreement between G.J. Eco Power Pvt Ltd and KSEB was executed on 19-6-2019. 	2 years from the date of obtaining environmental clearance
c)	Palakkad	Kanjikode (Land taken over from Kerala State Electricity Board Ltd. in advance possession)	15	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Prebid meeting held on 21-6-2019 and the representatives from 15 firms attended the meeting. • Details of successful bidders in other WtE plants were collected and the tender documents were forwarded to each of them. • Further follow-ups were being done to 	2 years from the date of obtaining environmental clearance

				evince their interest in the project	
d)	Kozhikode	Njaliyanparambu (Govt. land)	12.67	<ul style="list-style-type: none"> • After the completion of tendering process, the work awarded to Zonta Infratech Private Limited. • Letter of intent issued to Zonta Infratech Pvt Limited on 27-5-2019 as per the tender procedure detailed in the RFP. • M/s. Zonta Infratech Pvt Limited communicated the acceptance of LOI vide their letter dated 10-6-2019. • M/s.Zonta Infratech Pvt Limited filed documents before Registrar of Companies(RoC) and the RoC allotted the name "Zonta Malabar Waste Management Pvt Limited" to the SPV, which is a fully owned subsidiary of the lead bidder, Zonta Infratech Pvt Limited with an initial share capital of Rs. 10 crores and it is expected that SPV could be incorporated before 10-7-2019. 	2 years from the date of obtaining environmental clearance
e)	Kannur	Chelora (Govt. Land)	9.7	<ul style="list-style-type: none"> • Retendered the waste to energy project through e-tender portal on 6-6-2019. • Tender advertisement was published in all India editions of Times of India, Indian Express, New Indian Express and the Hindu newspaper. • Prebid meeting held on 21-6-2019 and representatives from 15 firms attended the meeting. • Details of successful 	2 years from the date of obtaining environmental clearance

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				<p>bidders in other WtE plants were collected and the tender documents were forwarded to each of them.</p> <ul style="list-style-type: none"> • Further follow-ups were being done to evince their interest in the project 	
f)	Thiruvananthapuram	Peringamala (Govt. Land)	15	Alternate land is being identified for the solid waste processing plant. The feasibility for setting up the plant at Valiyathura is being explored.	2 years from the date of obtaining
g)	Thrissur	Laloor (Govt. Land)	15	Stakeholder meetings have been conducted. Further action to tender the work will be initiated soon.	2 years from the date of obtaining environmental clearance
h)	Malappuram	Panakkad (Land in possession with Kerala State Industrial Development Corporation)	10	Further action is being taken	2 years from the date of obtaining environmental clearance

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

Action Taken

Local Body	Nature of Plant	Status/Time of completion
SulthanBathery Municipality in Wayanad District	5 TPD modern bio gas plant	Construction of plant is going on. Expected to be commissioned by August 2019.
Munnar and Devikulam Grama Panchayat in Idukki District	Modern Waste to Energy Plant	<ul style="list-style-type: none"> • Decided to award the work to M/s AG Dauters Waste Processing Pvt. Ltd. • Decision taken by State Level Advisory Committee to issue final notice to M/s AG Dauters Waste Processing Pvt. Ltd to take action as per the agreement executed and to submit applications with sufficient details to the concerned departments and also if they fails to adhere to directions and statutory provisions within thirty days,actin is to be taken to terminate concession agreement and tender the project to find a private partner for setting up processing plant. • Sanction was given to Munnar Grama Panchayath to clear the legacy waste from the

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

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

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

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

Action Taken

- A study has been conducted with the support of the World Bank and it has been recommended that there is a requirement of 6 regional sanitary landfill facility in the State.
- Based on the criteria for locating sanitary landfill sites, the study proposed 6 probable sites, one each for Kasaragod and Kannur District, Kozhikode and Wayanad district, Malappuram and Palakkad district, Thrissur and Ernakulum district, Kottayam, Idukki and Pathanamthitta 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.

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

Action Taken:

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

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

2.2.2 Compliance to Rule 11 (Secretary Urban Development)

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

2.2.3 Proposed Kerala Waste Management Authority

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

2.2.4 Project Green Grass in Forest Area

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

2.2.5 Tourism department has implemented the following three projects

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

2.2.6 Removal of garbage on road sides

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

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

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

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

2.2.9 Notice for Environmental Compensation issued to local bodies

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

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

Compliance of the Rules

2.2.1 Submission of annual report (Rule 17)

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

2.2.2 State Level Monitoring Committee (Rule 16)

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

2.2.3 Manufacturers of Plastic products

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

3.4 Registered recycling units

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

3.5 Registration to producers, brand owners

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

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

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

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

5. The main outcome of the meeting is as follows:

1. KSPCB submitted that the rag-picker model used by PROs for collection of value components of packaging wastes does not comprehensively address plastic wastes. Therefore, bulk of the plastic wastes must be addressed by local bodies through regular door-to-door waste collection and treatment. EPR for Producers/Importers/Brand-Owners (PIBO) shall primarily be a financial responsibility while the physical responsibility shall be that of Urban Local Bodies.
2. In order to implement the EPR financial responsibility of PIBOs, KSPCB proposed bringing all Producers, Brand Owners, and Importers under **consent and generating EPR fund from consent fee**. The EPR fund can be distributed to the local bodies for the strengthening of their collection system which they are to be submitted periodically the annual report. The Plastic Waste Management Rules, 2016 Rule 9.2 provides requires consent for PIB who introduce multi-layered plastic packaging into the market. Solid Waste Management Rules, 17.1 requires all manufacturers and brand-owners who introduce disposable packaging to provide financial assistance to local authorities. Consent is given under the Water Act and Air Act. PIB are bought under consent with the formation of negative Environmental impact by introduction of products, cause air and water pollution when improperly disposed off.
3. PIB may implement a Return Deposit Scheme for collection and recycling of bottles and containers. In this case, PIB shall be give consent fee credit for effective collection for recycling. Schemes for recycling of plastics are practical only when economically feasible.
4. PIB/PRO representatives mentioned that under PWM 2016 Rule 13.2, national brand-owners are already registered with CPCB. Therefore, it is burdensome for PIBs to take consent from KSPCB.
5. Producers as defined in E-waste Rules 2016, should implement EPR through Return-Deposit-Scheme or Buy-back scheme for e-waste so as to improve collection. Collection through own sales distribution network is preferred. When EPR plan uses PROs, Sufficient collection points must be provided for effective collection of e-waste.

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

b) Meeting with RELIANCE on 25-6-2019

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

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

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

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

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

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

d) Meeting with industrial units in the State

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

Annexure 12. The outcome of the meeting is as follows:

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

3.6 Technical Committee Report on Regulation of Single use plastic

The Government has constituted an Expert Committee vide Order No. G.O (Rt) No.134/2018/Envnt 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. A decision on the same is being taken by the Environment Department.

2.4 Status on compliance of Biomedical Waste Management Rules, 2016

2.4.1 General

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

2.4.2 Status of health care institutions in Kerala

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

2.4.3 Compliance of the Rules

Submission of annual report(Rule 24)

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

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

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2.4.4 State Level Advisory Committee for Biomedical Waste Management

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

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

2.4.5 Category-wise biomedical waste generated in Kerala

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

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

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

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

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

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

Existing facility

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

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

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

- c) IMA PEPS has developed the software for Bar-coding and has authorized four Regional Dealers to implement and to supply the colour coded bar-coded bags to all Health Care Institutions affiliated with IMAGE
- d) Kerala State Pollution Control Board can monitor the movement of all the bar-coded bags & containers from each Health Care Institution to the Bio-medical Waste Treatment Plant of IMAGE with the help of online link provided to them.
- e) IMAGE runs 53 GPS installed covered vehicles for collection of biomedical waste within 24 hours
- f) All these vehicles are monitored through GPS Satellite Monitoring using AVL View Software Application. The movement of waste collection vehicles is monitored through GPS system and the waste collection is monitored through the mobile application system
- g) Phasing out of plastic bags has been implemented
- h) The affiliation process for joining IMAGE by Healthcare establishments has been made online through www.imageima.org
- i) Online Continuous Stack Emission Monitoring System (CSEMS) are being installed in IMAGE plant as per the request of Pollution Control Board authorities for the measurement of pollutants within the stack emission. Monitoring within the stack presents a number of problems due to extreme of temperature, velocity of sample and pressure. CSEMS is used for continuous emissions monitoring in waste incinerators. Typically, concentrations of CO₂, CO, NO, NO₂, O₂, primary temperature and secondary temperatures are continuously measured.

2.4.7 Facilities proposed

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

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

A) CBMWTF facility at Kinalur, Kozhikode

- Integrated Consent to Establish having validity upto 31-12-2016 was issued to Sri. P. S. Deepthikumar, Director, Malabar Enviro Vision Private Limited, on 4-4-2014 for setting a Common Biomedical Waste Treatment Facility (Incinerator – 100kg/hr; autoclave -1000l; shredder 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 26th June 2015 for CBMWTF with two numbers of incinerators 200 and 300kg/hr.; two numbers of autoclave (2Nos) of 400kg/hr. each and a shredder of 700kg/hr.

- Due to public resistance to construction, several meetings were conducted at the level of District Collector and the level of Minister. In the meeting conducted by Hon'ble Excise Minister, relocating the location CBWMTF to a location within the KSIDC Industrial estate was suggested. The Board was directed to identify a new location for Common Biomedical Treatment plant within the Kinalur Industrial Estate.
- Based on the direction received from office of the District Collector on 21-5-2018, 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/08/204 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.

2.4.8 Authorization from the Board

7314 Health care institutions have obtained authorization from the Board.

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

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

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

2.5. E-Waste Management Rules, 2016

2.5.1 Submission of Annual Report (Rule 18)

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

2.5.2 Collection Centres

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

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

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

2.5.3 Registered Recycler

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

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

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

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

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

2.6. Hazardous Waste Management Rules, 2016

2.6.1 Submission of Annual Inventory

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

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

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

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

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

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

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

2.7 Batteries(Management & Handling) Rules.2001

2.7.1 Submission of annual report Rule 2001

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

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

(a) Manufacturers of Plastic products

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

Assembler

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

Importers

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

Bulk Consumers

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

Dealers

A total of 164 dealers are in Kerala. Three of them have submitted annual reports.

Recyclers

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

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

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

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

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

Other Projects

2.9.1 National Hydrology Project

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

2.9.2 Urban Regeneration and Integrated Water Transport System in Cochin

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

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

2.9.3 Akkulam Lake Rejuvenation

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

2.10 Ambient Air Quality (681/2018)

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

Sl. No.	Site Name	Industry	City	District	Status
a)	Adani Vizhinjam Port Private Limited	Power Plant	Vizhinjam	Ernakulum	Active
b)	Amrita Institute of Medical Sciences 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

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

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

2.10.2 Ambient air quality data map is available in the website

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

2.10.3 Ambient air quality data of public places

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

2.10.4 Ambient air quality stations:

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

Ambient air quality stations under National Ambient Air Quality Programme

Sl. No.	Location	District	
a)	COSMO Politian Hospital, Pattom	Thiruvananthapuram	NAMP
b)	SMV Govt. Model High School over bridge	Thiruvananthapuram	NAMP
c)	Filatex, Veli	Thiruvananthapuram	NAMP
d)	Kerala State Pollution Control Board, District Office, Plamood, Thiruvananthapuram	Thiruvananthapuram	NAMP
e)	Krishna Leela Tower Kadapakkada Kollam	Kollam	NAMP
f)	Chavra KMML Guest House, Chavara, Kollam	Kollam	NAMP
g)	Kerala State Pollution Control Board District Office Pathanamthitta	Pathanamthitta	NAMP
h)	D C Mills Pvt Ltd Pathirapilly Alappuzha	Alappuzha	NAMP
i)	Kerala State Pollution Control Board District Office Thondankualgara, Alappuzha	Alappuzha	NAMP
j)	Kerala State Pollution Control Board V-Publishers Building Kottayam	Kottayam	NAMP
k)	MRF Ltd, Vadavathoor, Kottayam	Kottayam	NAMP
l)	Ernakulum (South Over Bridge)	Ernakulum	NAMP
m)	Ernakulum MG Road	Ernakulum	NAMP
n)	Vytilla FCI-OEN Connecters Ernakulum	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)	Sulthan Bathery Near Grama Panchayath Office Wayanad	Wayanad	NAMP

Ambient air quality stations under State Ambient Air Quality Programme

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

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

2.10.5 Water and Air quality directory

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

2.10.6 Air quality seminar

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

2.10.7 Electric vehicle policy

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

2.10.7 Proposal for strengthening of the air quality stations

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

Draft format for status of CAAQMS / NAMP Monitoring station under SPCB's /PCC's –reg.									
Sl. No.	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

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				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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2.11 Industrially Polluted clusters (OA 1038 of 2018)

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

2.12 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 Rutilites 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

2.13 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.

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