



सत्यमेव जयते

**PROCEEDINGS OF THE ADMINISTRATOR, STATE
ENVIRONMENT IMPACT ASSESSMENT AUTHORITY,
THIRUVANANTHAPURAM
(Present. SABITHA . S)**

Subj: SEIAA Environmental Clearance for the proposed Kochi Waste to Energy Project, at Brahmapuram, Ernakulam submitted by M/S. GJ Eco power at survey Nos. 30/2pt, 30/3, 30/4, 30/5, 30/6, 30/7, 30/8pt, 30/8 at Kakkanad Village, Kunnathumadu Taluk, Ernakulam District – granted - Orders issued.

STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY

No. 236/VA/2019/SEIAA

dated, Thiruvananthapuram, 05.10.2019

- Ref:**
1. O.M.No.L-11011/47/2011-1AII(M) dated 24.06.2013 of the Ministry of Environment & Forests, Government of India.
 2. Standard ToR issued by SEIAA vide order No.1183/A1/2018/SEIAA dated 16.2.2019.
 3. Application received on 08.07.2019 from M/S. GJ Eco power Ltd.
 4. Minutes of the 100th meeting of SEAC held on 11th & 12th July 2019
 5. Minutes of the 101th meeting of SEAC held on 1st & 2nd August 2019.
 6. Minutes of the 102nd meeting of SEAC held on 26th & 27th August 2019
 7. Minutes of the 103rd SEAC held on 17th & 18th September 2019
 8. Minutes of the 97th Meeting of SEIAA held on 24.9.2019
 9. G.O(Rt.) No.29/2019/Envr dated.12.04.2019

ENVIRONMENTAL CLEARANCE NO. 50/2019

Shri. James Adai, Director, M/S. GJ Eco Power Pvt.Ltd, Kakkanad, Kochi, Kerala 682030 has submitted an application for Environmental Clearance in SEIAA for the proposed Kochi Waste to Energy Project, for common Municipal Solid Waste Management facility (CMSWMF) at Kakkanad, Ernakulam at survey

Nos. 30/2 pt, 30/3, 30/4, 30/5, 30/6, 30/7, 30/8pt, 30/8 as per the paper read as 3rd above. The project involves the conversion of Municipal solid waste (MSW) into electricity. As per the project proponent, the Kochi Municipal Corporation (KMC) will deliver the MSW to the facility on a daily basis. M/S GJ Eco power pvt. Ltd will process the MSW to convert it into Refused Derived Fuel (RDF) which will be used to produce syngas in the gasification process. The Syngas will be utilized as a fuel to produce steam in the boiler to generate electricity. The plant is designed for a capacity to process 500 metric tonnes of MSW per day. The proposed plant will have a gross installed capacity of 12.65 MW. The project located at survey Nos. 30/2 pt, 30/3, 30/4, 30/5, 30/6, 30/7, 30/8pt, 30/8. The bounded latitudes (North) is from 1104738.85 to 1105058.68 & bounded longitudes (East) is from 649764.48 to 650144.76

- (2) An application for ToR had been submitted by M/S.GJ Eco power Ltd for the preparation of an Environmental Impact Assessment report in respect of a project being a mega project and standard ToR has been issued vide order read as 2nd above, as per the suggestions of 91st SEAC and the decision in 88th meeting of SEIAA. Public hearing was conducted on 10.6.2019 and the proponent submitted Environment Impact Assessment (EIA)/EMP Report based on the approved ToR/Suggestions made by SEIAA on 08.07.2019.
- (3) The proposal was placed in 100th SEAC meeting held on 11th & 12th July 2019 and committee decided to invite the proponent for presentation. The proponent made presentation in the 101th SEAC meeting on 1st August 2019 and the committee decided to conduct a field inspection. A field inspection was conducted on 16.08.2019 by a Subcommittee of SEAC and the committee submitted recommendations as follows:-

(4) Recommendations

Based on the EIA Report, Site Visit and Discussions had at the Site with representatives of project proponent, the following suggestion/ recommendations are drawn by the Sub Committee.

Waste Processing

1. Ensure proper estimation of quantity of Legacy Waste clearly by conducting Bore Hole observation /other means and based on that study, decide on the availability of solid waste of 500 TPD. Based on this, if required, possibility of sourcing of waste from other Urban Local Bodies should also be considered.
2. Ensure that Bio mining of the Legacy waste is done with environmental safeguards so that it is done as per the Guidelines / Rules of the Central and State Governments.
3. Provide sufficient environmental safeguards for avoiding release of Syngas to the environment as there is no Synthesis Gas Storage Facility at site and no gas Cleaning Facility. As per the EIA report, the proposal is to ensure synchronization of the Gasifier with Heat Recovery Boiler and Generator for power generation. At the time of system maintenance/breakdown, it should be ensured that , necessary precautionary facilities are provided for safe storage of incoming waste of 500 TPD and ensure that it is stored safely for that period.
4. Provide details of additional Fuel used in the Gasifier as it is not specified in the EIA report and it is an essential factor for checking suitability/adequacy of Air pollution Control Systems proposed.

Pollution Control

5. Provide proper Pollution Control Facilities for control of Odour gas from waste unloading and pre-processing areas (shredding and segregation) with proper Bio filter design should also include proper ducting of all areas, providing negative pressure and use of proven filter media considering the Climatic conditions of Kerala for avoiding spread of odour in the surrounding areas. This is an important component, as wood chips based Bio filter System mentioned in the EIA report is not sufficient for the purpose.
6. Provide sufficient Bio Drying Shed area (20 bays of 50 m by 8 m size, is quite inadequate as the floor area is only about 8000 sq m area,) required for 18 to 28 days of bio drying and it should be designed by incorporating provisions for avoiding dumping of waste outside the shed and for avoiding environmental issues from this activity or from the Bio drying beds at the time of rotation and mixing of waste.

7. Provide double Stage Gas Cleaning Facilities for the Dry Scrubber and Bag House for the two units of Gasifiers, for ensuring efficient /trouble free operation of emission control facilities and for ensuring emission quality to the level of EU standards as there is no specific Indian standards for Gasification Technology. It is an essential requirement for ensuring sustainable operation of the plant in an environmentally friendly manner.

Leachate Management

8. Provide sufficient capacity of Leachate treatment plant at the site preferably 130 KLD (instead of 30 KLD given in EIA Report) in the peak and on average 100 KLD, considering leachate from all areas including Sanitary Landfill facility. Consider treatment of Sewage in a separate STP or combining it with Leachate Treatment Plant for the additional sewage quantity of 25 KLD.
9. Provide scientific pre-treatment of Leachate with Primary Treatment comprising of Bar Screen, Anaerobic Treatment comprising of UASB/ Fixed Bed/ Flocculation, sedimentation, Aerobic treatment comprising of ASP with MBBR Type/ other type, followed by Tertiary treatment with PSF, ACF and Microbial Soil Based Reed Bed (MSR) System. The treatment method given in the EIA report is Microbial Soil Based Reed Bed (MSR) System alone for treatment of Leachate and that is quite inadequate to treat leachate and reuse.
10. Rectify the Fig 2.2, of EIA report, it shows that storm water is coming to reed bed. The reed bed actually stands alone and it is intended for Leachate Treatment as per the EIA Report but the position of Reed Bed shown in the figure is away requiring pumping of the polluted water. This component should be linked with ETP and position of Reed Bed is to be clearly specified.
11. Provide sufficient facilities for reuse of treated Leachate for Boiler cooling/ reactor cooling/ floor washing/ vehicle washing /gardening as the treated water is to be fully utilised for reuse of treated leachate as per the Government order dated 9.8.2018 of the Local Self Government Department and considering the prevailing environmental safeguards.

Sanitary Landfill Facility

12. Provide Sanitary Landfill Facility as specified in the MSW Rules 2016 for the disposal of pre-processing and post processing rejects including ash from the 500 TPD Plant. Provide sufficient area for sanitary land fill considering all these components as it is a major environmental safeguard for a Waste to Energy Plant, as in the EIA report, it is given as at 7 TPD will be sent to the Sanitary Landfill.
13. Provide sufficient facility for utilising Fly Ash from the unit for Brick Manufacture as no details of that are provided in the EIA report. This is one major component in a Waste to Energy plant for ensuring sustainable environment friendly operation and it is a statutory requirement as per MSW Rules.

Land Environment

14. Provide quantity of earth requirement for filling up of land to a level of 3.00 m above MSL and provide details of land from where it is proposed to transport the soil/ red earth for evaluating that component also.
15. Consider proper geological investigation and ensure structural safety in the design of Structures proposed to be built in the area as there is challenge in the area, in the light of structural failure of existing Compost Plant.

Biodiversity Related Matters

16. Modify the Biodiversity component related to project site as the fauna list seems to be not complete especially while considering the diverse ecosystems in the area, better to refer People's Biodiversity Register.
17. Modify / relook on the part that there is no impact or mitigation measures due to the reclamation of the part of the wetland. There could be impact on the dependent community, if there is dependence. There could be impact on water availability. There could be impact on the fishes and other aquatic fauna. Based on the CWRDM studies, necessary amendment has to be made in the EIA.
18. Modify the background information in the EIA Report as most of the background information is on the Ernakulam district not within the 10 km radius.
19. Recheck and correct the following background information given in the EIA Report.

- Table 1-3, the 8th one says that the area is not flood plain, which is not correct. The 10th item says the site is not wetland. Actually, it is and that is why there is a decision for conversion.
 - Table 3.1, 3rd item is left blank. This needs to be filled up. Items 8-11 need to be revisited and corrected/elaborated.
 - Chapter 3.5.3.1 Everything except Mangalavanam.
 - In 3.5.3.3 The agricultural resources say everything except rice cultivation.
 - 3.5.3.4 No details of fishes in the wetlands and lakes.
 - Table 3-2 LULC and Figure 3-3 are contradictory. As per Figure, agriculture and aquaculture form 64%. In the Table, it is different.
 - Table 3.3- Landuse – Landcover, better cite the reference if the classification to wasteland waterlogged/wasteland scrub use is correct.
 - In 3.10.2, the method seems to be wrong. It says collection of information from the discussions with local people. This cannot be primary data. No method given for fishes.
20. Modify the list of Fauna, as fauna list seems to be not complete especially while considering the diverse ecosystems in the area, it is better refer People's Biodiversity Register.

CER Component

21. Provide revised budget for CER taking into account the environmental changes in the project cost due to the changes effected after the preparation of EIA report and the changes suggested in this report. The project related activities cannot be considered as CER activities. Detailed break up of CER activities should be submitted. Due consideration should be given for implementing activities which are beneficial to the people of Vadavukode- Puthenkurisu Panchayat where the site is located. Apprehensions were raised by different people that the project will promote collection and processing of unsegregated waste. It is suggested that CER funds should also be utilised for promoting decentralised segregated waste collection and management practices in Kochi city and surrounding local bodies.

Environmental Monitoring

22. Ensure effective monitoring mechanism since the project is the first of its kind in Kerala, a more effective monitoring mechanism is a primary requirement for making sure that the specific conditions insisted in the Environmental Clearance are complied with.
 23. Ensure constitution of a monitoring committee as suggested in the Public hearing and the proponent has agreed to the suggestion (as reported in the EA report).
 24. Action for ensuring necessary monitoring data on the quality of air and water and leachate is collected more frequently, preferably once in a month, than suggested in the EIA report especially in the first year of operation. As suggested in the NGT order on Okhla Waste to Energy Plant, the proposed project should have an online monitoring system and as suggested in the EIA report and it should be linked to Central Pollution Control Board and State Pollution Control Board.
 25. Make necessary corrections/amendments in the EIA Report as per the observations / recommendations given in the report for making the commitments compliable and accountable.
- (5) File was placed before 102nd SEAC held on 26th & 27th August 2019 for appraisal. The committee decided to intimate the proponent to modify/ add necessary corrections/ amendments in the EIA report in line with the additions / modifications suggested by the sub committee of SEAC for making the EIA Report full and for ensuring commitments compliable and accountable as it is a project intended for solving the issues of solid waste management in the State.
- (6) Accordingly direction had been given to Director, M/SGJ Eco Power on 2.9.2019.
- (7) The proponent submitted the replies for the observations made by the appraisal committee and agreed to incorporate the same in final EIA report and also furnished an amended clarification Report.

(8) The proposal was placed in the 103rd meeting of SEAC held on 17th- 18th September 2019 and SEAC decided to recommend to SEIAA for issuance of EC for the waste to energy project with following specific conditions for making the project Eco friendly and operationally sustainable.

Specific conditions

1. Ensure sufficient plinth area for covered waste storage facility /shed under roof with odour control and leachate collection facility, during the regular operation of the Plant as well as at the time of maintenance/breakdown. The covered area proposed in the project is only 8000 sq. m which is insufficient as mentioned by the project proponent in the clarification furnished by them. It should also be ensured that necessary precautionary facilities are provided for safe storage of incoming waste of 500 TPD and to ensure that it is stored safely for further processing without causing environmental issues.
2. Provide proper odour extraction and odour control facilities, along with the proposed Wood Chips based Bio filter odour control facilities for the waste unloading area, waste storage area and pre-processing areas (shredding and segregation) and improve it with proven Bio Filter System with other media, if required, with technical advice of NIIST- CSIR, as the proposed odour control system is inadequate for the climatic conditions of Kerala and for ensuring avoidance of spread of bad odour in the surrounding areas.
3. Provide necessary emission control/emission gas cleaning facilities and ambient air quality monitoring facilities in the plant as specified in the clarifications/commitments submitted by the proponent. It should be established / modified, if necessary, so as to ensure compliance with the standards specified in the SWM Rules, 2016, EU standards and the conditions specified by the KSPCB from time to time, for ensuring eco-friendly operation of the Plant.
4. Ensure a minimum of 130 KLD capacity for leachate treatment plant considering probable quantities of leachate generation from all sources, such as waste unloading area, waste storage area, waste handling area, pre-processing area, bio drying beds, vehicle washing area and sanitary landfill facility, as the use of Microbial Soil Based Reed Bed (MSR) System proposed in the project alone for treatment of Leachate is inadequate to treat leachate and to ensure reuse /recycle the treated leachate as stipulated by the Local Self Government Department, Govt. of Kerala in their order dated 9.8.2018.
5. Provide sufficient facilities for ensuring reuse/recycle of treated water in the Plant for boiler cooling/ reactor cooling/ floor washing/ vehicle washing /gardening etc. , as the treated water is to be fully utilised as stipulated by the Local Self Government Department, Govt. of

Kerala vide order dated 9.8.2018 and for minimising use of fresh water. It is an essential component for solving water pollution problems in the area and to facilitate anticipated environmental safeguards in the site.

6. Ensure sanitary landfill facility of adequate size for the concession period and beyond for a period of at least 20 years as specified in the SWM Rules, 2016. Also provide resource recovery facility aiming to reduce the use of sanitary landfill facility to the minimum, as the estimated load of 7 TPD given in the project report is quite inadequate for a 500 TPD WTE Plant for the disposal of pre-processing and post- processing rejects including unutilised part of fly ash and bottom ash.
7. The suggestions of CWRDM on water availability of the area should be implemented for effective water management.
8. Details obtained from the People's Biodiversity Register of the Local Self Government should be incorporated in the Biodiversity Management Plan.
9. Constitute a Local Level Monitoring Committee, as suggested in the Public Hearing, by including elected representatives of concerned Local Bodies in the area, KSPCB, Suchitwa Mission, and the District Administration.

(9) Subsequently the proposal placed in 97th SEIAA held on 24th September 2019. Authority decided to issue Environmental Clearance for 7 years subject to the following specific conditions.

Specific conditions.

1. *Ensure sufficient plinth area for covered waste storage facility /shed under roof with odour control and leachate collection facility, during the regular operation of the Plant as well as at the time of maintenance/breakdown. The covered area proposed in the project is only 8000 sq. m which is insufficient as mentioned by the project proponent in the clarification furnished by them. It should also be ensured that necessary precautionary facilities are provided for safe storage of incoming waste of 500 TPD and to ensure that it is stored safely for further processing without causing environmental issues.*
2. *Provide proper odour extraction and odour control facilities, along with the proposed Wood Chips based Bio filter odour control facilities for the waste unloading area, waste storage area and pre-processing areas (shredding and segregation) and improve it with proven Bio Filter System with other media, if required, with technical advice of NIIST- CSIR, as the proposed odour control*

system is inadequate for the climatic conditions of Kerala and for ensuring avoidance of spread of bad odour in the surrounding areas.

3. Provide necessary emission control/emission gas cleaning facilities and ambient air quality monitoring facilities in the plant as specified in the clarifications/commitments submitted by the proponent. It should be established / modified, if necessary, so as to ensure compliance with the standards specified in the SWM Rules, 2016, EU standards and the conditions specified by the KSPCB from time to time, for ensuring eco-friendly operation of the Plant.
4. Ensure a minimum of 130 KLD capacity for leachate treatment plant considering probable quantities of leachate generation from all sources, such as waste unloading area, waste storage area, waste handling area, pre-processing area, bio drying beds, vehicle washing area and sanitary landfill facility, as the use of Microbial Soil Based Reed Bed (MSR) System proposed in the project alone for treatment of Leachate is inadequate to treat leachate and to ensure reuse /recycle the treated leachate as stipulated by the Local Self Government Department , Govt. of Kerala in their order dated 9.8.2018.
5. Provide sufficient facilities for ensuring reuse/recycle of treated water in the Plant for boiler cooling/ reactor cooling/ floor washing/ vehicle washing /gardening etc. , as the treated water is to be fully utilised as stipulated by the Local Self Government Department, Govt. of Kerala vide order dated 9.8.2018 and for minimising use of fresh water. It is an essential component for solving water pollution problems in the area and to facilitate anticipated environmental safeguards in the site.
6. Ensure sanitary landfill facility of adequate size for the concession period and beyond for a period of at least 20 years as specified in the SWM Rules, 2016. Also provide resource recovery facility aiming to reduce the use of sanitary landfill facility to the minimum, as the estimated load of 7 TPD given in the project report is quite inadequate for a 500 TPD WTE Plant for the disposal of pre-processing and post- processing rejects including unutilised part of fly ash and bottom ash.
7. The suggestions of CWRDM on water availability of the area should be implemented for effective water management.
8. Details obtained from the People's Biodiversity Register of the Local Self Government should be incorporated in the Biodiversity Management Plan.

9. *Constitute a Local Level Monitoring Committee, as suggested in the Public Hearing, by including elected representatives of concerned Local Bodies in the area, KSPCB, Suchitwa Mission, and the District Administration.*
 10. *The proponent shall follow the guidelines of Municipal Solid Waste (Management & Handling) Rules 2000 of MoEF.*
 11. *The proponent shall prepare a detailed Environment Management Plan as per the approved final EIA report for the timely completion and successful operation of "Kochi waste to energy project", Brahmapuram.*
 12. *Activities relating to Corporate Environmental Responsibilities (2% of total project cost) shall be carried out leading to protection and promotion of Environment in the project region as per OM F.No.22-65/2017-IA-III dt.01.05.2018 of MoEF & CC in consultation with the District Collector, Ernakulam.*
- (10) In this circumstances Environmental Clearance for the proposed Kochi Waste to Energy Project, submitted by M/S.GJ Eco power Ltd at survey nos. 30/2 pt, 30/3, 30/4, 30/5, 30/6, 30/7, 30/8pt, 30/8 at Kakkanad Village, Kunnathunad Taluk, Ernakulam District is hereby accorded for 7 years subject to the specific conditions in para 9 of this order.
- (11) The Clearance issued will also be subject to full and effective implementation of all the undertakings given in the application form, mitigation measures as assured in the Environment Management Plan/ EIA report as submitted will be deemed to be part of this proceedings as conditions as undertaken by the proponent, as if incorporated herein.
- (12) Validity of the Environmental Clearance will be 7 years from the date of this clearance, subject to inspection by State Environment Impact Assessment Authority on annual basis and compliance of the conditions, subject to earlier review of Environmental Clearance in case of violation or non-compliance of conditions or genuine complaints from residents within the scrutiny area of the project.
- (13) Compliance of the conditions herein will be monitored by the State Environment Impact Assessment Authority or its authorised offices and also by the Regional Office of the Ministry of Environment & Forests, Govt. of India, Bangalore.

- i. Necessary assistance for entry and inspection should be provided by the project proponent and those who are engaged or entrusted by him to the staff for inspection or monitoring.
- ii. Instances of violation if any shall be reported to the District Collector, Ernakulam .
- iii. The given address for correspondence with the authorised signatory of the project is Shri. James Adai, Director, M/S. GJ Eco Power Pvt.Ltd, Door No.X/63, Sarayu complex, Seaport - Airport Road, Kakkanad, Kochi, Kerala -682030.


Sabitha.S
Administrator, SEIAA

To,

Shri. James Adai,
Director,
M/S. GJ Eco Power Pvt.Ltd,
Door No.X/63, Sarayu complex,
Seaport - Airport Road,
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Kerala -682030

Copy to:

1. MoEF Regional Office, Southern Zone, Kendriya Sadan, 4th Floor, E&F Wing, II Block, Koramangala, Bangalore-560034.
2. The Principal Secretary to Government, Environment Department, Government of Kerala.
3. District Collector, Ernakulam
4. Director, Mining & Geology, Thiruvananthapuram -4.
5. The Member Secretary, Kerala State Pollution Control Board, Thiruvananthapuram
6. Tahsildhar, Kunnathunadu Taluk, Ernakulam
7. Secretary, Cochi Corporation
8. Secretary, Vadakkodu Puthencruez panchayat, Ernakulam
9. Village Officer, Kakkanad Village, Ernakulam
10. Chairman, SEIAA.
- ✓ 11. Website.
12. S/f
13. O/c