

Status Report of Bio mining of Legacy Waste at Kureepuzha (OA No: 439/2013 and OA No 456/2013)

Kollam Municipal Corporation has plotted tender for Bio-mining of the Legacy waste at Kureepuzha, Kollam. On 27/01/2021, technical bid was opened; three bidders participated. i.e., Zigma global environ solutions Pvt ltd., SIDCO, Socio Economic Unit Foundation. Based on the evaluation and report of the technical committee it was found that only one bidder was technically qualified. As per the PWD manual, if only one bidder is found eligible after technical evaluation then it is considered as a single bid; so, it has to be retendered. Before signing the Bio-mining agreement, Council has given approval to assess the actual quantity of Legacy Waste dumped in Kureepuzha with the technical support of NIT Calicut. On 11/02/2021 Kollam corporation has retendered the project. The Technical bid was opened on 25/02/2021; three bidders participated Viz, Zigma Global Environ solutions pvt ltd, Geethanjali environ solutions pvt ltd and socio-economic unit foundation were participated. On 01/03/2021, Technical Evaluation committee was held; the technical committee members evaluated the documents and the bidders had done a presentation before the committee members regarding their methodology. Based on the technical committee evaluation only one bidder i.e., (Zigma Global Environ Solutions Pvt Ltd) found technically qualified for the next stage. On 04/03/2021 financial bid of qualified bidder ie, Zigma Global Enviro solutions Pvt ltd was opened. Meanwhile, on 02/03/2021, a team from NIT Calicut has conducted the drone-based survey for assessing the entire quantity of legacy waste at Kureepuzha. As the quoted rate for the Bio-mining process by the lowest bidder is higher than the scheduled rate; a Negotiation meeting (17/3/2021) was called for by Kollam Municipal Corporation. Despite the negotiation, the negotiated rate is higher than the scheduled rate. On 22/3/21, based on the approval from council, this matter has been sent to Government for approval. In between, the survey report has been submitted by NIT Calicut and the total quantity of legacy waste at an extend of 5.5 acres is 104906m³ found accordingly.

On 7/6/2021, a letter from Government has received stating the approval of rate(1130/m³) negotiated by Zigma Global Environ Solutions Pvt Ltd and this matter was approved by the Council on 17/6/2021. Letter of acceptance has been issued on 28/6/2021 and the agreement was signed on 10/7/2021. Work order and site handing over has been done on 12/7/2021.

On 2/8/2021, as a first step of starting of work, nearly 8 acres of vegetative growth over the legacy waste dump site area and its boundaries were cleared and debris were removed for easy conveyance of machineries and setting up of equipments. On 3/08/2021, the contractor has conducted a drone based survey in the presence of KMC officials to ascertain the quantity assessed by NIT Calicut. On 14/08/2021, Excavator for windrowing the legacy waste reached the site. On 17/08/2021, entire area was cleared and readied for placing the heavy duty machineries and other equipments. A meeting was conducted on 17/08/2021 in the presence of Mayor Kollam Corporation to evaluate the progress of the project, in which Mayor has asked the contractor to finish the work as soon as possible regardless of the completion period stated in the bid. The contractor has assured that they will complete the entire process before the stipulated time schedule, unless the monsoon arrives unexpectedly. Instruments for environmental baseline study such as ambient air quality monitoring, noise pollution and water quality testing equipment has reached at the site on 28/8/2021 and samples collected for baseline environmental study. On 10/11/2021, Chief Technical Examiner visited the site and directed the officials to conduct a total station survey to check the accuracy of the quantity. Based on this, a total station survey was conducted on 22/11/2021. CTE approval will be provided based on this survey. Authorization for Bio-mining as per Solid Waste Management Rule 2016 has been received from Kerala State Pollution Control Board on 06-12-2021.

Installation of the bio-mining plant infrastructure has been completed and set for doing a bench test shortly. 80% of the Lake side fencing has been completed and the remaining work gets delayed due to continuous rains. Application for a new transformer of 99Kva is submitted to KSEB which is under process. It is expected to start the windrowing (by 15th December 2021) after getting the initial level approval from CTE. Due to the recent unexpected rains and high moisture content of the legacy waste area, the project is getting delayed. Kollam Corporation guarantees that we will provide all support needed for the completion of the project by following the orders from the Hon'ble NGT.

Progress of the Project with photographs



Removal of Vegetative Cover from the site



Arrival of Excavator for windrowing the legacy waste at the site



Instrument for baseline environmental study at the site.

Before



Drone image of Kureepuzha dumpsite before removing vegetative cover

After



Drone image of Kureepuzha dumpsite after removing vegetative cover







STATUS OF SOLID WASTE MANAGEMENT IN KOLLAM CORPORATION

As per SWM Rule 22(1),(3),(7) & (8), Kollam Municipal Corporation (KMC) has taken imperative steps to facilitate door to door collection of non-biodegradable waste, segregation of bio-degradable and non-biodegradable waste at source, conversion of biodegradable waste into compost at source itself and proper recycle or utilisation of the non-biodegradable waste for commercial purposes.

NON-DEGRADABLE WASTE MANAGEMENT:

- **Facilities provided by Kollam Corporation for the effective management of non-degradable waste are as follows:**

Non-biodegradable waste collected from household and individual establishments by **Haritha Karma Sena (HKS)**, an initiative of Govt. of Kerala and LSGD. Currently 213 HKS members work across 53 wards of KMC. Number of members working per health circle ranges from 16- 24. Most of the HKS members follow a monthly schedule for visit to households, although the daily working 9 Am – 5 Pm. Households are visited once in a month and Commercial establishments are visited twice in a month. User fee collected is deposited in bank account (Micro enterprise group account) monthly, from which income is taken by HKS.

Till date, HKS status shows that they been able to visit 83% of households and 70% of commercial establishment in KMC. A cluster book is maintained by HKS in which the collection can be recorded. The households also have given a consumer card for their record. Micro-Enterprises groups of HKS have been registered under Kudumbasree. It can also serve as a point of sale for eco-friendly products. But it will not sustain for a long run as the quantity of NBW is reducing by the introduction of new Government policies. Hence other income generating activities is also planning which include biodegradable waste management, compost/fertilizer repack and selling, cloth/paper bag production, Nursery/ farming etc. must be carried out. Haritha Karma Sena is trained to repair idle biogas plants in households, there will be a separate fee for it. Bio composter bins as well as the composting medium at households are being distributed by HKS.

The collected non-biodegradable waste (NBW) is stored at the collection point i.e.: material collection facilities setup at each zone. Around 192 mini MCF is being installed in Kollam Corporation. Then it is transported to material recovery facilities at Anchalumood which is having a shredding machine and bailing machine. Shredding Unit and bailing unit run by HKS to segregate,

bale and shred non-biodegradable waste. Recyclable waste were segregated and sold to Clean Kerala Company, the agency under the State Government entrusted with the responsibility. Non-recyclable plastics were shredded in MRF and are used for LSGI's various road tarring works. Also scrap and other metals are sold out to local scrap dealers. Furthermore, 1 RRF (Resource Recovery Facility) is established which has a floor area of 5000sqft to facilitate the separation and preparation of recyclable materials for marketing to end-user manufacturers. Shredding machine, bailing machine, plastic washing and drying machines were purchased for the effective operation of RRF. Due to public protest, the functioning of RRF is stalled.

Till date, 38.31 of Bailed and non-bailed plastics were sold out to Clean Kerala Company for recycling and 28.3 Ton of scrap were sold out to local scrap dealers. Selling of non-degradable waste for recycling will create an extra revenue to HKS in addition to user-fee. After the introduction of Harita Karma Sena an amount of Rs.1,00,52,216 has been generated to KMC.

As per instruction given from Suchitwa Mission, non-biodegradable waste other than plastic waste like cloth, chappals, bags, glass wastes, E-waste etc. being collected as per calendar from 55 wards. Based on this, 16 ton of glass waste was collected via collection point and sent to Clean Kerala Company for recycling. Likewise as per calendar, other non-biodegradable waste will be collected throughout the year.

20Ton of Legacy waste which was illegally dumped on various points of Kollam Corporation has been collected and diverted to Clean Kerala Company for safe disposal. Night squad were constituted for continuously monitoring illegal waste dumping and spot fines were induced for the defaulters. Plastic squad of KMC has served notice to 135 numbers of shops for using banned plastics.

BIO-DEGRADABLE WASTE MANAGEMENT

Kollam Corporation has provided bio-degradable waste management facilities in source level like bio digesters, biogas plant, bio compost bins, pipe compost, ring compost) for treatment of biodegradable waste will be ensured at each household and commercial establishment. KMC has brought out provisions for availing subsidised bio compost bins for achieving 100% conversion of biodegradable waste at source itself. In community level Kollam Corporation has provided de-centralised treatment systems Viz, aerobic composting units, community based bio gas plants. An integrated solid waste

management with a waste to energy plant of 200Tpd capacity was proposed by Government of Kerala at Kureepuzha.

The details of the Solid Management Facilities provided by Kollam Corporation (Subsidised) as well as procured by Individuals are furnished in the table below

BIODEGRADABLE WASTE MANAGEMENT		
Treatment Facilities	No's	Quantity (TPD)
Household Level		
Biogas Plants(HH)	2100	4.2
Pipe Compost(HH)	1750	2.6
Bio-composter(HH)	17115	25.67
Vermicomposting(HH)	189	0.2
Ring compost(HH)	750	1.2
Compost pit(HH)	7025	10.50
Bucket compost(HH)	3200	4.8
Community Level(Decentralized Facility)		
Aerobic Composting Unit	27	1.30
Biogas Plants(Community Level)	13	5.60
Informal Waste Collectors (Hotels and Chicken Stall)		25.0
Total Quantity of Bio- degradable waste treated		108TPD

The total quantity of waste generated in Kollam Corporation is 112.45TPD. Of this 48.4 TPD is processed at source with the facilities provided by Kollam Corporation (Subsidized) as well as procured by Individuals; about 6.9 TPD is processed at community level(decentralized facility) ; this facility is utilized by households (especially in slum areas) who are not having enough space for installation of source level treatment facilities. 25TPD of chicken waste and hotel waste were collected by informal waste collectors. Tender procedure has started to select authorised agencies to

collect, transport and treat chicken waste at rendering plant as per SWM rule. Hence, total 108TPD of biodegradable waste is treated out of 123.39 of solid waste.

An amount of Rs.8, 84,46,250/- has been allotted to Kollam Corporation for waste management projects from Swatch Bharat Mission (Urban). In the financial year 2021-22 for increasing the source level treatment of bio-degradable waste, Kollam Corporation has allocated fund of Rs.4,95,00,000/- for 27500 bio composter in household level, biogas plants(2200no:s)- Rs.2,31,00,000/-; Ring compost (2750no's- BPL families) Rs.6875000/-. Now, the project is being in the stage of implementation.

At Community level, 27 Aerobic composting units, 192 Mini-Material Collection Facilities, one Resource recovery Facility of 5000 Sq. ft, 13 community based biogas plants were installed. Out of 27500 Bio composter 17115 no's were distributed; remaining 10385 no's will be distributed within March 2022. After the completion of the project out of 88332 households, 42554 households will be benefitted with the existing source level treatment facilities and decentralised treatment systems. For proper waste management, we had planned projects for filling the Gap of 45778 households. For that an action plan was prepared as part of implementation of solid waste management rule 2016 based on Hon'ble NGT order (OA 606/2018). The prepared action plan was approved by the Council as per resolution no 1, on 08/10/2021 .and the copy of the action plan is attached herewith.

Kollam Corporation has started a project to conserve the Ashtamudi Lake (Ramsar site) and restore its habitats. Various workshops were organized by Kollam Corporation with the participation of 12 Panchayats including people from various fields such as stakeholders, representatives of political parties, NCC and NSS volunteers, Volunteers from various schools and colleges, environmental experts, fishermen communities etc. On 2/10/2021, Kollam Corporation has carried out a massive 7 day clean-up drive with the participation of about 2000 people. Clean-up operations were carried out at 17 points of Ashtamudi Lake and in addition, the canals flowing into the lake were also cleaned. The Kollam Corporation has envisaged project of 1.25 Crore for the protection and conservation of Ashtamudi Lake. The project include setting up of STP at vulnerable points where canals flows into lake, beautification of Ashtamudi Lake, shoreline protection, floating garden, planting of mangroves etc. It is decided to constitute Ramsar site protection and conservation authority. A motto was introduced "*Jeevanaanu Astamudi, Jeevikkanam Astamudi*" meaning Ashtamudi lake the life of Kollam must cherish.

Kollam Corporation will become a Zero Waste City with the implementation of the said projects and the planned project like integrated solid waste processing facility like waste to energy plant(as per Rule 22(1),(3),(7) and (8) of SWM Rule,2016. With the advent of integrated solid waste management – Waste to Energy plant, Kollam Corporation is aiming to achieve the 100% management of Municipal Solid Waste. For this, Government of Kerala has selected Kureepuzha in Kollam Corporation to setup a Waste to Energy plant of 200Tpd with a Bio-Methanisation plant, Refuse Derived Fuel. For that 7.05 acres of land in Kureepuzha were leased to KSIDC (nodal agency) and Kollam Corporation has signed the concession agreement for the same. Status of Waste to Energy Plant is given below:

STATUS OF WASTE TO ENERGY PROJECT

KSIDC has tendered for Waste to Energy Project (200tpd capacity) and on 3rd bidding process (26 Sep 2019), received bid from consortium of M/s Zonta Infratech P Ltd, M/s Zonta Bauer Pvt Ltd, M/s Ningbo Kaseen Ecology Technology Co Ltd, M/s Bauer GmbH. Financial bid of the Technically qualified bidder was opened and after 2 rounds of Financial Negotiation done. Concession Agreement signed on 14/10/2020 with M/s M/s Venad Waste Management Pvt Ltd, the SPV incorporated. DPR for the project approved by the Technical Committee on 30th November 2020. Processing capacity of the plant is 200 tonnes per day. Bio- degradable fraction in the MSW will be processed using bio-methanation technology and bio-gas thus generated will be sold to oil marketing companies. Inorganic fraction will be converted into RDF form and transported to nearest WtE plant.

The Concessionaire needs to obtain necessary statutory clearances prior to the construction of the plant. The Concessionaire has submitted the application to District Pollution Control Board, Department of Town and Country planning and Department of Factories and Boilers, through K-Swift portal. The District Pollution Control Board has advised to get NOC from Kerala Coastal Zone Management Authority (KCZMA) and State Wetland Authority, since the site is near to Ashtamudi lake.

The application was submitted to KCZMA through Kollam Corporation and on scrutiny of the proposed plan of the project, KCZMA has stated that the project location is at a distance of 100m from the HTL of the Ashtamudi lake which is outside CRZ area and 100 m away from the wetland

boundary of the Ramsar wetland , prior approval from KCZMA is not required and that the Kollam Corporation can issue NOC themselves, subject to the satisfaction of general conditions to be followed for wetland and other relevant parameters. The application will be submitted to PCB within this week. The rest of the statutory clearances will be processed after obtaining CTE from Pollution Control Board.




Secretary

Kollam Municipal Corporation