

## Solid Waste Management in Kochi: No Solution to the Age-old Problem?



Image source: The Hindu

### Lt Col Anil Raj

On March 7, 2020, *The Hindu* newspaper reported that the State Government had issued an order entrusting the Local Self Government Department with the responsibility of handling the legacy waste at Brahmapuram because it felt that the Kochi Corporation was not in a position to manage this complex matter effectively. The tender process which the Corporation had initiated for bio-mining the legacy waste, stood cancelled. The daily collection and management of waste and operations at the Brahmapuram plant, however, was to continue to rest with the Corporation. What was the reason for this decision by the State Government? To understand the issues plaguing Brahmapuram and waste management in Kochi, we will have to rewind to 2007, when the waste treatment plant at Brahmapuram came into existence.

### History of Brahmapuram Waste Treatment Plant

The landfill site at Brahmapuram came into being on June 30, 2007, when 27 tipper lorries<sup>1</sup> fully loaded with stinking un-segregated waste escorted by police jeeps, arrived at a non-descript site in Chellipadam village at Brahmapuram in Vadavukode-Puthenkurissu Panchayat, just 17 kilometres from Kochi city. Fifty three families<sup>2</sup> became refugees in their own village overnight. Such was the stench emanating from the garbage that many of them had to be hospitalised as they could not cope up with the headache, nausea and giddiness associated with it.

The 37.33 acres of land at Brahmapuram was acquired by the Kochi Corporation in 1998 after it had to abandon its landfill site at Cheranellore following public outrage. The Vadavukode-

<sup>1</sup>Report on landfill site of Kochi Corporation at Brahmapuram by Independent Fact Finding Committee which was submitted on July 09, 2007.

<sup>2</sup>Suchitra, M and Venugopal, P.N. "The Environmental Refugees of Brahmapuram." July 24, 2007. <http://www.indiatogether.org/bpuram-environment>.

Puthenkurissu Panchayat council had even issued a No-Objection-Certificate for setting up a waste treatment plant at Brahmapuram, but the plant did not materialise for a long time. Meanwhile, the Southern Naval Command allowed its premises in Willingdon Island for the dumping of waste but due to the frequent bird strikes on its naval aircrafts, withdrew its permission in November 2006. The Corporation even resorted to dumping the waste in neighbouring states clandestinely after that, but had to beat an embarrassing retreat after one such trip was returned back after the Tamil Nadu police intercepted the convoy. The question as to why suitable measures could not be initiated in the intervening period to set up recycling units, which could have taken up processing of non-decomposable waste and vermicomposting to process bio-degradable waste, in order to reduce the quantum of wastes, is a mystery. Maybe the government machinery did not believe in decentralised functioning as far as Solid Waste Management (SWM) was concerned way back in the 2000s, unlike now in the COVID environment.

On January 5, 2007, deciding on a PIL case, a Division Bench of the Kerala High Court, directed the civic authorities to dump waste at Brahmapuram<sup>3</sup>. But the Corporation did not adhere to the conditions stipulated by the Court. Not surprisingly, the independent Fact Finding Committee comprising members and experts of the judiciary, public and NGOs which went into the details of the entire issue in July 2007, came up with a list of violations of various provisions of statutory laws prohibiting such blatant action of dumping waste in Brahmapuram. The various sections of laws which were found to have been violated are<sup>4</sup>: Sections 24 and 33 of the *Water (Prevention and Control of Pollution) Act, 1974*; Rule 4 and Schedule III of the *Municipal Solid Waste (Management and Handling) Rules, 2000*; Sections 3, 6 and 25 of the *Environmental (Protection) Act, 1986*; provisions of *Coastal Regulations Zone Rules* in force at that time; Clause 6 of the *Land Utilization Order, 1967*; Sections 268, 269, 270, 277 and 278 of the *Indian Penal Code*; and Articles 14 and 21 of the *Constitution of India*.

Considering the above violations, the High Court constituted a monitoring committee consisting of an Advocate Commissioner, District Medical Officer of Health, Ernakulam and Chief Environmental Engineer, Kerala State Pollution Control Board (KSPCB), Ernakulam, to jointly inspect and suggest safeguards necessary to look into the environmental pollution issues and the statutory violations at the site.

In 2007, a treatment plant was set up under the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) project, but the plant did not function properly for even two years due to maintenance issues related to the outdated design and technology<sup>5</sup> used and also due to the huge quantity of city waste being transported to the site on a daily basis. It was thereafter decided that a new and modern plant would be required and till then repair and maintenance would be carried out on the existing plant. But both Vadavukode-Puthenkurissu and

---

<sup>3</sup>Ibid.

<sup>4</sup>Report on landfill site of Kochi Corporation at Brahmapuram by Independent Fact Finding Committee submitted on July 09, 2007.

<sup>5</sup>"Steps to be Taken to Repair Brahmapuram Plant". *News 18 India*, October 29, 2011.  
<https://www.news18.com/news/india/steps-to-be-taken-to-repair-brahmapuram-plant-413812.html>.  
Accessed 23 April 2020.

Kunnathunadu Panchayats decided not to provide the required license<sup>6</sup> to the proposed new plant capable of processing about 500 tonnes of waste daily. The waste kept on piling with no solution in sight. There were widespread protests by the aggrieved people, but nobody seemed to care.

In 2012, the Corporation even tried unsuccessfully in using enzymes to reduce the pungent smell emanating from the open un-segregated legacy waste with the help of a UK-based company<sup>7</sup>.

The relentless struggle by the people of Vadavukode-Puthenkurissu Panchayat finally paid off in May 2016 when the Southern Bench of National Green Tribunal (NGT) termed Brahmapuram waste treatment plant illegal<sup>8</sup> on the basis of absence of requisite pollution and environmental clearances and directed Kerala State Pollution Control Board (KSPCB) to prosecute the concerned officers. The Panchayat filed an affidavit<sup>9</sup> before NGT that the Corporation had no intention to operate the solid waste treatment plant as it had never made any efforts to segregate the garbage into biodegradable and non-degradable varieties.

In its report of October 2016, the Advocate Commissioner revealed alarming conditions and gross violation of the SWM rules and blamed the Kochi Corporation for its total lack of interest and casual approach. It recommended a slew of measures to be adopted within a fixed timeline. The environmental engineer of the KSPCB also reported that the leachate from the processing site was being discharged into the storm water drain constructed around the proposed vermicomposting building, draining into the adjacent Kadambayar River.

On February 7, 2017, the Corporation entered into a contract agreement with a concessionaire to install a thermal gasification plant. Till August 30, 2018, after more than a year, only the KSPCB had given its consent but the environmental clearance was still not processed. Hearing a batch of applications related to indiscriminate disposal and dumping of garbage in Brahmapuram, the Southern Zone Bench of the NGT at Chennai, through video conferencing on October 22, 2018, gave Kochi Corporation six months for the establishment of the new integrated solid waste treatment processing plant. It also directed the Corporation to treat the legacy waste in accordance with the laid down procedures. For the inordinate delay caused in taking up the requisite work, the Corporation was imposed a penalty of ₹1 Cr<sup>10</sup>.

---

<sup>6</sup>"Panchayats Say 'No' to New Waste Treatment Plant." *The Hindu*, February 14, 2012. <https://www.thehindu.com/news/cities/Kochi/panchayats-say-no-to-new-waste-treatment-plant/article2891845.ece>. Accessed 23 April 2020.

<sup>7</sup>"New Proposals Rejected at Failed Waste Facility in Kochi, India." *Eco-Business*, February 22, 2012. <https://www.eco-business.com/news/new-proposals-rejected-at-failed-waste-facility-in-kochi-india/>. Accessed 23 April 2020.

<sup>8</sup>Brahmapuram Dumping Yard Illegal, Rules NGT South Bench." *The New Indian Express*, June 1, 2016. <https://www.newindianexpress.com/states/tamil-nadu/2016/jun/01/Brahmapuram-dumping-yard-illegal-rules-NGT-South-Bench-935348.html>. Accessed 23 April 2020.

<sup>9</sup>"Panchayat Files Affidavit before NGT." *The Times of India*, June 19, 2016. <https://timesofindia.indiatimes.com/city/kochi/Panchayat-files-affidavit-before-NGT/articleshow/52815599.cms>. Accessed 23 April 2020.

<sup>10</sup><http://lsgkerala.gov.in/system/files/2019-02/brahmapuram-SWM-Reports.pdf>. Accessed 18 April 2020.

The State Government swung into action and constituted a team to visit and report on the immediate, short-term, medium-term and long-term measures to be adopted to mitigate the adverse impact of leachate on the environment and for the proper and decent functioning of the SWM facility at Brahmapuram.

The Kochi Corporation, in 2019, placed orders for two plastic shredding<sup>11</sup> and baling units at a cost of ₹16 lakh capable of shredding at least four tonnes of plastic waste daily. But there are few takers, not even the Corporation is buying plastic pellets to tar its roads.

### Existing State of Affairs

Waste from 21 Circles of the Corporation of Kochi, in addition to waste from five nearby Municipalities (Aluva, Angamaly, Kalamasseri, Thrikkakkara, Thrippunithura), and Cheranalloor and Vadavukode-Puthenkurissu Panchayats, is brought to the Brahmapuram plant. On a normal working day, the plant receives 383.45 tonnes of waste which is 64 per cent biodegradable. A simple Cost-Benefit analysis of the huge sums being paid to the Corporation for dumping waste at the yard by the Panchayats along with the additional transportation costs incurred vis-a-vis the benefits accrued, should have made the Panchayats to enforce segregation at source and install decentralised treatment methods like biogas and ring compost, to reduce the quantum of waste generated. This would in turn have reduced the requirement of land for setting up the biomethanation plants in the respective Municipalities.

The composting plant at Brahmapuram has six sheds which are adequate if windrow composting is done as per the protocol, but the structure is presently in a dilapidated condition. The drains existing at some places are fully clogged, non-existent at others or not sloped properly in the balance areas. The quantity of leachate generated is around 10 kilolitres per day. There is, however, no drainage to collect and channelise the leachate to any collection centre.

### Issues Pertaining to Legacy Waste

The legacy waste dump existing in Brahmapuram is anywhere between 65,000 to 100,000<sup>12</sup> tonnes spread over an area of about 16 acres. With the present rate of waste collection and further dumping, the total waste is expected to swell to around 150,000 tonnes by the end of 2021. This figure is a conservative estimate arrived at by the author considering 28 percent moisture<sup>13</sup> content in the municipal waste generated by the city of Kochi. A 0.02 percent increase of waste generated has been assumed per year based on the available data. The average depth of the legacy waste dump would be anywhere between 4.15 m to 6.22 m towards the end of 2021.

The Kochi Corporation is in the process of establishing a ₹295 Cr Waste to Energy (W2E) Plant near the present dumping site, by August 2021. Though M/s GJ Eco Power had won the bid to set up the plant in 2016, delay in obtaining the mandatory clearances has led to a cost

---

<sup>11</sup>Meeting held on January 9, 2019, in the chamber of Additional Chief Secretary, LSGD to discuss the further course of action in connection with the 5<sup>th</sup> Meeting of Regional Monitoring Committee (Southern States) held on 24 and 25 January 2019, at Kochi.

<sup>12</sup>The figures vary from 65,000 tonnes to 100,000 tonnes in various literature available online.

<sup>13</sup>Katiyar, Rajesh Babu, Suresh, S, and Sharma, A.K.2013. "Characterization of Municipal Solid Waste Generated by the City of Bhopal, India." *International Journal of Chem Tech Research*5(2): 623–628.



escalation of nearly ₹40 Cr<sup>14</sup>. The silver lining, however, is that the company has decided to upgrade the equipment models to the latest version. As part of the long-term remedial measures, a scientifically engineered sanitary landfill would be required to be put in place to dispose of the rejects generated after the recovery of legacy waste by 2023<sup>15</sup>.

The bio-mining of the legacy waste is unlikely to come to fruition during the term of the current Corporation Council because of the differences of opinion amongst the councillors on the rates quoted by the contractor and also non-availability of the requisite mandatory site data. The lack of data on the quantum of old waste at the dump cannot be an excuse to delay bio-mining. The total station survey using drones and compositional analysis of legacy waste should have been completed by now. The talk of decentralisation of decision making powers to the Panchayat level is nothing but empty rhetoric when it is a fact that these data cannot even be obtained at the State Government level, let alone the Corporation level. The leachate treatment plant has also been stalled as councillors did not approve the involvement of German agency GIZ<sup>16</sup>. The councillors, though, are unanimous on the impending disaster at Brahmapuram in the absence of any tangible work. At present, the Kochi Corporation is shelling out an average of ₹35 lakh per month for processing the waste but there seems to be no clarity on the amount of compost generated or sold<sup>17</sup>. The cost of renting lorries has also doubled to around 6.56 Cr per annum<sup>18</sup>.

### **Fires at the Dumping Site: Sabotage or Natural Phenomenon?**

Meanwhile, in February this year and about the same time last year, there have been instances of fires raging in the dump yard, posing a health risk to the people of Kochi and neighbouring areas.

Other than the theory of sabotage propounded by the Corporation as the reason for fires at the dump yard, there can also be instances of spontaneous fires which can be scientifically proved<sup>19</sup>. The fresh waste usually contains 20 per cent oxygen. The aerobic phase, which lasts from a few weeks to about three months, results in the depletion of this oxygen content to zero. Methane and carbon dioxide concentrations begin to increase thereafter. The stable anaerobic phase is preceded by a transition period which ranges from two to more than five months. The temperature of the waste keeps on increasing across all the above three phases of decomposition and it has been reported that the temperature increase in the post-aerobic period is 5 to 10 times more than the temperature increase in the aerobic phase. Spontaneous

---

<sup>14</sup>"Brahmapuram Waste-to-Energy Plant to be Ready by 2021." *The New Indian Express*, December 9, 2019. <https://www.newindianexpress.com/cities/kochi/2019/dec/09/brahmapuram-waste-to-energy-plant-to-be-ready-by-2021-2073362.html>. Accessed 15 April 2020.

<sup>15</sup>Report on SWM at Brahmapuram of Kochi Corporation submitted vide GO (Rt) No.3105/2018/LSGD dated December 6, 2018.

<sup>16</sup>"Corporation Fails to Move an Inch Forward on Brahmapuram." *The Hindu*, March 4, 2020. <https://www.thehindu.com/news/cities/Kochi/corpn-fails-to-move-an-inch-forward-on-brahmapuram/article30976069.ece>. Accessed 15 April 2020.

<sup>17</sup>"Brahmapuram Dumping Yard, an Unmitigated Disaster." *The Hindu*, March 4, 2020. <https://www.thehindu.com/news/cities/Kochi/brahmapuram-dumping-yard-an-unmitigated-disaster/article30976081.ece>. Accessed 15 April 2020.

<sup>18</sup>Ibid.

<sup>19</sup>Yesiller, N, Hanson, J.L., and Liu, W. L.2005. "Heat Generation in Municipal Solid Waste Landfills". *Journal of Geotechnical and Geoenvironmental Engineering*. ASCE 131: 1330–1344.

combustion occurs when materials are heated beyond the ignition temperature aided by strong winds or hot weather conditions, resulting in surface fires in landfills containing organic wastes.

Is there light at the end of the tunnel? Time will only tell. As per the latest newspaper reports, the W2E plant which was slated to come up by the second half of 2021 has been shelved for the time being. The earlier concession agreement stands cancelled and fresh tendering will be initiated to select another company<sup>20</sup>. Kochiites will now have to continue to keep their fingers crossed for more such incidences in the times to come. If not the fire, then there is always the issue of leachate flowing into the nearby water bodies during the impending rainy season. So either way, health hazards are staring at our face.

### **SWM Success Stories**

What stops the City from studying and emulating other success stories, be it in Alappuzha in the State or a bigger city like Indore. Two years was all it took for the city of Indore, the commercial capital of the State of Madhya Pradesh, to transform itself from one of the 43 most critically polluted cities in 2015 to the cleanest city in India, consecutively. What did Indore do that Kochi cannot do? For any problem to be tackled head-on, taking ownership of the problem is the very first step. And the solid waste problem is not to be seen as the creation of a third party. Each citizen residing in the City is equally responsible for generating waste and not disposing it off before dumping it in somebody else's backyard. Why should people of Brahmapuram suffer for a problem which is not their creation? But then the strong and powerful have always exploited the weak and the poor.

### **COVID and the Kerala Model vis-a-vis SWM**

The 'Kerala Model' has come in for praise from all across the globe in tackling, confronting and taming the COVID pandemic. Decentralisation and devolution of power to the local self-government bodies, powerful institutional memory, high literacy rates, women empowerment through education, egalitarianism, etc. have been attributed to the achievement, which by any standards is not a mean feat. It may not, therefore, be a surprise if renowned and prestigious institutes like Harvard commission case studies on the success story of the State. However, if one were to ponder over what is wrong with Brahmapuram, it is actually bewildering that these very same sets of qualities and characteristics are required for finding a solution to an age-old problem.

Why has not the State been able to find a solution so far? Over a period of more than two decades, from public outrage to widespread protests, numerous meetings at all levels up to the Central Government, from various court orders to imposition of fines, and to summoning of the Chief Secretary of the State by the NGT, no amount of threatening or coercion or even visibly worsening situation on ground, has been able to rouse the State out of its deep slumber. Should we wait for the next major fire or other epidemic like dengue or maybe the next deluge?

### **Where does it all Lead to?**

The unscientific and inefficient handling and disposal of solid waste in open dump yards, water bodies and landfills create problems not only to the public health and the environment, but

---

<sup>20</sup>“Govt. Revokes Approval for Waste-to-Energy Plant.” *The Hindu*, May 3, 2020.

may turn out to be one of the biggest contributors to the decreasing carrying capacity of the various water bodies criss-crossing the city of Kochi, leading to floods during the rains. While scouring through scores of papers, reports and newspaper articles dating back to 1990s, the author has come to the conclusion that nobody is aware of the actual quantum of waste generated or being dumped daily at Brahmapuram or the old waste lying there. It implies that the amount of waste collected and transported to Brahmapuram daily is only a fraction of the waste generated. A major chunk of the waste, which is not collected, ends up in the water bodies. This is the right kind of recipe for the outbreak of epidemics and floods to occur every consecutive year.

***The author is a former Research Intern of CPPR and presently posted in an NCC unit in Ernakulam. Views expressed are personal and need not reflect or represent the views of Centre for Public Policy Research***