

WASTE MANAGEMENT SYSTEM IN GURGAON: KEY ACTORS AND PROCESSES INVOLVED

In India, waste management is a function of Urban Local Bodies (ULBs) such as Municipal bodies and nagarpallikas. In Gurgaon, there is a multiplicity of agencies handling waste. Once collected, waste is taken to the Bhandwari Plant in the outskirts of the city for disposal.

Key Bodies involved in the process of waste management:

1. Municipal Corporation of Gurgaon (MCG) in Old Gurgaon.
2. HUDA in colonies and roads in New Gurgaon.
3. HSIIDC in the industrial belts.
4. Private developers (such as DLF, Unitech etc) for licensed private colonies in their respective areas.

Both MCG and HUDA have very little sanitation staff of their own and employ contractors to perform the actual work at ground level. They outsource works to contract agencies through service contracts. Tenders are floated at the time of expiry of a contract for each of the zones. The service period for every contract varies.

MCG has a total of four zones that stretch across 207 sq. km. Different contractors are assigned these zones and they perform three distinct functions – 1. Sweeping 2. Collection of waste 3. Transportation to the Bhandwari plant.

Current list of contractors working in the four MCG zones-

<u>Zone</u>	<u>Sweeping</u>	<u>Collection of waste and transportation to Bhandwari</u>
Zone 1 & 2 [to the right side of NH-8]	Sulabh and Aries	K.L. Envitech
Zone 3 & 4 [to the left side of NH-8]	Sharp, Sheel, Excellent Manpower and Shree Shyam Enterprises	Sharp, Sheel, Excellent Manpower and Shree Shyam Enterprises

HUDA has two zones for the same purpose and the contractors assigned are as follows-

<u>Zone</u>	<u>Contractor</u>
Zone-1	Leading Manpower, Balaji
Zone-2	Sulabh International Academy

KEY ISSUES AND CONCERNS

- Arbitrarily chosen dumping points throughout the city, replete with garbage, stench and diseases of various kinds.

- Drainage systems are seldom maintained properly. Much of the initiative is taken during the rainy season.
- Technically, segregation of waste into wet, dry recyclable, industrial, e-waste and C & D waste is not practiced at the local level.
- Garbage burning is a rampant practice, despite stringent rules imposed against it.
- Labour conditions, as under contractors, are abysmal. The staff employed by the contractors does not have permanent jobs and job satisfaction is poor which reflects in work. Principal employers, MCG and HUDA, have relinquished responsibility regarding labour laws, provisions, wages, bonus etc. These responsibilities have been passed onto the contractors, which shouldn't be the case because the former are 'principal' employers.
- There are no separate sites for construction and Demolition Waste (C&D) waste disposal. Delhi has 72 such sites. Gurgaon has none.
- The proposal for a C&D waste recycling facility near KachraChowk on the Gurgaon-Faridabad Road has remained stuck for the last 2-3 years.
- Households and housing societies have not been provided with guidelines regarding effective management and disposal of e-waste.
- While the contracts signed between MCG and contractors have many progressive provisions, there are several loopholes and contradictions between its various clauses which need to be reconsidered.
- Recycling rates in the city are at an all-time low and need to be urgently reconsidered for better treatment of waste. Starting from the lack of source segregation to the redundancy of the Bhandwari plant, recyclable materials are not being treated accordingly.
- Redressal mechanisms for citizens have been provided for in the statutes, but the follow-up is poor and farcical. This specially relates to the procedure wherein citizens can click pictures of ineffective and dirty areas and ask for immediate action by uploading them on the MCG website, or simply contacting the authorities concerned.
- Bhandwari plant has been running in suboptimal conditions due to having reached limit of its capacity in less than two years. Gurgaon has failed to come up with a viable alternative in terms of waste dumping and treatment mechanisms.

**LESSONS FROM THE
AHMEDABAD MUNICIPAL
CORPORATION (AMC) FOR
GURGAON**

- The city of Ahmedabad is divided into 64 municipal wards. 3800 Metric Tons of solid waste (including 300 MT of construction and demolition debris) are collected and treated by a staff of 12,500 employees.
- Different departments at ward level perform a varied list of functions. The Health Department is responsible for such activities like sweeping the streets, door-to-door garbage collection, cleaning of public toilets and providing its services during campaigns like the polio campaign. The Engineering Department provides basic amenities, is responsible for management of the drainage network, waste water treatment and maintenance of roads and pavements.
- Street sweeping is a systematised affair with 365 days of working, total stretch of 1,484 km roads swept on a daily basis, and a strength of more than 13,000 street sweepers on the go.
- Night sweeping through Road Sweeping Machines on public roads, BRTS roads and model roads is a regular affair.
- Centralised SWM department is responsible for implementing the MSW rules in the city. It is also responsible for secondary storage and transportation, collection, and final disposal of Municipal Bio Medical wasteat the incineration plant on Privatization basis from 5 general hospitals, 54 referral hospitals, maternity home and health care centres of AMC.

Initiatives taken for SWM (Solid Waste Management) in Ahmedabad:

- AMC launched the country's first Sanitation Mobile Court on 4th June, 2009, dedicated to contain littering. 1, 23,116 cases have been registered so far, and penalty worth Rs. 4.81 crores has been levied on such offenders.
- The Municipal body has started a Project for IEC (Information, Education, Communication) Activities and Awareness Generation among the masses. This includes generating awareness through the use of media, organising rallies, launching campaigns and conducting street plays.
- There are plans for construction of Transfer Stations across five zones, each with a capacity of 400 mega tonnes. These stations will help reduce transportation cost and pollution. One out of the five proposed stations is operational in the East Zone at present.
- The AMC has adopted several methods for collection, disposal and effective treatment of different kinds of

	<p>waste such as Municipal Bio Medical Waste, kitchen waste from hotels and restaurants and C & D waste.</p> <ul style="list-style-type: none"> ● AMC is in the process of issuing a competitive bid for designing and constructing collection points and treatment facilities for e-waste and carcass waste based on the PPP model. ● With the help of OWC machines, AMC wishes to decentralise the process of converting green waste into organic manure. ● AMC initiated the preparation of Public Health Bye-laws in 2012, seeking to classify waste into 25 categories and ensuring the creation of a schedule of fines. ● AMC has signed an MoU with UNCRD (United Nations Center for Regional Development, Japan) for developing a “Roadmap for Zero Waste Ahmedabad by 2031”.
<p><u>SUCCESS STORIES IN GURGAON: PALMS RWA</u></p>	<ul style="list-style-type: none"> ● The Palms society has started a Waste Management Programme (for managing wet, biodegradable waste or kitchen waste). ● Inspiration came from Beverly Park RWA. The citizens realised the importance of segregating waste at its source. Every household is required to segregate its waste into at least two categories – wet waste (biodegradable) and non-biodegradable or recyclable (like plastic). ● A creative training programme was devised to create awareness. This included workshops, games, training programmes for the maids and guards, implementation of a youth initiative etc. ● Out of the 450 households involved, the society gets around 100 (max 200) kilos of wet waste. The programme manages to get 30-40% compliance on source segregation, which is very essential. ● The wet waste segregated at household level is put into the Organic Waste Converter machine to be turned into manure. ● Corporates have shown interest in collecting plastic bottles and other such recyclable materials in light of their CSR obligations. Retail corporates like Shoppers Stop and Reliance have also shown interest in obtaining waste in return of cash, shopping coupons etc. ● The initiative is funded solely by the RWA of Palms, but outside actors are steadily showing interest. The RWA also uses ‘Outdoor media’ to spread the message and create awareness. ● To be sure, half kg of wet waste turns into 300 gm of compost, if not mixed up. Besides, 1 kg of compost

	<p>created is equal to 1 kg of Co2 NOT let out into the atmosphere (which is beneficial for curbing the greenhouse effect and global warming). This is also equivalent to ½ kg of methane NOT let out. Also, these benefits can be traded for carbon credits, which can add onto the country's resources. Not to forget, this method also helps relieve pressure from overflowing landfills.</p> <ul style="list-style-type: none">● Future targets of the programme – (a) Drive to increase the compliance rate (b) Help segregate waste into more categories other than the ones mentioned above. For e.g. inerts, e-waste, C & D etc. Effective management of equipment and space is essential for this purpose.● RWAs need to fund such practices within a society. If this system has to work in the city as a whole, government needs to step in and make compost generation a decentralised practice in each locality.● A Mumbai based company, Excel Industries, supplies a machine called Organic Waste Converter to this society. This machine takes 15 minutes to convert organic waste into raw compost. After ten days of curing procedure, rich compost is produced. The machine costs about 7 lacs and a couple of RWAs including Palms, Beverly Park and World Spa have installed this machine. This process works under a concept called Decentralised Solid Waste Management developed by this company. This system allows onsite treatment of garbage, reducing labour and transportation costs.
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SITUATION AT BHANDWARI

- A 1,000 TPD combined solid waste management facility plant based on the PPP mode under JNNURM scheme set up on the highway from Gurgaon to Faridabad. This plant is responsible for processing the MSW for Faridabad and Gurgaon.
- This plant is an RDF (Refuse Derived Fuel) plant. It takes 600 tonnes of waste from Faridabad and 400 tonnes from Gurgaon.
- However, the plant has been choked to the brim and a large part of the waste at the plant consists of polythene bags.
- It is no secret that the Bhandwari plant has been running sub-optimally ever since its inception. Within two years of operation, 50 per cent of the land has already been occupied by garbage. The landfill is falling apart at its seams.
- The untreated waste at Bhandwari is also responsible for percolating the ground and degrading the quality of groundwater.
- On April 2013, a minor fire broke out at the site, forcing operations to a halt. No attempts have been made to resume operations after this incident, and waste continues to be dumped at this already stuffed landfill.
- There is an urgent need to have an alternate option than Bhandwari.

WAY FORWARD: NEW TECHNOLOGY AND MANAGEMENT PRACTICES THAT CAN HELP IMPROVE WASTE MANAGEMENT.

Waste-to-energy/Incineration Plants

- Waste to Energy (WtE) or Energy from Waste (EfW) is the process of generating energy in the form of electricity and/or heat from the incineration of waste. Solid waste is converted into thermal energy to generate steam that further drives turbines for electricity generators.
- There are different kinds of waste treatment processes such as landfills, mechanical biological and thermal. WtE is a thermal treatment process in which burning takes place in a very controlled fashion to produce energy. Gases produced by open burning are harmful to the atmosphere and health, therefore, incineration plants help curb the release of such harmful gases into the atmosphere through a process called 'Flue Treatment.'
- Hitachi-Zosen, the company that is providing for such plants in India is a technology provider, not a developer. There needs to be a developer in between the company and the municipal bodies in order to help build these plants.

	<ul style="list-style-type: none"> ● WtE follows an integrated solid waste management approach. Contrary to popular belief, this method doesn't overshadow the importance of recycling at local level. The basic assumption involved here is that despite prevention, reduction and recycling of waste, there will always remain a certain quantity of waste that needs to be disposed of. 'Zero Waste' is an academic term with no practical implications. ● Waste Incineration is the way to go for the following reasons: (a) Less landfill space required (b) produces chemically stable residues only (c) Thermal utilization of energy content (d) Reduction of greenhouse gas emissions (e) Material utilization (f) Reduces transportation cost if the plant is situated within the city. ● While pre-treatment is not a requirement for processing the waste inside these plants, capital cost of constructing such plants is high, so is the level of skill and technical know-how required. There are 900 operational incineration plants across the globe. As per surveys conducted, countries with the highest incineration rates, are at the same time, countries with the highest living standards and the longest life expectations. These countries also have a high recycling rate. ● In India, The National Bio-Energy Board (NBB) of the Ministry of Non-Conventional Energy Sources (MNES) has developed the "<i>National Master Plan of India for Development of Waste-to-Energy Projects</i>" with a clear recommendation to provide special loans for WtE projects.
<p><u>E-WASTE MANAGEMENT IN GURGAON</u></p>	<ul style="list-style-type: none"> ● E-waste is a term that refers to used electrical and electronic equipment such as IT and communication technology equipment such as PCs, laptops, notebooks, calculators, telephones etc. and also consumer electronics such as T.V. sets, ACs, refrigerators and washing machines. ● Currently, there is a lack of awareness about how e-waste is treated after its disposal. Majority of the time, e-waste segregation is not a part of source-segregation, and the waste is usually dipped in acid and burnt by the informal sector under conditions hazardous to both health and environment. ● The Ministry of Environment has issued a notification of e-waste rules which came into effect on May 1st, 2012. Under this, delivering or handing over e-waste

	<p>to any unauthorized party is a criminal offense under EPA (Environment Protection Act) 1986.</p> <ul style="list-style-type: none"> ● Consumers and bulk consumers of electronic equipment have to ensure that e-waste generated by them is delivered to authorized agencies, authorized collection centers/registered dismantlers/recyclers. ● Three types of agencies can be authorised as agencies responsible for collecting e-waste. These are – authorised collection centres, dismantlers and recyclers. Some of the e-waste recyclers that are active in Gurgaon are Deshwal Waste Management Company, Dataserv APAC, Green Vortex and Earth Sense Recycle Pvt. Ltd. ● GIZ is a German multilateral agency which works with governments across 130 nations primarily at policy level, but also at ground level. They work in the areas of capacity building and community outreach. RWAs can contact this agency to get in touch with authorised e-waste cyclers to organise collection drives in their colonies. ● A lot of components can be recovered from e-waste. These parts can be effectively refurbished and made reusable. Such items like plastic, cables, ferrous/non-ferrous metals and glass can be further sold to an authorised recycler with the capacity and capability to operationalize such material. ● Established in 2011 at Khuskhera in Rajasthan, Deshwal e-waste recycler provides pan-India services. Its recycling processes are approved and authorised by the State Pollution Control Board. Collecting waste from almost all major parts of India, the company then sends the material collected to its factory in Rajasthan where it gets treated under conditions approved by the authorities concerned.
<p><u>KEY RECOMMENDATIONS</u></p>	<ul style="list-style-type: none"> ● Source segregation to be encouraged by RWAs. Apart from the regular segregation of waste into the basic categories of wet and dry waste, other categories like e-waste and c & D waste also need to be introduced. ● New technology, infrastructure and processes need to be in place. The multiple inventory system needs to be replaced by 4-wheeler Mini Tipper vans that carry waste to the dumping site at low cost. ● Multiple solutions needed: Bhandwari alone cannot deliver. Alternative forms of waste disposal and treatment mechanisms need to be devised to support the traditional patterns. ● Focus on local decentralised solutions that focus on empowering RWAs and providing them with

	<p>appropriate technology to carry out on-site treatment of waste.</p> <ul style="list-style-type: none">● Better contracting systems and proper implementation of provisions mentioned in the Haryana Municipal Corporation Act, Municipal Solid Wastes Rules, 2000. There needs to be a better appraisal of some of the progressive provisions regarding sanitation work in the act.● Labour conditions should be improved and made more systematic.
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