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## Right Approach to Solid Waste Management in India

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On daily basis, urban India generates 188,500 tones of MSW - 68.8 million tons per year and expected to grow at 1.3% per capita p.a. - and waste generation increases by 50% every decade, as per the CPCB report. Some of this waste will be recovered by informal recyclers - 20% in large cities and lesser in smaller cities. However, more than 80% reaches open dumpsites where it causes damage to public health, environment pollution, and contribute to green house gases causing climate change.

Waste to Energy emerged as a cutting edge segment in Waste Management sector as it reduces the burden on dump sizes drastically and also contributes to limited current power situation of the country. While WtE is making huge roar globally riding high on technological advancement, in India the sector is facing hard time due to certain waste character issues due to non-segregation and regulatory challenges.

WtE players in India largely get stuck due to mix (non-segregated) nature of Waste in indian cities coupled with technologies not able to address the same. Most of the MSW

in India is dumped on land in an uncontrolled manner despite having legislation in place. Such inadequate disposal practices lead to problems that are impairing human and animal health and are already resulting in economic, environmental and biological losses.

The current regulations (MSWM rules, 2000) are very stringent and are not being fully implemented by the Municipal agencies due to ground resistance. Unfortunately, clearly there is a large gap between policy and implementation. The producer responsibility is to avoid having products on the market that cannot be handled effectively and environmentally in the correct methodology when they become waste products. A new survey should be carried out on the generation and characterization of MSW in India. Since the MSW is heterogeneous in nature, a large number of samples have to be collected and analyzed to obtain statistically reliable results. Municipal corporations have limited options and will not be able to deliver integrated waste management systems immediately.

Huge number of people will be added to urban India every day, continuously, until 2021. This addition is a warning, considering how India's waste management infrastructure went out of control trying to deal with new urban Indians during the last decade. The scale of urbanization in India and around the world is unprecedented with planetary consequences to Earth's limited natural resources and its natural balance. Urban Indians will have to wait longer than an average urban citizen of our world for access to proper waste management infrastructure due to technological failures.

The clear trend in the outbreak of epidemic and public protests around India is that they are happening in the biggest cities in their respective regions. Lack of resources such as financing, infrastructure and suitable planning further adds to waste management problems. It is well known among the small but growing waste management sector that urban India will hit rock bottom due to improper waste management of it does not wake up to reality and acceptance of workable technologies in the local space.

There had been a lot of technological advancement globally and we need to take a cue from these success stories for creating a better waste management and WtE roadmap. The technology also needs to be test approved specifically for non segregated Indian waste. The mantra for success in the area lies in Reduce, Recycle,

Renovate and Reuse philosophy. Comparing the biological, chemical and thermal treatment options in the Indian scenario, the biological processing (Anaerobic Digestion) options should get the priority. Composting and vermin composting are slow processes and requires a large space.

An open dump or an uncontrolled waste disposal area should be rehabilitated. It is advisable to move from open dumping to sanitary landfilling in a phased manner. Landfilling should be restricted to non-biodegradable, inert waste and other waste that are not suitable either for recycling or for biological processing.

The challenges does not stop here, Municipalities face the task of realizing waste management facilities inside or near cities while none of their citizens want those facilities near their residences. All local people should understand the importance of the issue. Due to local people agitation waste management problem will not get solved but it will become more severe, instead of that local people should insist for waste management technology which should not have any adverse impact on environment and should have scientific disposal MSW. As per today's available technologies, anaerobic digestion is the technology which doesn't have any adverse effect on environment. This is also based on the report by UNDP-GEF. To achieve this, government should implement related programs which will help people to educate for waste management.

The environmental benefits of waste to energy based on Anaerobic Digestion technology, as an alternative to disposing of waste in landfills, are clear and compelling. Waste to energy generates clean, reliable energy from a renewable fuel source, thus reducing constant use of fossil fuels and hence environmentally preferred. WtE measures would reduce the quantity of wastes, generate a substantial quantity of energy from them, and greatly reduce pollution of water and air, thereby offering a number of social and economic benefits that cannot easily be quantified. The provision of organic manure, refuse derived fuel as alternate fuel for cement plants are additional means of completing doing away the rejects of waste treatment. Actually no waste should be treated as waste but a Resource; we should manage it well and utilize it to the fullest.

According to the Ministry of New and Renewable Energy (MNRE), there exists a potential of about 1700 MW from urban waste (1500 from MSW and 225 MW from sewage) and about 1300 MW from industrial waste. This is estimated to go upto 5200 MW from 304,000 TPD in year 2017. The ministry is also actively promoting the generation of energy from waste, by providing subsidies and incentives for the projects. Indian Renewable Energy Development Agency (IREDA) estimates indicate that India has so far realized only about 2% of its waste-to-energy potential. So going by the figures the sector offers huge potential; and the Government should re-look at the sector for giving it a standalone recognition and development benefits which would catapult the sector to equal with solar or wind sectors.

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### **About Suhas Bhand**

*Suhas Bhand, founder of Organic Recycling System Pvt. Ltd(ORS), is an expert and a Technical Advisor in Urban Infrastructure and Environment with 30 years of experience in Government as well as Private Sector. He has developed a proprietary technology based on principle of biomethanation for generating green energy from solid waste.*

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