PREFACE

Urban India produces around 55 million tonnes of municipal solid waste (MSW) every year. Of this, only about 25 per cent is processed, i.e. recycled or converted into energy. The remainder finds its way into dumpsites or is burned openly. Waste generation in urban India is increasing by 5 per cent every year because of increasing population and consumption. It is estimated that MSW generation would reach a staggering 150 million tonnes by 2030—triple the current levels. In such a situation, how should the country manage its waste?

The easy answer that urban policymakers seem to have is to burn MSW in waste-to-energy (WTE) plants. The logic put forth by proponents of this system of waste management is that as we are not likely to be successful in segregating waste at source—and hence largely mixed waste will be collected—the best way to deal with waste is to burn it and produce electricity. Based on this assumption, the government has big plans to set up WTE plants across the country. For instance, Niti Aayog has set a target of constructing 330 megawatt (MW) of WTE plants by 2017–18 and 511 MW for 2018–19 under the Swachh Bharat Mission (SBM). It has also proposed the formation of the Waste to Energy Corporation of India, which would set up incineration plants through PPP models. In September 2017, the National Thermal Power Corporation (NTPC) invited developers and investors to set up 100 WTE plants in the country. But the big questions for the country are: How feasible are these plants? Is WTE the first choice to manage MSW in India?

WTE has a long history in India. The first WTE plant came up in Timarpur in Delhi in 1987. It was designed to incinerate 300 tonnes of waste per day (TPD) and produce 3.75 MW of electricity. It failed and was shut down soon after. Since then, 14 more WTE plants of 130 MW capacity have been installed in the country. Out of these, seven plants with capacity of 66 MW are closed and the remaining seven plants are operational. So, half of all the WTE plants constructed in the country have closed down. The remaining plants are also under scrutiny for environmental violations. In fact, citizen movements against WTE plants are rising. For instance, there have been continual protests against the Okhla WTE plant for polluting the environment. In 2016, the National Green Tribunal (NGT) slapped an environmental compensation fine of Rs 25 lakh on this plant.

Why are WTE plants not working in India while they are doing reasonably well in developed countries like Germany and Sweden? (In fact, Sweden takes waste from other European countries to burn it in its WTE plants.)

The fundamental determinant of suitability of WTE plants is the quality and composition of waste. MSW in India has low calorific value and high moisture content. As most of the waste sent to WTE plants is unsegregated, it also has high inert content. This waste is not suitable for burning in WTE plants. To burn it, additional fuel is required. This has been the main reason why WTE plants in Kanpur, Bengaluru, Hyderabad, Lucknow, Vijayawada, Karimnagar etc. had to be closed down.

The second reason for WTE plants not working in India is that they are expensive despite being given several subsidies. The Ministry of New and Renewable Energy (MNRE) offers financial incentives by way of interest subsidy in order to reduce the rate of interest to 7.5 per cent. In addition, financial incentives are provided to ULBs for supplying garbage free of cost at the project site and providing land at a nominal rent on a long-term lease of 30 years and above. There are also incentives for preparing Techno-economic Feasibility Reports and for promotion, coordination and monitoring of projects. There is also concessional custom duty on imported parts. All put together, these subsidies/incentives take care of about 40 per cent of the project cost. Yet, the cost of electricity produced from these plants is the most expensive. Compared to Rs 3–4 per kWh from coal and solar plants, WTE plants sell electricity at about Rs 7/kWh. Discoms are not interested in buying such expensive electricity when cheaper electricity is available. In fact, if these subsidies are removed, the electricity produced from these plants will simply not be affordable.

The last reason is the environmental and health impacts of WTE plants. Experience across the country indicates that these plants are not able to meet environmental norms. The reason seems to be the highly variable and poor quality of waste that the plants are not able to burn properly. As they have to handle vast quantities of mixed waste, the housekeeping is extremely challenging, leading to odour and visual pollution. Also, WTE plants have to reject about 30–40 per cent of the waste, which they dump into landfills because it is either inert or too poor in quality to be combustible.

None of these problems exist in the developed world. WTE plants in Germany and Sweden receive largely segregated, high-calorific-value waste that is easy to manage. They have also installed highly sophisticated systems to further segregate waste so that a consistent quality of waste is fed to the plant. The result is that these plants are run well and are profitable. They not only supply electricity but also hot water to municipalities and earn extra revenue.

The lesson for us is that we should not copy anything mindlessly. But this doesn't mean that there is no case for WTE plants in India.

There is clearly a case for having WTE plants, but it is not for burning mixed waste. The Solid Waste Management Rules, 2016 spell out that only segregated non-recyclable highcalorific fractions like used rubber tyres, multilayer plastics, discarded textile and paper etc. be sent to WTE plants. The next question is if we only burn segregated non-recyclable high-calorific waste, how many WTE plants do we need?

Of the 55 million tonnes of MSW generated every year, only about 15 per cent can be classified as non-biodegradable, non-recyclable, high-calorific-value waste. This translates into about 30,000 TPD of waste which can be fed to the WTE plant. But the total waste treatment capacity for 48 existing, under-construction and proposed WTE plants is over 37,000 TPD. The question we need to ask policymakers, plant owners and cities is: Where is the waste to burn in WTE plants?

As the country grows, so does its waste. There is clearly a need for different technologies to manage waste sustainably. But the choice of technology—whether waste will be burned or recycled or composted—depends on the quality of waste. Past experience clearly indicates that WTE cannot be the first choice to manage MSW in India. It can at best be the option for the fraction of the waste that cannot be managed by other technologies.

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