



Indian solutions for Indian waste

By Darryl D'Monte

India generates mind-boggling quantities of waste: 320 million tonnes of agricultural waste and 4.4 million tonnes of hazardous waste every year. But Indian garbage, which consists of around 85% organic matter, is not suited to the burn technologies that we are importing from the West to manage our solid waste. What are the alternatives?

Environment is slowly but surely proving to be big business, thanks both to international conventions like the Kyoto Protocol and more stringent national standards. Countries and companies are offering their products and services to developing countries to enable them to conform as best they can.

A recent case in point was a road show organised in three cities by the British High Commission to highlight British advances in solid waste management. As Professor Shyam Asolekar from the Indian Institute of Technology (IIT) in Mumbai, who heads the Indian Environment Association, noted at the workshop's inauguration, the scale of the problem in a country like India is simply mind-boggling.

There are, for instance, 320 million tonnes of agricultural waste, for which solutions are available but a combination of human and material inadequacy thwarts the recycling process. The country produces 4.4 million tonnes of hazardous waste every year, of which 15% is recyclable, but isn't recycled. A 12-million strong metropolis like Mumbai poses tremendous problems of scale. It generates 7,000 tonnes of garbage a day, which could fill a one square kilometre pit up to 20 feet deep every year. No wonder it is rapidly running out of places to dispose of its waste.

N B Patil, principal secretary in the urban development department of the state government, reported that the Brihanmumbai Municipal Corporation (BMC) was spending Rs 500 crore a year on solid waste management, which works out to over Rs 1 crore a day. However, 90% of this cost goes towards paying employees who receive 129% of their salaries as dearness allowance. The problem is further complicated by the fact that every Class IV employee has the right to appoint his or her successor.

This means that the number of employees doesn't go down, preventing the BMC from outsourcing the disposal of waste to private contractors who would mechanise much of the operations.

While it is certainly true that municipal employees are the model neither of efficiency nor honesty -- at huge dumping sites like Deonar trucks have been known to merely report attendance? without carrying any loads -- the BMC management is not exempt from blame. It could surely put into operation some system of checks and balances to ensure that citizens get the service they are paying for. The protracted failure of the BMC to do anything of the kind only reinforces the suspicion that officials are hand-in-glove with the conservancy staff.

Patil appealed to consultants to advise the government on the best technology to rid the city of its garbage, failing which it would be subjected to a public interest litigation by environmental NGOs. Toxics Link in New Delhi has long been a thorn in the side of the Municipal Corporation of Delhi (MCD) for pointing out that the technologies employed there are environmentally unfriendly, if not outright hostile. The case of the Timarpur incinerator illustrates the point.

In the 1980s, the MCD invested Rs 44 crore in a waste-to-energy plant in Timarpur, employing Danish technology. The plant ran for all of 21 days and then ground to a halt, never to be started again. It is still apparently being maintained?. The reason, at least to environmentalists, was pretty obvious. Garbage in Indian cities is quite different from that in Denmark -- or the UK for that matter. There is a much higher percentage of organic kitchen waste -- not only because Indians are by and large vegetarians but also because there is much less packaging (paper and plastic) used in household goods here, especially two decades and more ago.

Because Delhi (also Kolkata) uses more firewood for cooking than Mumbai does, there is more ash in the city's waste. Indeed, 40% of the total content at the time in Delhi consisted of waste that was not combustible -- like vegetable waste. Wet? garbage doesn't lend itself easily to combustion, which is why the Timarpur plant and others like it are unsuitable in India .

Late last year, the MCD did not inform Mayor A R Verma about a proposal to set up another waste-to-energy plant with Energy Development Ltd, an Australian company. This project also had to bite the dust because the mayor was miffed about being kept in the dark.

In Andhra Pradesh, Hyderabad and Vijaywada are employing another technology whereby waste is converted into pellets and then burned to produce electricity. But villagers living close to dumping sites complain about the nuisance created by SELCO

International Limited's pelletisation-to-energy plant, promoted by the ministry of science and technology's agency, the Technology Information, Forecasting and Assessment Council (TIFAC). Besides, the burning of such waste releases toxic substances into the atmosphere and leaves damaging residue like dioxins in the soil.

Villagers who live in the catchment of drinking water lakes in the state complain of severe illnesses as a consequence of this technology. According to Toxics Link, the Andhra Pradesh Pollution Control Board found that chemicals leaching out of dumpsites and into the air as a result of combustion are entering the human chain. The irony is that the villagers produce very little solid waste, but are paying for the treatment of waste generated by better-off city dwellers.

All this makes one wonder whether technologies for solid waste management showcased by western companies are always useful in the Indian context. At the British road show, companies present in Mumbai detailed several such methods. Enviro Consulting Ltd didn't hide the fact that there were risks associated with different techniques. These were identified as political, operational, environmental and economic -- all of which were evident in the Timarpur case.

A British energy-to-waste plant is typically larger than units employing gasification; its capacity varies from 30,000 to 500,000 tonnes. Its technology can handle all municipal solid waste with no pre-treatment. Such waste is reduced to a third of its mass and 90% by volume. It also produces gas from landfills -- methane is the second biggest greenhouse gas, globally, after carbon dioxide. Graham Cooper, from another firm, distinguished between 'burning' and 'incineration': the former uses low temperatures, is uncontrolled, unpleasant and does not feature in a sanitary landfill. Incineration is high-tech and managed.

Importantly, Cooper advocated the reduction of waste as the best option, well before its re-use, recycling, energy-recovery and disposal. In Chennai, for example, the company examined a landfill site which hadn't grown over 30 years because it was picked relatively clean by rag-pickers -- which no firm in Britain must have ever encountered. There are 20,000 families thus employed in Chennai. In landfills in Sri Lanka, problems ranged from careless littering to birds, flies, rats and odour.

According to Toxics Link, in India, the campaign against such technologies has been successful in getting the commerce and industry ministries to categorically label incinerators a polluting technology -- and one that is being thrust upon developing countries. Toxics Link alleges that the burning of waste and combustion technologies violate the Kyoto Protocol, the Stockholm Convention on Persistent Organic Pollutants (POPs) and the recommendations of the Global Mercury Assessment Report. The

rationale for trade in goods that violate environmental international treaties, and attempts to promote them as environmental goods and services, is questionable.

Solid waste incinerators are considered by some to be 'environmental goods' and 'polluters' by others. Such goods should not be included in the World Trade Organisation's (WTO) list of environmental goods and services, according to the commerce ministry. But strangely, one of the only fiscally supported schemes for municipal waste is waste-to-energy projects. The ministries of non-conventional energy sources, and science and technology are promoting combustion technologies unmindful of their health and environmental consequences.

Unfortunately, though such schemes are supposed to tackle waste management they don't even address the basic causes of the waste problem. This technology cannot be justified either for energy generation or for waste abatement. The ideal resource management strategy for municipal solid waste is to avoid its generation in the first place. This implies changing production and consumption patterns to eliminate the use of disposable, non-reusable, non-returnable products and packaging, instead of adopting technologies like SELCO's, which bring their own social and environmental problems.

Incentives and subsidies should be offered for 'cold' technologies (bio-methanation, composting, vermi-composting) that suit India economically and socially, and also its waste. Indian garbage, which consists of around 85% organic matter, is not suited to burn technologies. Alternatives for waste-to-energy technology include composting, recycling, bio-methanation, simple indigenous technologies and 'advanced locality management'. Many of these, ironically, are already in use in Mumbai.

Indeed, the suburb of Bandra where the British held their road show has proceeded the furthest in the treatment of solid waste. Several streets have made inroads into the problem by segregating kitchen and inorganic waste. They sell or hand the latter over to recycling contractors, even rag-pickers. Not far away from this suburb lies Dharavi, which should surely win medals for its global prowess in recycling plastic, glass and paper.

This columnist has witnessed how plastic is collected from households and, till recently from garbage bins, and sorted into different categories in the scrap yards of Dharavi. Although most plastic can be melted down, it is easier to do so if it is sorted by size, colour and texture. Once this is done, it is melted down in a crucible-like bowl and then extruded. When it is cool, the spaghetti-like extrusions are cut into small pellets that are then despatched to recycling plants in Gujarat and elsewhere to be made into bags and other products. Even more amazingly, cardboard boxes that are damaged are

repaired and sold for re-use here, which must be one of the most ingenious recycling processes in the world.

The point is that one has to be extremely cautious about the technologies that other countries are offering us to deal with solid waste. As we have seen, the garbage itself is quite different in India . What's more, instead of expensive capital-intensive plants, we have to employ much more labour-intensive methods. None of the countries that have come to India with their techniques for recycling garbage have rag-pickers. However destitute, migrants to Mumbai can hope to earn Rs 60-80 a day picking up trash, which is not to romanticise this thankless job but to point out that people are involved in day-to-day garbage collection for their very survival.

Bandra's citizens are gearing up to launch a novel scheme in time for the suburb's second Celebrate Bandra festival in November. The BMC will be asked to demarcate one or more gardens or vacant areas for composting garbage. An NGO, Stree Mukti, which has generated hundreds of jobs for poor women, at Rs 100 a day to treat urban waste, will be at the forefront of a community-led drive to minimise the amount of garbage that needs to be removed by trucks every day. If all goes well, this initiative may even qualify for a small grant under a UN-led scheme to reduce greenhouse gases and improve the environment.

More than a technical issue, the treatment of solid waste calls upon people's involvement -- from the well-to-do who generate the waste, to poor women who find alternative sources of livelihood in segregating waste, to the most lowly rag-picker. If preserving the environment requires people to 'think globally, but act locally?', this is surely one such exercise.

Bandra has already blazed a new trail by calling on its citizens twice in the past year to do **shramdaan** (voluntary work) and remove the plastic litter that clogs the suburb's mangroves. The initiative was spearheaded by the NGO Reefwatch, which promotes deep-sea diving off the Andamans and Lakshadweep islands, together with citizens' organisations and schools. If anything, the sheer enthusiasm displayed by the children exposed the cynicism of residents who believed this was a pointless exercise. Unless people realise that the buck stops at each and every person who wastes and carelessly uses plastic bags, it will be difficult to ensure that any area is kept litter-free.

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