INTEGRATED MUNICIPAL SOLID WASTE MANAGEMENT: EXCEL THINKS OUT OF THE BOX

Answers & Solutions

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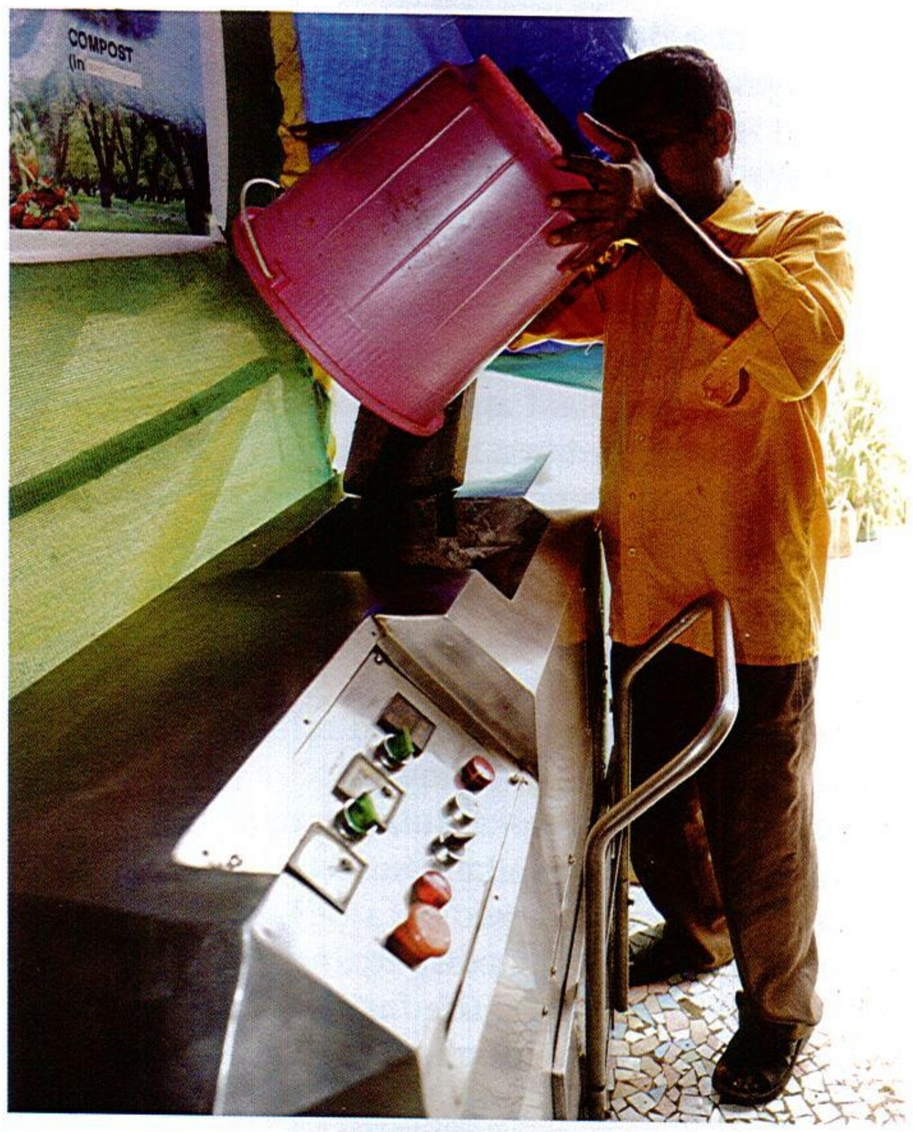
Municipal solid waste is a humungous problem for our country, and an integrated approach is the need of the hour – an approach that looks at solid waste as a resource for energy as well as manure for farming. Excel's inspiring story of breaking new grounds in solid waste management brings a fresh perspective on this problem.

While **Indian cities** have grown manifold in the past several decades – and it is most likely that the rate of urbanization would further go up in the future – problems of sewage disposal, municipal waste, open landscaped spaces, ground water pollution, etc, paint a frightening picture in the overall urban scenario. The constantly rising population, ever-increasing urbanization and growing standards of living have contributed to a huge increase in the quantity of municipal solid waste (MSW) generation in the country.

According to a Planning Commission report, India produces around 70 million tons of MSW annually, of which, at present, less than 5% is processed scientifically. Due to the paucity of urban land for scientific waste disposal, the common practice of open dumping is prevalent in the country, and most of the dumpsites in our cities are overflowing.

Consequently, waste continues to be one of the biggest public health, environmental, and land use challenges in urban India.



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An innovative concept

Ever since the beginning of its operations, Excel Industries Ltd has played a pioneering role in the field of crop protection chemicals for the industry as well as for agriculture. The company has done ground-breaking work in the field of solid waste management and in the development of a range of bio-pesticides. The company continues to play a major role in sustainable management of the urban environment and sustainable agriculture in rural areas.

Excel has gained considerable expertise while working in municipal solid waste (MSW) treatment and processing projects in India under various project implementations, structuring and providing a centralized solution of organic MSW treatment and processing at the landfill site. The company has also endeavored to explore forward linkage of compost recovered from centralized composting activities with wasteland rejuvenation projects as well as backward linkage with waste generating communities to promote decentralized waste management strategies.

Decentralized SWM strategy

Excel has evolved decentralized waste disposal options on the basis of its experience in this field over the years. The company believes that a decentralized solid waste management strategy will

- Promote awareness for waste segregation among waste generators
- Facilitate efficient recycling and composting of waste resources
- Minimize long haulage of waste to central disposal sites
- Reduce recurring need for sanitary landfill sites
- Facilitate compliance of MSW Rule 2000.

OWC system

Apart from this, after long, intensive research and extensive experiments, Excel evolved the organic waste converter (OWC), the core objectives of which are that it

- Minimizes the ill-effects of garbage
- Facilitates stakeholders' networking to encourage segregation, efficient composting and recycling at source
- Minimizes environment pollution resulting from long haulage of MSW to landfill sites
- Reduces the recurring need for landfill space
- Sensitizes the need for waste minimization through the introduction of waste services on "pay & use" or "polluters to pay" principles

The OWC system facilitates decentralized waste management strategy implementation to alleviate the burden of waste disposal from the ULB. It also generates opportunities for micro-entrepreneurship/self-employment opportunities for unemployed youth, rag pickers, or urban poor to earn their livelihood through the following means:

- House-to-house waste collection
- Biological treatment and processing at source of generation
- Reuse of recyclable waste, utilization of compost in garden and disposal of residue at source of generation.

In action at Excel

The company's head office in Mumbai demonstrates the efficacy and usefulness of OWC most tellingly. With its 800-odd employees, the company has its own canteen where the kitchen serves wholesome meals on a regular basis. WB was witness to the excellent manner in which the entire food waste and other organic waste from the kitchen is dumped into huge dumpsters by everyone directly from his or her plate after their meals. The dumpsters are later carried through a lift to the roof of the building where they have to pass through a OWC system.

The terrace serves as the processing area for the waste. The segregated organic waste is bio-mechanically treated in the OWC machine. It homogenizes organic waste with appropriate bio-

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culture and organic media. The coarse wastes such as garden pruning, bones, etc, are shredded prior to being fed into OWC machine. The output from the OWC machine is raw compost in uniform colours and soil-structured coarse powder, free of any odour. The leachate is controlled during the homogenization process. The machine operates in a batch cycle of about 15-20 minutes. And, the waste treated in the OWC machine accelerates the composting cycle.

Despite being used as a waste converting area, the sheer look of the terrace is no less than an organic garden with rows of decorative plants and a large number of vegetables growing in large pots in the compost generated by the waste.

The OWC takes up only a very small area compared to the volumes of waste it processes on a daily basis. The quality of vegetables grown is also superior to the quality seen in regular markets since the medium of its growth is high quality soil and compost. The funds generated by the sale of this produce are shared by the cleaning staff of the complex that would have otherwise merely dumped the waste in some municipal truck or elsewhere. A horticulture expert manages the plants and helps develop the garden as it were.

This initiative by the company illustrates the efficacy of the OWC and demonstrates how helpful it can be in high-rise complexes and even large residential areas with 40 to 5,000 families. In just 15 to 20 minutes, the treated output from OWC comes out as homogenized and odour-free coarse powder. It can further be converted into compost in 10-15 days for use in gardens, urban landscaping and forestation, thereby make cities and towns cleaner, greener, and healthier.

The matured compost, generated through the OWC can be utilized for in-house gardening, landscaping, or for green initiatives such as eco-housing, eco-townships, eco-hotels, etc, or as part of CSR activities such as social forestry, waste land rejuvenation, bio-energy plantations, etc.

Good for the city policy makers and planners need to think in terms of fiscal, financial and policy support for a decentralized waste management strategy because that seems to be the only way forward for garnering public support in this endeavor. The problem of solid waste management is humungous. Municipal Solid Waste (MSW) generation by 5,161 cities and towns in India is estimated at over 42 million tons per annum. About 40% to 50% of the total MSW generated is the organic waste of plant and animal origin. If organic waste is not treated in a time-bound manner, then it causes serious concern for public health hazards, unhygienic conditions, and environmental deterioration. About 72% of the total MSW is generated by 423 class-I cities and towns in India.

Some of the measures that need to be taken as soon as possible are as follows:

- *Bulk waste generators:* Bulk waste generators such as hotels, hospitals, hostels, commercial kitchens, corporate house canteens, institutions, large housing complexes, etc, may be advised to create their own in-house facilities for solid waste treatment through appropriate rules, regulations, legislations by statutory bodies, and thereby reduce the load on urban land bodies for waste collection, transportation, and disposal. In addition, exemption of local taxes, VAT, service tax, etc, to encourage waste generators to adopt the system at the source of generation.
- *Household waste generators:* Individual household generators may be encouraged to create community-based waste management facilities through appropriate incentives in the form of cost sharing by residential societies and other urban land bodies, municipal corporations, concession in local taxes, making available community spaces such as small areas in the garden, power, and water, as per the process requirement, etc.

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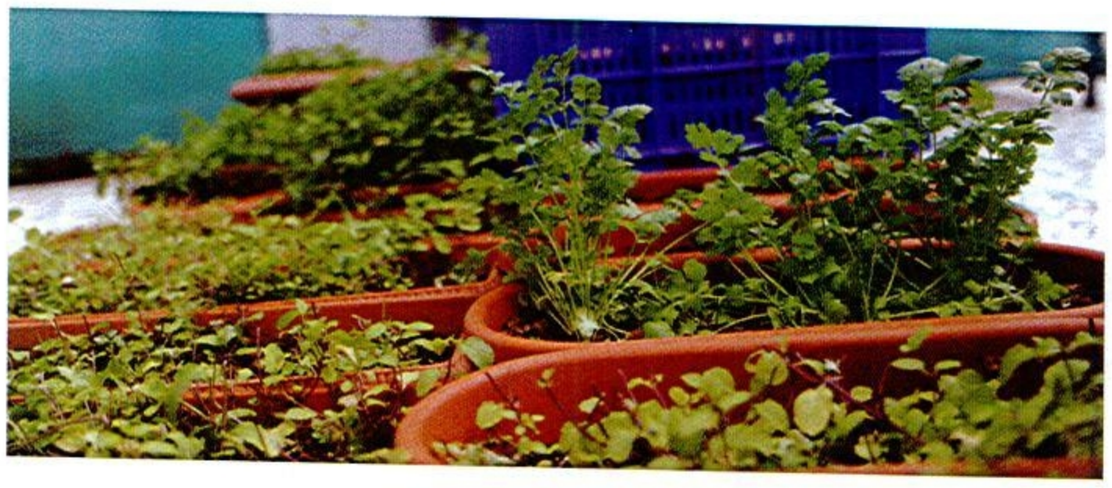
- *Waste virtuous cycle:* Once organic waste is segregated and treated at the source, rag-pickers or the urban poor can send it to recycling units through transport service providers. Similarly, debris can be transported to low-lying areas generally required for the reclamation of marshy land by builders and developers. Treated organic waste can be converted into compost at the landfill site, and the compost recovered can be utilized for city gardens, urban landscaping, city farming, social forestry, wasteland rejuvenation, etc, which will help mitigate adverse climate changes over a period of time.

The best way out

As per the 38th Report of the Standing Committee on Urban Development (2008-09) of the 14th Lok Sabha, "Urban local bodies (ULB) spend between Rs 500 and Rs 1,500 per ton on solid waste management of which 60% to 70% is spent on collection alone, 20% to 30% on transportation, and less than 5% on treatment and disposal, which is very essential to prevent environmental pollution."

Given this state of affairs, the above-mentioned strategy points, if followed meticulously, will result in saving revenue for the country's ULBs.



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The states will have to play a key role in this endeavor since most of our local government bodies are under the subject of the state list and are thereby governed by state statutes. Such measures are best practiced when the decision-making power is with the local civic bodies.

However, in India, devolution of power – both administrative and financial – has not been adequate; hence, land use, urban, and regional planning practices are weak because of limited capacities of the local and regional urban bodies. Under such conditions, the example set by Excel in its own head office can be a guide to resolving this problem elsewhere, too.

Not only is this a good way out for the problem of handling organic waste, but it is a livelihood for many and of course, green and healthy options for everyone as well.