



Don't let opportunity go to waste
 Promoting Integrated Resource Recovery Centres in Urban Asia

DECENTRALIZED COMPOSTING

How can composting improve solid waste management?

About 70 to 80 per cent of the waste in cities in developing countries is organic. By introducing composting, cities and towns can mitigate their growing problem of waste. By diverting up to 80 per cent of the waste from the landfill to compost plants, composting reduces the amount of waste that goes to the landfill and reduces disposal costs for the local government. Composting also reduces emissions of methane, a greenhouse gas, and thereby contributes to mitigating climate change.

Why decentralized composting?

In developing countries, large centralized and highly mechanized composting plants have often failed to produce good quality compost. These plants have often been abandoned due to high operational, transport and maintenance costs.

Decentralized composting is the composting of carefully separated organic household wastes in limited quantities at neighbourhood or ward levels. The involvement of local residents promotes awareness of resource recovery and ensures

the separation of waste at household level, while creating employment opportunities for the urban poor.

The decentralized composting approach reduces transportation costs, makes use of low-cost technologies based mainly on manual labour, and ensures waste is well sorted before it is composted. This minimizes many of the problems and difficulties that have led to the failure of large centralized composting plants in the past.

Where is decentralized composting appropriate?

While the decentralized composting approach developed by Waste Concern is flexible and can be adapted to suit most contexts, it works best for secondary cities and small towns where the local government can allocate land.

Decentralized composting can be implemented on a small scale, medium scale, or large scale. The small-scale model allows for 3 tons of organic waste to be processed daily, while the medium-scale model permits processing 3 to 10 tons of organic waste per day. More than 11 tons of organic waste can be processed daily using the large-scale model.

Large-scale centralized vs. Decentralized composting

| Large-scale centralized composting system | Decentralized composting system |
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| Depend on highly mechanized technology. | Simple technology and labour intense. |
| Large investments for advanced machineries. | Low capital cost and locally available materials. |
| High operation and maintenance costs and a high degree of specialized skills to operate and maintain. | Comparatively less maintenance costs and low level skills required. |
| Less interaction and involvement of the residents. | Having the residents separate their own waste reduces the volume of solid waste earmarked for disposal, increases the value of recyclables, and enhances the environmental awareness of the community. |
| Transportation cost is high as all waste needs to be transported to disposal facilities often located far from the city. | Reduces the costs for transportation. |
| Quality of compost is poor due to large quantity of unseparated waste with high risks of contamination. | Quality of compost is good because waste is efficiently separated twice and risks for contamination are minimized. |



THE BENEFITS OF COMPOSTING

Compost is the product derived from the biological break-down of organic material. Finished compost should look like soil – dark brown, crumbly and with an earthy smell like that of a forest floor. Compost has several benefits when used as a fertilizer in agriculture:

- Lightens heavy soils, allowing better infiltration of both air and water.
- Enhances and improves the soil's structure, so that it becomes less subject to erosion by either water or wind.
- Adds nutrients and trace materials to the soil, stimulating biological activity and encouraging vigorous plant rooting systems.
- Enables soil to retain nutrients and moisture, preventing them from being leached out of the soil and into the ground water.

How do decentralized compost plants work?

Each compost plant is located either within the neighbourhood it services or at the fringe of the city. The plant can provide daily door-to-door collection service or receive sorted waste from the municipal collection system. Households are trained to separate their own waste. Once separated, this waste is transported to the plant by hand carts, motorized carts or small vans. At the plant, waste is sorted one final time into organic waste, recyclable waste and rejects.

After sorting, the carbon/nitrogen ratio in the resulting compost is balanced. The organic waste is then piled in perforated boxes that are specifically designed for composting. These boxes let

more oxygen into the compost and allow more excess water to drain. The land needed for this method of composting is less than that needed for other compost technologies.

The fact that the plants are located in the neighbourhoods they service ensures that transportation distances are short, which reduces the risk of contamination and pollution. Strict quality control is maintained throughout the process, ensuring that the compost complies with numerous standards for certified organic compost.

Comparison between a 10-ton/day compost plant and conventional solid waste management

