CGIAR RESEARCH PROGRAM ON Water, Land and Ecosystems
LED BY: IWMI International Water Management Institute

Subsidy-free Community-based Composting

Business characteristics

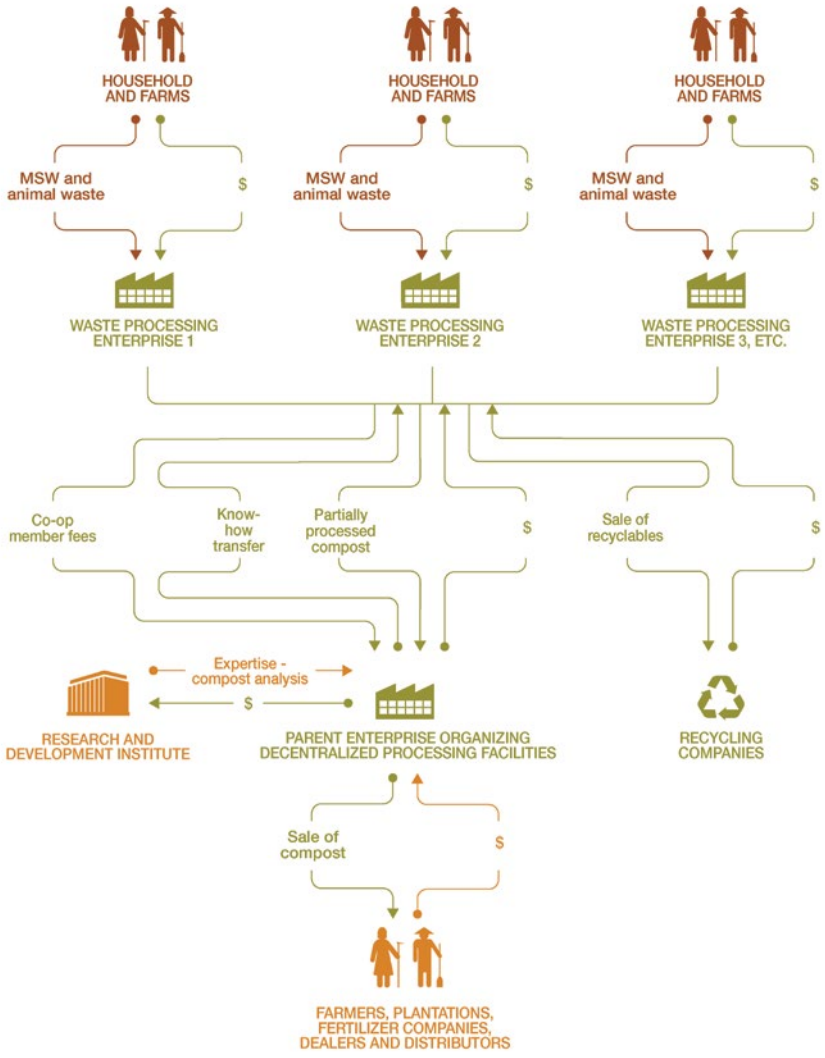
Geography	Replicable in medium and large cities where land availability is limited
Scale of production	20-30 tons of municipal solid waste (MSW) processed per day
Type of organization	Cooperative
Investment cost range	Capital cost of about USD 3,500-5,500 excluding land costs, and operation and maintenance costs of USD 7,500-12,500 per year
Key costs	Capital investment (land, machinery, licensing), operation and maintenance (electricity, land, rent, etc.), payment of quality control fees to research institute, and administrative costs (collection of member fees and selling the compost)
Revenue stream	Sale of compost, waste collection fees and cooperative membership fees

Business model

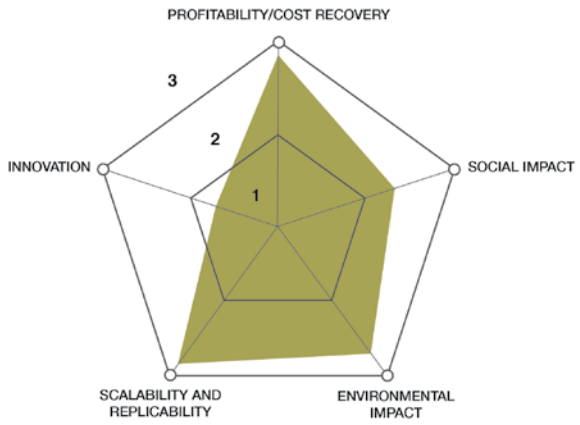
The business model groups together various community-based organizations (CBOs) to form a cooperative for producing organic compost from MSW. The compost produced is sold to agricultural producers, and the profits are divided among the members pro rata to the amount of business each member has done with the cooperative. The model also provides sustainable waste management services for the communities involved.

In the model, the CBOs collect waste from households and farms in their area at a fee. The waste is then separated and partially composted by each member, and sold to the parent enterprise of the cooperative. This enterprise can then add value to the compost by processing it further (e.g., fortification with nutrient minerals), and packaging, branding and marketing the final product. A key partnership with a research institute is essential in developing a final compost product that is competitive on the fertilizer market. In this way, the CBOs generate revenue through waste collection fees and compost sales, and the parent enterprise receives income from membership fees (paid by the CBOs) and final compost sales. Members can also sell recyclables.

BUSINESS MODEL VALUE CHAIN



Business performance



The business model ranks highest on profitability as it can generate significant profits due to the cooperative and cost-saving nature of the decentralized operations that produce a partially-processed compost. The value addition to the product via fortification and branding can also represent an incremental price mark-up on the final compost product.

Main risks

General risks: Lack of community awareness and interest, with the need for a reliable leader among the community to prevent falling into the trap of a 'failed cooperative'.

Market risks: Potential risks in the output market arising from policy instruments such as chemical fertilizer subsidies.

Political and regulatory risks: Cooperative models, particularly in developing countries, have shown a mixed record of success even in cases where community involvement and support have been strong. This has mainly been attributed to poor management.

Safety, environmental and health risks: Risk of workers' exposure to waste and related pathogens, if the appropriate gear is not used. Also, given that the pre-composting process is dispersed and occurs in multiple locations, there may be a greater number of people exposed to waste-related pathogens, depending on their level of training on safety measures and use of safety gear.

Case study: Nakuru, Kenya

The Nakuru Waste Collectors and Recyclers Management Cooperative Society (NAWACOM) is a cooperative that has brought together various CBOs in the organic waste recovery sector in Nakuru, Kenya. The CBOs produce a partially-processed compost from agricultural, household and market waste using a windrow composting technology, which is sold to NAWACOM. The product is then further composted, fortified, packaged and branded under the name Mazingira, and sold directly to farmers through word of mouth (95%) or through agro-shops (5%). Revenue streams of the cooperative are mainly from compost sales and member subscription fees. All accrued profits are shared among cooperative members.

The benefits of the decentralization of NAWACOM's activities have ensured that: (i) smaller-scale CBOs are still able to financially sustain their businesses by not having to put up significant capital investment for equipment, and establishing sound marketing and distribution channels; and (ii) NAWACOM allocates its resources efficiently, i.e., waste collection and separation is outsourced to communities, reducing high transportation costs. The cooperative's activities have also helped to significantly reduce the city's waste management costs, reduce human exposure to untreated waste and contribute to the livelihoods of local communities.

Key performance indicators (as of 2015)

Capital investment:	USD 4,671 excluding land costs	
Labor:	Six employees (two skilled part-time, four unskilled part-time) – excludes employees in the different CBOs	
Operation and maintenance cost:	USD 9,977/year	
Output:	100-300 tons of compost per season	
Social and environmental impact:	Job creation, provision of a nutrient-rich organic fertilizer for agricultural production and a clean environment	
Financial viability	Payback period: 5 years	Gross margin: 40%

For more information on the business model and related cases, see Chapter 8 of **Otoo, M.; Drechsel, P. (Eds.). 2017.** ***Resource recovery from waste: Business models for energy, nutrient and water reuse in low- and middle-income countries.*** **London: Earthscan/Routledge. In press.** The book has been produced by the Resource Recovery and Reuse subprogram of the International Water Management Institute (IWMI), under the CGIAR Research Program on Water, Land and Ecosystems (WLE) and its Rural-Urban Linkages Research Theme. The support of the Swiss Agency for Development and Cooperation (SDC), the International Fund for Agricultural Development (IFAD), and CGIAR Fund Donors (www.cgiar.org/about-us/our-funders/) is gratefully acknowledged.