

Integrated Solutions are Reducing, Reusing, and Recycling Waste

HIGHLIGHTS

- Integrated waste management enterprises serve the dual goal of poverty alleviation and prevention of environmental degradation across the waste management value chain.
- Some enterprises leverage partnerships with government to minimize their initial investment in infrastructure and support public sector efforts to manage waste.
- A few enterprises deploy technology to connect various stakeholders across the value chain and improve efficiency of operations.



Development Challenge

Nearly 50 percent of the world’s population does not have access to regular waste collection, while over 3 billion people lack access to controlled waste disposal facilities. Inadequate waste management has implications on the environment and public health. The sections of society that face serious health risks include waste workers and people residing near dump yards; most of these communities belong to low-income groups; poor health impacts their livelihood and productivity. One of the key challenges in ensuring efficiency in waste management processes is the informality across all activities from collection to segregation and disposal, and across stakeholders such as waste pickers and middlemen. This informality also perpetrates the lack of awareness related to safe waste management practices in most developing countries. Unregulated and illegal dump sites serve about 4 billion people and contain over 40 percent of the world’s waste. Inefficiencies also creep in as different players manage different components of the waste value chain.

Business Model

A number of innovative enterprises have emerged in the recent past to address gaps in the waste management system and build sustainability through efficiencies. The integrated waste management business model focuses on undertaking activities across the waste value chain, including collection of waste, sorting and segregation, treatment or recycling and disposal of waste. This model also relates to facilitating forward and backward links across the waste management value chain. Some of these enterprises leverage information and communications technology to deliver their services. In addition to providing end-to-end waste management solutions, some of these enterprises also assist the governments in providing information and data through online platforms and information analytics.

Regarding partnerships, often integrated waste management enterprises partner with municipal corporations, international bodies, and other waste management enterprises at various levels in the value chain. These partnerships help the enterprises to increase their outreach, access financing, leverage infrastructure for their own benefit and of the partners and stakeholders at large.

Features of Integrated Waste Management Business Model

| ICT enabled integrated waste management | Non-ICT integrated waste management |
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| <div style="text-align: center;"></div> <ul style="list-style-type: none"> • Enterprises provide efficient end-to-end services including collection, sorting/ segregation, transportation and disposal • Some of the enterprises deploy GPS technology and provide mobile-phone enabled tracking of waste collected and recycled • A number of enterprises leverage ICT to provide services across the waste value chain • Enterprises also provide smart analytics based landfill management services such as waste analytics reports with details of amount of waste collected and disposed at landfills | <div style="text-align: center;"></div> <ul style="list-style-type: none"> • Some enterprises have designed and deployed modern machinery that collects, treats and compresses the treated waste for efficient disposal • Enterprises provide efficient end-to-end services • Integrated waste management enterprises leverage costs saved in undertaking waste related activities in a holistic manner and pass the savings on in terms of lower collection costs. |

Implementation: Delivering Value to the Poor

Awareness

In most households, there is disgust and apathy towards safe disposal and limited curiosity about what happens to waste once it leaves their homes. The attitude-behavior gap regarding appropriate waste management is seen among waste generators and waste managers. Apart from traditional awareness building initiatives, integrated waste management enterprises adopt technology to provide information and make the process convenient to all. India-based Banyan Nation leverages technology to map and connect with informal recyclers through its tools, such as an app and an SMS-based trading platform to give them leads on type and amount of waste collected.

Acceptance

A major constraint observed across most developing countries is the lack of education and awareness of effective waste-management practices, which eventually results in low acceptance. Other reasons for low acceptance include age-old habits and lack of responsibility toward the environment. Enterprises present customized solutions and user-friendly strategies to increase acceptance of their waste management solutions. For instance, India-based Green Nerds leverages technology to provide innovative techniques of waste disposal and management. Its PECK machine offers individuals a disposal unit that collects and treats plastic and e-waste. It allows users extra benefits for disposing waste in the machine.

Accessibility

Enterprises increase accessibility of their solutions to the prospective customer segments in a number of ways. A few leverage local networks to increase accessibility of their services. For instance, Sampurn(e)arth partners with volunteers from the housing societies where it provides its services. The volunteers have a local influence and help the enterprise in increasing the accessibility of its services. Some enterprises also adopt online mediums to increase accessibility of waste-to-value products and services to targeted customers. Daily Dump has its own online portal through which it sells its products and services.

Affordability

A number of integrated waste management enterprises avail government premises for storing, sorting, and recycling waste, which not only reduces their costs, but also ties in their efforts to that of the local government. Enterprises that enter into public-private partnerships also enjoy stability in revenue streams as well as increased outreach. Some enterprises adopt efficient processes to collect, sort, and recycle waste materials to bring down their costs, and pass on the benefits to the customers in terms of affordable services.

Integrated waste management enterprises incur a majority of their cost in salaries of employees and contract workers. A few that partner with waste picker organizations for collection incur additional labor costs in sourcing waste. They also incur material cost and transportation cost for sourced waste. Other cost factors include premise rentals and cost of recycling machines.

Integrated waste management enterprises typically have multiple revenue streams since they offer a range of services. These include waste collection fees from households, commercial enterprises and institutions, and proceeds from the sale of recycled products, such as gift and utility items, biogas, and compost. Sampurn(e)arth earns revenues from its collection services, the sale of biogas plants, sale of biogas, and operation and maintenance services. Bali Fokus earns revenues through sale of recyclables, such as plastic bottles and cans to scrap dealers, in addition to fees for collection services to hotels. A number of integrated waste management enterprises dealing in e-waste earn revenues through the sale of refurbished electronic items, and recovered precious materials.

The financial sustainability of integrated waste management enterprises depends on the efficiency of waste collection fees, increased sale of recycled and refurbished items across the value chain, and diversifying the revenue streams and financing mechanisms. Most of the interviewed enterprises have not achieved breakeven; a few of them are operationally sustainable.

Results and Effectiveness

Integrated waste management enterprises have direct and indirect environmental and social impacts. They reduce the amount of waste reaching the landfills and prevent greenhouse gases and hence environmental degradation. For instance, Think in India upcycles the waste, thereby diverting huge amounts of waste from landfills and dump yards. The upcycling process also reduces the amount of virgin materials to produce new materials.

The enterprises engage with low-income communities mostly as employers, and help them through improved aspects of income generation, health, and better dignity at workplace. A few enterprises train informal waste workers, provide them skills for life, and help them become a part of the formal waste management system. Brazil-based ASMARE employs the homeless and ex-convicts and trains them for operating the recycling process. It shares the profits obtained by sale of recycled items with the waste workers.

Private enterprises are often better equipped to deliver a quality service at a low price, while creating the same impact. As a result, several public authorities engage with private enterprises to improve waste management in terms of costs and outcomes. Since they leverage public infrastructure for sorting and recycling waste, these enterprises require limited capital investment.