



Integrated resource recovery centre

Key points

- *Waste can be turned into valuable resources.*
- *Setting up a system for the collection and treatment of waste is an enabling condition for recovering the resource potential of waste.*

Integrated resource recovery centre explained

An integrated resource recovery centres (IRRC) is a decentralized community-based centre specializing in waste treatment. Attractive features of an IRRC are the close involvement of the surrounding communities and the small scale of the facility.

How it works

An IRRC carries out three primary activities:

- **Collection of segregated waste:** Most centres provide daily door-to-door collection service from neighbourhoods and charge a monthly waste collection fee. Waste can be also collected from local authorities or private companies.
- **Processing of waste:** Waste is sorted a second time at the centre. A major portion of the incoming waste is organic and about 70–80 per cent can be composted. The recyclable material is stored and in some cases processed. The 5–10 of waste that is rejected is sent to a landfill.
- **Selling resources produced from the waste:** Compost is sold in bulk to farmers, fertilizer companies and to local authorities who use it for parks and green spaces. The IRRC is encouraged to focus on bulk buyers and buyers with their own distribution networks to reduce the cost of transportation and packaging. The recyclable material is also sold in bulk.

The IRRCs can incorporate various components for treating wastes:

- **Compost enrichment:** An IRRC can produce different types of fertilizer for specific soil and crops by varying quantities of nitrogen, phosphorus and potassium and other nutrients that are added to the compost.
- **Biogas plant:** Fish and animal waste can be made into biogas using a digester installed within the premises. The produced biogas can be used for cooking and generating electricity.
- **Recyclable management:** Inorganic waste, including plastics and metals, are sorted, cleaned and compacted before it is sold to bulk buyers.
- **Used cooking oil recycling unit:** Used cooking oil can be converted into biodiesel.

Strengths of an integrated resource recovery centre

- **Offers an inexpensive option:** IRRCs can be built and operated at low costs by using limited mechanical technology. Using technology that requires little energy keeps operation costs low and equipment breakdowns are minimal. Simpler technology is also more labour intensive, therefore it creates more job opportunities for the poor.
- **Reduces landfill content:** By limiting the amount of waste going to dumpsites, the IRRCs also help the

environment. This process addresses the problem of used cooking oil being disposed of into the drainage systems of many developing cities.

- **Provides safer employment:** IRRCs directly benefit the urban poor, providing waste pickers with better, more stable incomes and safer working conditions.
- **Promotes recycling to produce healthier material:** Organic fertilizer or biodiesel are environment friendly.

Challenges to setting up an integrated resource recovery centre

- Potential resistance from informal workers making money out of the current waste treatment system.

Implementing strategies

Designate a focal point to operate and manage the centres: An IRRC can be initiated and operated by municipalities, private-sector enterprises and civil society organizations, or a combination of all three through different partnership models. The capacity to process waste can vary from 2 to 20 tonnes per day. An IRRC can be established within neighbourhoods, in several areas in one city or in the outskirts of a city.

Ensure financial viability of the operation: Income streams can include collection fees from serviced households, sale of compost and recyclable material and income from carbon financing. To ensure profitability, an IRRC must formulate a business plan before starting any work. The business plan must ensure that the products cater to the demands of the local agricultural sector and that the source of revenue, including carbon credits, and running costs are identified and estimated as accurately as possible.

Inform and engage people from the community: The value added and the purpose of recycling need to be communicated to the public for higher uptake. Training households to separate their waste into organic and inorganic fractions helps increase the value of what is recycled for safer and easier collecting and sorting at the IRRC. With carefully sorted organic waste, an IRRC uses an aerated box method to produce good-quality compost.

Further reading

Integrated Resource Recovery Centres (Bangkok, UNESCAP, 2010).