3. Managing facilities and improving operations

Facilities management and operational performance are critical components of any waste-to-resource initiative that aspires to long-term sustainability. Without sound management, the facility will fail. This section features a range of lessons on management and good business practices, such as correct business planning, human resource management and performance monitoring. It advocates for the establishment of key performance indicators to allow facility managers to better understand operations and the best use of resources. The section also explores some of the common challenges related to the financial management of facilities and provides a range of strategies for improving financial sustainability.

3.1 The importance of a sound business approach

A business plan, job descriptions and sound accounting are fundamental. Waste-to-resource facilities should operate as a business to the extent possible. Such an approach greatly facilitates cost-recovery, thereby allowing the facility to maintain its operations over the long term. This requires that facility managers prepare a business plan.

The business plan should draw on results of surveys conducted among a community or city regarding the amount and composition of waste generated and collected, waste-related behaviour and willingness to pay as well as research on markets for resources to be produced from waste. The business plan needs to be realistic about operational expenditures and income-generating activities over the medium term (three to five years) and make calculations based on best-available data and local business experience to ensure cost-recovery. The preparation of the business plan should result in a better understanding of the economic benefits of implementing a waste-to-resource initiative. It may also be important to understand the amount of support needed from the local government for ensuring profitability. In addition, workers in waste-to-resource facilities need to understand their roles and specific duties. These duties should be outlined in clear job descriptions.
Approaching waste-to-resource facilities as businesses also requires that business managers adopt sound monitoring and accounting processes. Too often waste-to-resource initiatives in low- and middle-income cities fail to adopt correct accounting practices, which can contribute to their failure, and/or facility managers are not adequately informed of their operating expenses and revenue sources. With improved accounting, managers can make more-informed decisions.

**Key performance indicators need to be established and monitored.** Effective management requires the monitoring of operations. For this, data need to be systematically collected. Such data should include the amount and type of waste received at the facility, the amount of waste rejected, the amount of compost or biogas produced and the time it took and the amount sold, the volume of recyclables sold and other elements of operations. Similarly, the composting process requires careful monitoring to ensure that quality compost is produced. This includes monitoring the temperature of the compost pile, its moisture content and gas levels.

Such monitoring allows facility managers to establish and check key performance indicators (KPIs). Time and motion studies can provide useful guidance for establishing the KPIs. These may change over time, as new elements are added to facility operations. The monitoring of KPIs should take place at least monthly, with some facilities also establishing daily KPIs and monitoring systems to ensure efficient day-to-day performance. This practice will also contribute to the transparency of the operations and is important for claiming greenhouse gas emission reductions through the United Nations Framework Convention on Climate Change-approved protocols.

### 3.2 Achieving financial sustainability over the long term

**Diversifying revenue sources builds financial resilience.** To be sustainable over the long term, waste-to-resource initiatives must develop a robust portfolio of revenue sources. Diversification of revenue sources greatly increases the financial resilience of operations.
Common sources of revenue for waste-to-resource initiatives have included:

- **Sale of compost, recyclable materials and other products** of the waste-to-resource facility. Recyclable materials can be sold to the recycling industry. Compost may be sold to local residents for gardening, to commercial farmers and to the municipality for use in parks. Biogas may be used as a heating fuel or converted into electricity.

- **Fees for services rendered** to the community, commercial establishments or the municipality. Typically, these services are either for waste collection (collection fee) or waste treatment (tipping or gate fee).

- **In-kind support** extended to the waste-to-resource initiative from the local government. This might involve the local government paying for electricity or water charges incurred by the facility or the provision of labour to the facility at no-cost to the initiative. This support also can include a subsidy disbursed from the local, provincial or national government to offset costs incurred in the facility. Such subsidies can take many forms, depending on local financing procedures and regulations.

- **International financing** linked to climate change mitigation mechanisms. These mechanisms monetize the climate change mitigation benefits of waste-to-resource processes and can generate revenue for waste-to-resource initiatives.

The selection of revenue sources will depend on the type of policies and regulations in place, the degree of support that local government and other stakeholders are willing to extend and the degree of community engagement, among other factors. As Figure 14 demonstrates, diversification of revenue sources is required because revenue from the sale of compost, recyclables and other products from the facility are rarely sufficient to cover costs.

**Collection and tipping fees are usually required to achieve cost-recovery.** Waste-to-resource facilities that achieve operational cost-recovery usually do so by increasing the revenue derived from collection and tipping (also called gate) fees. Some waste-to-resource operators deliver small-scale waste collection services to households, who pay for the service. Some operators deliver larger-scale services to an entire city and are paid by the municipality. Other operators, by treating organic waste collected and delivered by a third party, provide an essential service to the local government who pays them per tonne of waste treated. However the fees are structured, they are essential for cost-recovery and should be prioritized accordingly by waste-to-resource managers.
Figure 14. Average share of revenue, by source for waste-to-resource facilities under various partnership models

In Kampot, compost fetches a high price on the local market. Under the business plan for the facility, compost is the main source of revenue. However, with the facility operating below capacity, compost production does not yet allow for cost recovery.

Source: ESCAP, using operational data generated in the facilities in 2014.
At first it was difficult to break even. The IRRC in Quy Nhon, Viet Nam had been running for a year but expenses continued to exceed revenue. “We were concerned that unless we found some way to increase our income, we would not be able to continue,” says Ngo Huy Liem, Executive Director of Environment and Development in Action. “So we began to try different options. We had to get creative, and we had to connect with our partners and stakeholders to find viable solutions.”

Among the strategies tried, some looked outwards to new clients and buyers, and others looked inwards at operational efficiency and quality production. These strategies permitted the facility to maintain a positive cash flow for more than two years, operating independently of external financial support. For all strategies, the collaboration and support of local government leaders was vital.

Strategies included:

- **Providing primary waste collection to households** in the community. Approximately 800 households pay between $.30 and $.90 per month to the waste-to-resource initiative for collection of separated waste.
- **Providing primary waste collection to hospitals and education facilities** in the city. A single contract can generate between $140 and $230 per month.
- **Marketing compost within the community** using demonstration gardens and workshops with farmers and other compost users. This helps to ensure a steady base of compost buyers.
- **Maintaining a good compost sales price**, in part due to the high-quality compost production and to community outreach initiatives. The sale price of compost produced in the waste-to-resource facility is twice as high as the sale price of compost produced elsewhere in the province.
- **Incentivizing facility staff for high performance**, particularly in terms of waste sorting and processing within the facility. Incentives for the workers include profits derived from the sale of recyclables and garden produce.

Source: ENDA.
**Improving quality helps to open markets.** Revenues increase when waste-to-resource facilities improve the quality of their products. This is the case both for compost products and recyclables. Recyclables need to be cleaned, compacted, sometimes shredded and packaged. In many cities, a market already exists for recyclables. But compost is often unknown and poorly marketed. Chemical products dominate the fertilizer market. This means that waste-to-resource facilities that produce compost must work extra hard to convince and maintain buyers. Improving compost quality helps gain new buyers and maintain existing buyers. Several factors contribute to compost quality. Waste separation at source is vital for ensuring clean, non-contaminated raw organic matter for composting. The composting process must be monitored closely to ensure that the chemical, microbial and moisture content are all correct. Certification by government bodies that the compost meets national standards also helps to demonstrate quality to buyers (Box 16).
“Because we produce compost from both organic and human waste, quality standards are critical for us,” says Anwar Ali, the mayor of Kushtia, a small city in Bangladesh. Kushtia is the first city in the country to adopt the practice of co-composting (see Box 17). “The co-composting facility is run by the municipality,” explains Mayor Ali, “and we work hard to ensure that compost produced there meets national quality standards.”

Before the introduction of the Organic Fertilizer Standard in 2008, some unethical producers in Bangladesh sold simple garden soil as organic fertilizer, tricking consumers and undermining the value of compost in the market. Product quality is an important factor influencing the uptake of compost by the market. The consistent production of high-quality compost builds product loyalty and trust among farmers, home gardeners and other users.

The Organic Fertilizer Standard specifies quality requirements against a number of criteria, including colour, smell, foreign matter, degree of maturing, nutrient content, heavy metal content, pathogens and acidity/alkalinity (pH). Under the Organic Fertilizer Standard, compost producers must acquire and maintain two separate licences. The first is a license to produce. It is granted to the organization if the compost it produces meets the quality standards. For this, the organization submits a sample of its compost for laboratory testing by the Ministry of Agriculture. The second is a license to distribute and market and is granted to organizations if the application of their compost results in a crop yield higher than a reference yield acquired with the use of chemical fertilizer. Organizations that have both licenses are able to use the term ‘government approved’ on their compost packaging.

As a result of the government standard, the quality of compost produced in Bangladesh has greatly improved, and the compost sector overall has been standardized and formalized. This has enhanced the confidence and trust of farmers and other compost consumers. By the end of 2014, 40 companies were producing compost in accordance with the quality standards.

Source: ESCAP and Waste Concern.
3.3 Lessons learned for management and operations

To support the management and operations of waste-to-resource initiatives, national and local governments have successfully utilized a range of strategies, tactics and policies, as the following outlines.

Contribute resources to support waste-to-resource initiatives by:

- **Allocating land in suitable locations for the construction of the facility.** Land constitutes an important capital cost. Municipal governments, as landowners in most cities, can provide critical support by providing the land for waste-to-resource initiatives.

- **If relevant, supporting waste-to-resource operations by contributing human resources.** To help reduce the operational costs incurred by NGOs, social enterprises or community groups, municipal governments have contributed human resources, either for technical support or manual labour. The parameters (duration, frequency, type, etc.) of this support may be negotiated as required. In addition, municipal governments have offset charges for municipal utilities over which they have influence, such as water and electricity. This has been successful in Matale and Ratnapura, Sri Lanka.

Encourage sound financial management and support revenue diversification by:

- **Supporting revenues derived from waste collection fees.** Collection fees constitute an important source of revenue for waste-to-resource operations. Municipalities have supported this component by ensuring that fees are adequate, correctly collected and disbursed. Municipality authorities have also supported the awarding of waste collection contracts for large public establishments, such as hospitals.

- **Stimulating the local compost market.** To boost the uptake of compost use, it has proved effective for a local government to promote the value of compost among local farmers through targeted programmes and initiatives. Additionally, given the parks, gardens and green spaces maintained by most municipalities, the city constitutes a potentially important buyer of compost. In Kon Tum, for example, the municipality’s environmental department buys almost all the compost produced by the waste-to-resource facility for use within the city.
• **Encouraging a diverse range of financial mechanisms.** Numerous options exist as potential revenue sources for waste-to-resource initiatives, including tipping fees, feed-in tariffs for waste-to-energy initiatives, tax holidays, reduction in import duties and sales taxes and climate change financing. Municipal governments should support the selection and implementation of appropriate financial mechanisms. The support (financial, technical, regulatory, etc.) of the national government may be necessary for some mechanisms. For example, it is typically beyond the scope of a municipal government to offer a tax holiday or feed-in tariff.