

## 4. Critical requisites for successful waste-to-resource initiatives

Successfully launching and sustaining a waste-to-resource initiative relies upon (i) government commitment, (ii) cost-recovery, (iii) waste separated at source and (iv) stakeholder engagement and education. Without these critical requisites, facilities will struggle and falter.

Encountering challenges and working within constraints is an essential reality of managing waste-to-resource initiatives, especially in low- and middle-income countries. Thus, one of the core tasks of managers is to find viable solutions for overcoming the challenges, which stem from policy gaps, technical or financial limitations or stakeholder behaviour. The four requisites provide managers with the fundamental conditions for overcoming the challenges.

After several years of waste-to-resource initiative operations in cities across the Asia-Pacific region, the four requisites were singled out as the keys to success.<sup>3</sup> Each requisite is closely interlinked, with high degrees of interdependence and interrelatedness. Thus, when these four requisites are in place, a solid and dependable structure for advancing waste-to-resource initiatives is essentially guaranteed.

### Requisite 1. Government commitment

Government commitment is the most important requisite for long-term success. It may come from local, municipal or provincial government, depending on how government responsibility for municipal waste management is structured and how a waste-to-resource initiative is designed. Unless an appropriate level of government is committed to waste-to-resource initiatives and fully engaged and willing to provide the required financial, technical or policy support, success will remain difficult.

Government commitment is necessary for a variety of reasons. First, a government commitment to a waste-to-resource initiative translates into the allocation of resources. In the cities where ESCAP and its partners have been

<sup>3</sup> Donovan Storey, Lorenzo Santucci, Rowan Fraser, Joao Aleluia and Laksiri Chomchuen, "Designing effective partnerships for waste-to-resource initiatives: Lessons learned from developing countries," *Waste Management and Research*, forthcoming.

working, local governments provided the land on which the waste-to-resource facility was built (except in Islamabad, Pakistan). Second, government commitment also translates into support and cooperation from government-owned bodies, such as garbage collectors and market associations. This is important because as a municipality begins to shift towards sustainable solid waste management organizational change will be required of other actors within the city's waste management system. Third, with government commitment comes its readiness to make the supporting policy and regulatory changes that are needed. This might involve, for example, the issuance of new regulations for households in terms of domestic recycling or waste separation. Policy and regulatory changes also include the design and provision of incentives, which are often required to strengthen a shift towards sustainable waste management.

The economic, social and environmental factors highlighted above are tremendous incentive for governments to embrace this practical solution. Additionally, in towns and cities with a growing tourism industry, commitment to improved waste management can link to the development of more attractive tourist destinations. In other towns and cities, the driving motivation may be environmental, while in others it may be the result of personal interest among local leaders.



#### Box 4. Government commitment in Matale, Sri Lanka

In 2007, a small waste-to-resource facility with a processing capacity of 2 tonnes of organic waste per day was established in Matale, a city in central Sri Lanka. Two years earlier, Hilmy Mohammad, who had just become the city's mayor, was concerned about the waste problem. "I wanted to make a difference," he recalls.

Matale is a city of 50,000 people generating around 30 tonnes of municipal waste per day. In 2007, most of that waste was dumped at an open landfill on the edge of the city. This caused pollution and was costly for the municipality. "We wanted to find an alternative," explains Mayor Hilmy. Under his direction, the city government provided land for the construction of the waste-to-resource facility.

"Mayor Hilmy proposed to build the facility on land close to his house," says Ekanayaka Banda, CEO of Micro Enrich Compost, the social enterprise that operates the waste-to-resource facility. "This was a sign of his commitment to the project." When he visited one of the IRRCs in Dhaka, the mayor witnessed first hand how the facility was operated and gave permission to go ahead.

In Matale, government commitment has also been expressed through a range of community awareness-raising activities and by the provision of labourers for the facility. Because the municipality continues to pay the salary of these labourers as well as the electricity and waste supply charges, the financial burden on the waste-to-resource initiative is greatly reduced, making cost-recovery easier. At the same time, costs incurred by the municipality in supporting the waste-to-resource initiative are less than the cost of sending waste to a landfill, making it beneficial for the city.

Since the first waste-to-resource facility was built, commitment to the initiative has resulted in two more facilities being constructed. In total, the three facilities in Matale now have a processing capacity of 9 tonnes of organic waste per day. By 2016, this will rise to 12 tonnes per day as a result of a planned 3-tonne expansion, which the Central Environment Authority is funding. Matale is slowly moving towards a total waste solution, in which nearly 100 per cent of the municipal waste could pass through waste-to-resource facilities.

Source: ESCAP and Waste Concern.

## Requisite 2. Cost-recovery

Cost-recovery is vital if a waste-to-resource facility is to provide long-term and sustainable benefits to a city and its residents. Cost-recovery means that the revenue the waste-to-resource facility generates is greater than the expenses it incurs. Cost-recovery should derive, to the extent possible, from the sale of goods (such as compost, biogas, recyclables and RDF) produced in the facility. Such revenues are usually not sufficient to cover expenses, however. Thus, facility managers must seek other sources of revenue, typically through waste collection and gate fees, government subsidy and other forms of financial support.

Such financial support from local government should be understood within its broader economic context. Landfilling brings many negative externalities, such as pollution and public health issues, which can be costly over the long term. Most negative externalities are highly localized, affecting communities, crops, waterways and economies. When local governments provide financial support to waste-to-resource initiatives, they are paying to avoid these negative externalities.

Cost-recovery is important for a number of reasons. Most critically, cost-recovery allows a waste-to-resource facility to become financially sustainable. Second, cost-recovery can help stimulate private sector uptake of the waste-to-resource model and broader replication. As a decentralized, community-based waste-to-resource model, the IRRRC relies upon replication for full effectiveness.

Nonetheless, cost-recovery can be a challenge, especially because it requires partners and stakeholders to affect change in community practices and the policy and regulatory environment. Waste-to-resource managers and partners must work with a variety of stakeholders to identify, secure and maintain sources of revenue; this is typically time consuming and relies upon the provision of an adequate service in return. Once a facility achieves cost-recovery, careful and dynamic financial management must be maintained even as revenue streams, the quantity of waste collected, collection fees, compost and recyclables sales and other financial variables fluctuate.

### Box 5. Achieving cost-recovery in Quy Nhon, Viet Nam

In 2007, a small 2-tonne-per-day IRRRC was established in Quy Nhon, a city of 300,000 people on the coast of Viet Nam. It took a few years before the facility achieved operational cost-recovery. Since 2012, the facility has operated independently of external financial support and now generates a profit.

Revenues generated by the IRRRC are sufficient to pay the salaries of the plant manager and five labourers. Some 80–85 per cent of the IRRRC revenue derives from waste collection fees paid by approximately 700 households as well as two hospitals and a vocational training centre. Revenue generated from the sale of compost and recyclables accounts for around 10–15 per cent of total revenue. In Quy Nhon, cost-recovery is heavily dependent on collection fees. In months when payment of collection fees to the IRRRC is delayed, the facility may experience a temporary operational loss. The facility now has cash reserves, which help to provide a cushion in these cases.

Cost-recovery in Quy Nhon is maintained thanks to various initiatives led by facility managers, including:

- undertaking marketing campaigns for the compost produced in the facility, leading to improved sales of compost;
- establishing long-term organic waste collection contracts with hospitals and an educational facility, leading to increased revenue from reliable collection fees;
- establishing a demonstration garden to show the effects of composting on plant growth, leading to improved compost sales; and
- improving labour productivity through the use of a compost-sieving machine, leading to improved production of compost.

Beyond these initiatives, the local government has been particularly committed to the waste-to-resource initiative. It has launched community awareness-raising campaigns and public outreach programmes to support separation of waste at source and negotiated on behalf of the waste-to-resource initiative for improved contract terms with the hospitals and the educational facility.

### Requisite 3. Waste separation at source

Waste is generated the moment a person or organization decides that the material or object in question is no longer of use to them. This is the source of the waste. Separation of waste at source involves the categorization of waste into its various components within a household, business or organization that generates it. Typically, this involves separation into organic and inorganic waste. Sometimes waste is also separated into organic and various types of inorganic material, such as glass, metal, paper and plastic.

Source separation of waste is critical because it permits the acquisition of good-quality, clean and uncontaminated organic waste, which is needed for the production of quality compost in a waste-to-resource facility. Source separation also provides facilities with clean and uncontaminated recyclable materials, such as paper and plastics. Some recyclables, such as paper, are easily ruined if contaminated by wet waste. Thus, separating waste at source greatly improves the waste recovery process. This in turn contributes to cost-recovery because better-quality separated waste leads to better-quality compost and recyclable materials, which lead to greater sales.

Gaining access to separated waste, however, can be a challenge. In many cities, communities lack understanding on how and why to separate their waste. This is due to gaps in public education. It is often necessary to implement communication and outreach campaigns to inform communities and build their awareness and capacity for source separation. This can be a slow process that requires government support and sustained effort.



### **Box 6. Achieving waste separation at source in Quy Nhon, Viet Nam**

Every morning, Vo Thu puts her family's waste of the previous 24 hours in front of her house. In a white bag goes organic waste, including food scraps, and in a small plastic basket goes inorganic waste, such as paper and plastics. Mrs Vo's household is one of around 750 households that separate their waste in Nhon Ly, a seaside commune close to Quy Nhon.

Achieving waste separation at source has been slow and challenging. "People resist changing deep-rooted habits," explains Nguyen Linh, Programme Manager for Environment and Development in the Third World (ENDA), an NGO active in Viet Nam. ENDA initiated activities with the commune in mid-2012. "When we started, only 12 per cent of households in the commune would separate their waste," Ms Nguyen recalls. Over the next year, the proportion rose slowly to 16 per cent. ENDA and the commune government redoubled their outreach efforts, and the understanding of the community improved.

"To speed up behaviour change, we established a network of communicators that began to hold monthly meetings with the community as well as individual communes," says Ms Nguyen. Commune leaders also provided policy support, adopting waste separation at source as an official decision of the commune. A communication campaign was launched involving training courses for residents on separating waste properly. This was supported by public announcements from loud speakers and the dissemination of messages on panels, posters and brochures. Over time, the community began to understand the benefits of waste separation and changed their behaviour accordingly, in the absence of enforcement mechanisms from government.

By the end of 2013, 27 per cent of households were separating waste at source. With ongoing efforts, participation continued to rise. By the middle of 2014, 36 per cent of households were separating. "This is slow work," Ms Nguyen adds. "You have to be very persistent. But if you are, change comes. That's what we have learned. It takes time but you can't give up."

Source: Environment and Development Action in the Third World, Viet Nam.



## Requisite 4. Stakeholder engagement

Stakeholder engagement concerns the ability and desire of a broad range of people and organizations to engage, participate in and contribute to a waste-to-resource initiative. Beyond the government, stakeholders might be community groups, households, market associations, private sector waste collectors, NGOs, restaurants, hotels, informal workers and farmers.

Stakeholder engagement is important for several reasons. First, because waste-to-resource initiatives rely upon the proactive participation and contribution of a range of people. Their willingness and ability to engage will determine the degree to which they mobilize their time, knowledge and resources in support of the initiative. The more willing and able stakeholders are, the more they will contribute.

Second, different stakeholders have access to different types of resources, such as expert knowledge, community trust, political legitimacy or informal sector connections. Waste-to-resource managers must look to these different stakeholders to contribute their different resources to the needs of a waste-to-resource initiative.

Third, stakeholder engagement is critical because of the behaviour change needed. To acquire source-separated waste, for example, requires time, trust and persistence. Without strong engagement from stakeholders, behaviour change is hard to achieve.

Maintaining engagement among all stakeholders, however, is a challenge. Various mechanisms, such as frequent formal and informal meetings, clear objectives and communication and outreach programmes help to mobilize stakeholders and keep them engaged. Beyond these activities, stakeholders need to be reminded of the benefits that a waste-to-resource initiative will bring them, and they need to share in the vision and buy into the promise of sustainable waste management more generally.



### Box 7. Community engagement in Matale, Sri Lanka

The city of Matale, Sri Lanka has been pursuing waste-to-resource initiatives for several years and has dynamically mobilized a range of stakeholders through the lead of Sevanatha Urban Resource Centre, an NGO that, jointly with its social enterprise affiliate Micro Enriched Compost, has been working to advance community engagement in selected wards of the city.

“When I was invited to the temple to learn about waste, at first I was surprised,” points out Padmika Kulathunga, a teacher. “But I went anyway and actually it was very interesting. I learned a lot.” The messaging ignited Mrs Kulathunga’s inspiration and commitment. She became involved in ‘spreading the word’ in a series of events organized in the ward where she lives with her husband and two daughters.

“Every month we promote waste separation at source by mobile loudspeaker in all the wards of the town, and every three months we try to do an open house event,” says Dilan Kumara of Micro Enriched Compost. “Regularity is the most important thing. It helps to keep the community engaged.” These open house events involve inviting community members to a public place, such as the local temple, where they can learn about waste separation at source and good waste management practices. The open house events usually last a weekend. Residents are also mailed brochures.

As a result of the events and activities in her ward, Mrs Kulathunga now separates her household waste into two bags and hangs them out for the waste collection trucks on their daily rounds. “I will continue to separate waste because I can see the benefits,” she says. “The street is much cleaner now, and there are fewer rats because waste is cleared often. Also, it is very convenient.” Mrs Kulathunga has recommended source separation to her friends and sisters.

Source: ESCAP.

To achieve and sustain these four requisites, managers of waste-to-resource initiatives must deploy a range of activities, including strategic thinking, business modelling and community outreach. After several years of operational experience, ESCAP and its country partners have learned important lessons related to the management of waste-to-resource initiatives and have identified and tested diverse strategies for overcoming common challenges. From this process, good practices have emerged. These are explored in Part II: Lessons learned.





