



PRO-POOR SOLID WASTE MANAGEMENT FOR SECONDARY CITIES AND SMALL TOWNS IN ASIA AND THE PACIFIC

THE CHALLENGE

The growth of urban populations and economies in Asia has resulted in a corresponding growth of solid wastes that municipal governments are finding difficult to dispose. Existing dumpsites are filling up and finding land for new dumpsites is becoming increasingly difficult. The solution lies in reducing the amount of waste that reaches dumpsites.

The traditional approach to solid waste management focuses on end-of-line solutions that are capital and technology intensive, and are therefore costly to build and operate. Hence many local governments devote a substantial portion of their annual budgets to collecting, transporting and disposing solid wastes. In spite of the amounts spent, collection is often insufficient and waste is often disposed in crude open dumps that pollute the atmosphere and water sources.

INCLUDING INFORMAL RECYCLING

In most developing towns and cities as much as 20 to 30 percent of the waste generated is collected, sorted and recycled by informal collectors and junk dealers. In some cities

informal sector pickers also collect waste from poor areas that are not serviced by formal collection systems. In addition to providing a vital service to the city, the informal waste collection sector also provides an important source of income for the urban poor. For informal waste pickers and recyclers waste is a resource, for them society's "Trash is Cash". However, waste recycling being a seasonal business, prices of recyclable material and therefore incomes of waste pickers vary considerably from month to month.

The contribution of the informal waste collection sector is being increasingly recognized by local governments in the region. Many local governments have tried to integrate or link informal waste recycling with municipal solid waste management systems thereby significantly increasing the amount waste that is recycled and collected.

TREATING ORGANIC WASTES

Given the fact that 70 to 80 percent of solid wastes are organic, even if recycling was increased 100 percent, the bulk of the disposal problem would remain. This means, for example, that savings in terms of

transport costs would be minimal as organic wastes would still need to be collected at the same frequency. Therefore recycling is part of the solution, not the whole solution.

In Asia and the Pacific, annually, untreated organic wastes contribute between 70 to 100 million metric tons of CO₂^{equivalent} Green House Gases to the atmosphere. As urban populations and levels of solid wastes increase, this figure is also likely to increase.

THE PROJECT

PROJECT OBJECTIVE:

To enable participating local governments, civil society organizations and organizations of the poor to develop and implement town-wide solid waste management strategies that are decentralized, pro-poor, low-carbon and financeable through the sale of carbon credits.

PARTNERS: ESCAP and Waste Concern, with funding from the Bill and Melinda Gates Foundation.

DURATION: 2009-2012

A NEW APPROACH

In 2004 after analyzing the problems that local governments were facing in solid waste management, ESCAP came to the conclusion that a new approach was needed. Such an approach needed to treat wastes as a resource, improve waste collection services, reduce transport costs and provide higher and more stable income and working conditions for waste pickers. Through a regional assessment ESCAP identified the decentralized neighbourhood-based compost plants developed by Waste Concern, an NGO in Bangladesh, as an approach that met the above criteria.

Since 2005, ESCAP, together with Waste Concern and local partners, have tested and further refined the approach in Matale, Sri Lanka and in Quy Nhon, Viet Nam. In each town, one compost plant serving about 1,000 households and treating two to three tons of waste per day has been built on land provided by the local government. Since 2007 both plants have been operating successfully on a self-financed basis under a public-private partnership arrangement.

HOW DO THE DECENTRALIZED COMPOST PLANTS WORK?

Each compost plant is located within the neighbourhood it services and provides daily door-to-door collection service. Households are trained to separate waste at source. Waste is transported by hand carts or motorized carts. At the plant waste is sorted one more time into organic waste, recyclable waste and rejects.

About 70 to 80 per cent of the waste is composted. The recyclable materials, roughly about 15 to 20 percent of the waste, are sold to junk dealers. Rejects comprising about 5 to 10 percent of the waste are collected once every two to three weeks by the municipal solid waste management service truck and taken to the dumpsite.

By providing waste pickers with stable salaries, safer working conditions, uniforms and adequate equipment, the approach contributes to improving their working life.

Each composting centre is a profit making enterprise. Since their operations in mid 2007 each plant is either breaking even or making a profit on operational costs. There are three streams of incomes for the centres, namely:

- Collection fees from serviced households;
- Sale of compost;
- Sale of recyclables to junk dealers.



FACTORS FOR SUCCESS AND REPLICATION

Many composting projects in developing countries have failed due to problems with quality and limited demand for the compost. The Waste Concern approach addresses both of these issues and has found successful strategies to deal with them.

USING SIMPLE TECHNOLOGY

The approach uses simple non-mechanical technology, that is easy to operate and maintain. It is easy for local organizations to become familiar with the technology and adapt it to the local context.

Because it uses simple non-mechanical technology operation costs are low and there are minimal breakdowns and needs for repairs.

PRODUCING HIGH QUALITY COMPOST

The plants produce high quality compost using the aerated box method. A key feature is the close involvement of the surrounding communities.

Households are provided with boxes for their organic waste and are trained on how to separate organic and inorganic waste. The wastes are hand-sorted again at the plant.

The fact that the plants are located in the neighborhoods they service ensures that transportation distances are short, which reduces the risk of contamination. Strict quality control is maintained and the compost complies with numerous standards for certified organic compost.

MAKING IT A BUSINESS

An important step before developing the plant is the formulation of a

local business plan. The plan ensures that the compost products cater for the demand of the local agricultural sector and that sources of revenues and running costs are identified and estimated before the plant start operations.

SECONDARY CITIES AND SMALL TOWNS

Another factor, that has been key for replicating the approach and which is considered an important factor for the possibility of up-scaling the approach is the size of the city. The approach is most suitable for small towns, with agricultural hinterlands.

As the local government have to provide land for the centres, medium sized towns and secondary cities where it is possible for the local government to allocate land are more suitable than big cities with high pressure on the land market.

A STORY FROM QUY NHON

“What surprised me the most of this project was the quality of the compost from the simple technique provided by Waste Concern. At the very beginning, to tell the truth, I did not think that we could produce something valuable from household waste or that we could convince people around to support a “dirty” plant within their community. It is unbelievable that this technique not only produces high quality compost but also keep the surrounding environment clean. That made households in the area supportive of the plant. The quality of the compost sustains the plant, because the gains from the sale of our compost now covers the operation and management costs.

The compost plant is a good self-financed model to improve the community environment and at the same time generate income for poor people. We need to replicate this model to other areas of Qui Nhon City and Binh dinh province and perhaps to the whole country.”

Nguyen Văn Búi,
Manager of the compost plant,
Quy Nhon



“Thanks to this project we have more income and our living standard has improved. Our awareness on environmental sanitation has increased. We know that there is always something valuable from waste. We teach our children to put away their waste properly because their parents are the ones who collect it.”

*Nguyen Thi Thanh Thúy,
Worker at the compost plant
Quy Nhon*

IMPLEMENTATION STRATEGY

The project will be implemented in two phases:

PHASE I

REFINING THE APPROACH

To enable the treatment of more types of solid wastes and to benefit a greater number of informal sector waste pickers, ESCAP and Waste Concern aim to further refine the approach by transforming the decentralized compost plants into Integrated Resource Recovery Centres (IRRC's). The components of the IRRC's include: the compost plant; processing sheds for recyclable materials; bio-diesel conversion plant to treat waste cooking-oil, and sludge digester to process meat and fish waste and sludge from septic tanks.

This transformation of the plants to IRRC's will also create new sources of revenue for the PPP's. In addition to revenues from user charges, selling of the compost and recyclables, the centers will also receive income from selling cooking-gas and bio-diesel developed from waste cooking-oil.

DEVELOPING AND MARKETING DESIGNER ORGANIC FERTILIZER

Based on the experience of Dhaka and Quy Nhon, compost will be enriched with nitrogen, phosphorous and potassium (NPK) and other micro nutrients, turning it into designer organic fertilizer.

In Quy Nhon and in Dhaka, the NPK values are tailored to the requirement of farmers around the town. Thereby, in addition to contributing to solving the local waste management problem the approach also contributes to meet the demand for organic fertilizer.

SCALING UP THROUGH CARBON FINANCING

Upscaling would be tested in Matale and QuyNhon. Upscaling to the town level would require financing the construction of additional plants in the two towns. This will be done through carbon financing.

Composting of organic waste has been approved as a methodology by the Executive Board of the UNFCCC and carbon financing has already been used by Waste Concern to finance up scaling of its approach in Bangladesh.

The project will test and develop methodologies for town-wide up-scaling using CDM-based Certified Emission Reductions (CERs) and non-CDM Voluntary Emission Reductions (VERs).

INTRODUCING THE APPROACH IN TEN TOWNS

The approach will be introduced and tested in ten small towns or secondary cities in the region. The ten towns will be selected through national workshops and city consultations.

In each town, IRRCs will be established on land provided by the local government and with seed funds and technical assistance provided by the project. The project will also conduct training on methods for composting and awareness raising on sorting of waste for the community.

In addition to the focal countries where the project will be implemented, the project will develop partnerships with other organizations and engage other countries to promote a sustainable pro-poor waste management approach by inviting them to regional meetings and training workshops.

PHASE II

Based on the experience of Phase I, the project will develop and operationalize a solid waste revolving equity fund that would provide technical, financial and managerial assistance to small towns and secondary cities in decentralized and pro-poor solid waste management. The fund will acquire CERs and VERs from the projects it finances and on-sell them on various carbon markets. The fund would impose a 3 per cent tax on its VER revenues and create an adaptation fund that would be used to upgrade or voluntarily resettle urban slum communities that are vulnerable to climate change related extreme weather events.



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