



UBND Thành phố Quy Nhơn



## REGIONAL WORKSHOP ON PRO-POOR, SUSTAINABLE SOLID WASTE MANAGEMENT IN SECONDARY CITIES AND SMALL TOWNS IN ASIA-PACIFIC

24-26 September 2014  
Quy Nhon City, Viet Nam

### REPORT

#### INTRODUCTION

The *Regional Workshop on Pro-Poor, Sustainable Solid Waste Management in Secondary Cities and Small Towns in Asia-Pacific* was organized by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) in partnership with the Association of Cities of Viet Nam (ACVN), the People's Committee of Quy Nhon, and Environment and Development in Action (ENDA) Viet Nam. The workshop, which took place in Quy Nhon, Viet Nam on 24-26 September 2014, was organized in the context of the project *Pro-Poor, Sustainable Solid Waste Management in Secondary Cities and Small Towns in Asia-Pacific* being implemented by ESCAP, Waste Concern and in-country partners.

Approximately 80 participants attended the workshop, including representatives from the municipal governments of Quy Nhon, Kon Tum and Ha Tinh (Viet Nam), Kushtia (Bangladesh), Battambang and Kampot (Cambodia), Jambi (Indonesia), and Ratnapura and Matale (Sri Lanka). Representatives from the central and provincial governments of Viet Nam, Bangladesh, Cambodia, Indonesia and Sri Lanka also attended. Representatives and resource people from academia and the non-profit sector participated including from ACVN, COMPED, CSARO, Dr. Akhtar Hameed Khan Memorial Trust, ENDA, ESCAP, INSWA, Sevanatha Urban Resource Center, UN-Habitat and the Waste to Resource Fund.

The project *Pro-Poor, Sustainable Solid Waste Management in Secondary Cities and Small Towns in Asia-Pacific* aims to assist local governments in developing sustainable solutions to solid waste management, through Integrated Resource Recovery Centres (IRRCs), which are decentralized and neighborhood based facilities that turn waste into resources through composting, recycling and bio digestion, thereby diverting waste from landfills and open dump sites. In supporting the activities and objectives of the project the regional workshop aimed to:

- Identify challenges faced by municipalities, policymakers, NGOs, partners and community groups in establishing and operating IRRCs;
- Strengthen the capacity of participating municipalities, policymakers, NGOs and partners by sharing knowledge and good practice for establishing and operating IRRCs;

- Strengthen the capacity of participating municipalities, policymakers, NGOs and partners by identifying workable solutions to common problems encountered in establishing and operating IRRCs;
- On the basis of the workshop outcomes, formulate policy recommendations for the wider policymaking community on the subject of waste-to-resource principles (3R), IRRCs and pro-poor sustainable solid waste management.

The workshop was opened by Mr. Donovan Storey, Chief, Sustainable Urban Development Section, Environment and Development Division, ESCAP, Mrs. Vu Thi Vinh, General Secretary, ACVN, Mr. Ngo Huy Liem, Country Director, ENDA Vietnam, and Mr. Ngo Hoang Nam, Vice-Chairman, People's Committee of Quy Nhon City, Viet Nam. The workshop was divided into 8 sessions over 3 days. The program included 3 field trips to the following sites around Quy Nhon:

- Dam Chao Market – to observe and discuss waste separation practice in the market;
- Nhon Phu Integrated Resource Recovery Centre – to observe and evaluate operations of the facility;
- Nhon Li Ward – to examine waste separation practices within the ward.

The following summary does not attempt to capture all of the issues raised by participants, but rather to synthesize the main points discussed. The conclusions and recommendations, broadly discussed and supported by the participants of the workshop in Session 8, are given in full in Annex I of this report.

## **SUMMARY OF DISCUSSIONS**

### **Session 1 – Introduction and context**

The opening session introduced the principal concepts, themes and topics under discussion as well as provided all participants with contextual information on the *Pro-Poor, Sustainable Solid Waste Management in Secondary Cities and Small Towns in Asia-Pacific* project.

Mr. Tran Anh Tuan, Vice-Director of Technical Infrastructure, Ministry of Construction, Viet Nam, noted the need to address environmental pollution at a global level and stated that environmental protection is a key objective of a country's sustainable development policy and practice. Viet Nam has made significant progress in this regard, especially in terms of awareness, but many challenges remain. Waste management is one of the main challenges which must be addressed. Rising levels of production, consumption and a growing population are resulting in clear impacts and raising serious concern. Waste generated is already impacting on the living standards of Vietnamese society. Popular waste management practices in Viet Nam include open dumping which leads to environmental problems. Mr. Tran stated that comprehensive waste management practices were necessary.

Mr. Lorenzo Santucci, Economic Affairs Officer, Sustainable Urban Development Section, Environment and Development Division, ESCAP, provided an overview of solid waste generation rates in Asia-Pacific over 1990-2014 and projected waste generation through to 2025. As countries develop economically, waste generation tends to increase, although once a high level of development has been achieved waste generation tends to plateau. Solid waste management is expensive and places strain on local government

budgets. However, within Asia-Pacific, due to the high percentage of organic content in the waste stream of low- and middle-income countries, the production of compost, biogas, recyclables, and refuse derived fuel etc. from organic content present a significant opportunity. Mr. Santucci called for a paradigm change towards the waste-to-resource approach. As an example of the waste-to-resource approach the Integrated Resource Recovery Center (IRRC) provides a good model for the region, and brings benefits to communities, the environment and municipalities. Secondary cities in Asia-Pacific have the opportunity to focus on implementing local, decentralized, and community-based waste-to-resource approaches and generally pursuing reuse, reduce and recycle (3R) principles in order to combat the regional waste crisis and strive towards a zero-waste urban future.

Mr. Iftekhhar Enayetullah, Managing Director, Waste Concern, Bangladesh, gave an overview of global waste generation rates, noting that waste generation in developing countries constituted the majority (over 70 per cent) of global waste generation. The waste of developing countries tends to have a low calorific value making it not suitable for incineration, and open dumping of this waste brings three main problems, namely the fostering of vermin, production of methane gas and discharge of leachate into soil and waterways. Mr. Enayetullah gave an overview of the IRRC model, pioneered by Waste Concern, and explained its functions, working process, benefits and requirements. Source separation is a prerequisite of successful operation of the IRRC model. Different waste products can flow through the IRRC in different ways, depending on the composition of local waste and the needs of the market for waste-to-resource products. Mr. Enayetullah also highlighting opportunities for urban-rural exchanges and linkages which the IRRC model can strengthen.

Mr. Sean Green, Chief Executive Officer, Waste to Resource Fund, explained the background of the Waste to Resource Fund. The fund was established in 2012 by a grant from the Bill and Melinda Gates Foundation with the overall aim of promoting the replication and up-scale of pro-poor waste-to-resource initiatives and in particular the IRRC model. Specific goals of the fund include: a) to facilitate the financial sustainability of each IRRC; b) to pilot new waste-to-energy projects; c) to seek new investors; and d) to invest in new research and development so that IRRCs can exploit new climate change-related funding opportunities. The fund has recently been exploring methods to model the trade-offs between different waste-to-resource options as a function of the price commanded by each product on local markets and therefore the profitability scenarios of the IRRC as a whole. Such modeling is intended to allow investor analysis of the IRRCs as well as enable decision making for IRRC operators.

Mrs. Pham Thi Kim Loan, Deputy Chief Officer, People's Committee of Quy Nhon, provided an overview of solid waste management in Quy Nhon. The city is the capital of Binh Dinh Province with approximately 300 000 people. The city's solid waste management company, URENCO, collects 86 per cent of the waste generated within the municipality overall, with approximately 100 per cent of waste generated in the central city being collected. Sixty-one percent of the municipal waste stream is organic. The waste management process in Quy Nhon involves primary collection by cart in the evening. Waste is then taken to transfer stations and from here it goes by truck to the IRRC and municipal landfill and dumping sites. Collection and transfer costs account for a large percentage of the municipal budget, and finding land for new land fill or dump sites is difficult. The local government is very committed to finding sustainable solutions for solid waste management. As such, URENCO, the local waste processing

company, has been charged with contributing to the functioning of the local IRRC, especially in terms of waste separation and collection practices.

To support this work, the People's Committee of Quy Nhon has formulated a five-year plan for solid waste management and URENCO is the main implementing agency of this plan. Waste separation at source forms an essential component of this plan and currently there are 19 markets, 28 hospitals, 48 schools and local households which participate in a waste separation at source program. URENCO transports this waste to the Nhon Li composting facility and land fill site. A smaller amount of organic waste is collected around the Nhon Phu IRRC facility and processed by the IRRC itself. Positive municipal commitment and leadership from the top levels of the People's Committee to the practice of waste separation at source has led to success on the ground. If waste is not separated at source, URENCO will not collect it.

## **Session 2 – Overview and implementation status of the regional project**

This session provided participating cities with a chance to outline their solid waste management practices and present their progress under the regional programme implemented by ESCAP. The session also allowed cities to identify challenges, successes and lessons learned through their pursuit of 3R and waste-to-resources initiatives.

- The city of Kon Tum, Viet Nam, collects waste nightly from households and transfers the waste to transfer stations. Between 60-65 tons of waste are generated per day, of which approximately 80 per cent is collected by URENCO, the city's local public waste processing company. The city's waste stream is 65 per cent organic. A portion of the organic waste is transferred to the IRRC Kon Tum (run by URENCO), and recyclables are transferred to a recycling facility. The IRRC was established in 2012, and has been operating since.
- Matale, Sri Lanka, has a population of approximately 48,000. Between 23-35 tons of solid waste are generated per day, of which around 80 per cent is collected and 71 per cent is organic. Currently, the original IRRC, which was established in 2007 handles 0.8 tons of waste per-day servicing 700 households and 200 commercial units. In 2011, a second IRRC was established with the financial support of Pilisaru programme, and technical support of ESCAP and Waste Concern. This IRRC has the capacity to process 2 tons of organic waste per day and serves approximately 1000 households. In 2013 a third IRRC was established to serve a further 300 households. The total processing capacity of the three IRRCs in Matale now stands at 12 tons per day – 9 tons organic and 3 tons recyclables. To manage the three IRRCs in Matale, a partnership was established between the Municipal Council of Matale and a private sector organization, MEC, which is in charge of operating the IRRCs.
- Ratnapura, Sri Lanka, has a population of 58,000. Between 28-30 tons of waste are generated per day, of which around 80 per cent is collected. The city has a history of extensive open dumping, which the municipality is trying to move away from. The establishment of an IRRC with a 5 ton capacity is designed to support this. Since establishing the IRRC, the municipality and its partners have engaged with communities in an effort to change behaviors on the ground. The

establishment and operation of the IRRC has led to a number of good results, including expanded market for organic fertilizer, improved status and income of waste workers, improved understanding of public and school students of 3R principles, and a reduction of open dumps.

- Islamabad, Pakistan confronts a number of solid waste challenges. Usually, solid waste in the city is collected by sweepers. Sweepers and the households will extract recyclables from the waste stream for sale. The remaining waste is disposed in dumping sites, in part due to an absence of institutional, legal and managerial support for correct disposal methods (the most recently solid waste management policy dates from 1997). Another key challenge is the segregation of waste as there is no government support for this currently. Islamabad is a planned city divided into sectors, and the city will establish its first IRRC in Sector G-15, a sector managed by a privately owned not-for-profit developer. The IRRC will have the capacity to process the whole waste generated in the sector. If this pilot is successful, there is a potential to establish IRRCs in other sectors of the city.
- In Kushtia, Bangladesh, the city has established a joint fecal sludge and solid waste treatment IRRC. The management of human waste in the IRRC is an effort to respond to the growing amount of human waste which is released, directly and untreated, from latrines and septic tanks into local waterways and the environment more generally. The Kushtia IRRC deploys three methods to sustainably and correctly manage waste: a) human waste from latrines and septic tanks is collected and dried on drying beds at the IRRC; b) dried waste is mixed into the compost being prepared using food and market waste as per standard IRRC process; and c) human effluent which is drained from the drying beds filtered through a bed of coconut husks and released into local waterways in line with national waste water treatment standards.
- The city of Kampot, Cambodia has a population of 35,000 and generates 60 tons of solid waste per day, 60 per cent of which is collected. The IRRC has a processing capacity of 4 tons. Waste is collected by a private company, GAEA, and the IRRC is operated by a local NGO called Community Sanitation and Recycling Organization (CSARO). The IRRC has been in operation since the beginning of 2013, and it currently treats waste coming from the main market in the city. Municipal and provincial government stakeholders expect that the IRRC can be brought into full capacity with the onset of the strategy to bring waste separation at source to the whole city.
- Battambang, Cambodia, has a population of 150,000 people and generates 31 tons of waste per day through a variety of economic and residential activities. The city treats some of its organic waste through composting. However, the city has been facing difficulties in properly segregating waste, and efforts have so far been focused on encouraging waste separation in markets.
- Finally, Jambi, Indonesia has 530,000 people and generates 1532 m<sup>3</sup> of municipal waste per day, 62 per cent of which is collected and transferred to landfill. Fifty-five per cent of waste is organic. By 2017, the city expects to have exhausted its current landfill site and is therefore seeking alternatives waste management options. Already, some good practices are in place such as the 31 waste banks around Jambi which provide households a waste-to-resource mechanism.

All cities emphasized the importance of sustainable solid waste management and the need for improved implementation of waste-to-resource initiatives. Common challenges which cities identified include:

- Limited participation of community groups, stakeholders and society in general;
- Insufficient community awareness of the need for and practice of sustainable solid waste management;
- Lack of experience and capacity mobilizing community participation;
- Difficulty of achieving financial sustainability;
- Low collection fees charged for waste providing a minimal revenue stream;
- Difficulty establishing taxes for solid waste collection (beyond straight collection fees);
- Lack of awareness of national-level policy makers for solid waste management as a cross-cutting issue;
- Inadequate legislation in place supporting sustainable solid waste management and waste-to-resource options, especially composting. When legislation is in place, it is often poorly enforced;
- Lack of recognition for community-based initiative as viable solid waste management options;
- Limited cooperation between agencies on solid waste management issues;

In response to these challenges, cities have launched various strategies and learned lessons for successfully progressing in the implementation of IRRCs. These are outlined below:

- Increasing participation through constant communication and consultation with community groups and households (such as door-to-door communication) and the engagement of schools as information disseminators;
- Increasing competency for IRRC and waste-flow management through training and workshops for operating staff on the subject of solid waste management, business principles and administration (e.g. especially business planning), waste-to-resource initiatives;
- Building the capacity of communities through awareness-raising workshops;
- Improving waste separation and waste collection through the provision of equipment, such as push-carts and recycling bins;
- Improving commitment from waste workers through the provision of health and safety insurance and access to additional revenue sources (such as recycling), as well as the establishment of self-help groups and community saving funds;
- Strengthening partnerships for the management of the IRRCs through careful partnership planning and building;
- Improving the commitment of the municipality through the use of awareness raising meetings and slow, steady mind-set change;
- Improving waste separation through the creation of multiple layers (e.g. national, provincial, local and community levels) of support and active participation from all stakeholders;
- Improving quality of compost and overall waste operations through the establishment of quality standards and other regulatory guidelines;
- Stimulating the market for compost by advertising and promotion to farmers.

### **Session 3 – Changing behaviours: Education, advocacy and incentives for community participation in solid waste management**

This session allowed for structured discussion around the theme of behavioral change, especially in terms of promoting waste-to-resource approaches and encouraging community participation to this end.

Mr. Ngo Huy Liem, Country Director, ENDA Viet Nam, noted that changing mindsets is a long and slow process and that such change takes place across all levels, from households to policy-makers. Yet, changing the mindsets of policy-makers is perhaps the most important factor in effecting change. In this regards, mindset change should be understood as a long-term goal. Viet Nam has had some success changing public behavior. To achieve behavioral change, it is important to leverage existing community networks for communication.

Mr. Iftekhar Enayetullah, Managing Director, Waste Concern, confirmed that source separation is best accomplished through long-term programs, not shorter-term projects. For this, the roles of national and local governments are very important, especially in order to support source separation, through the use of ordinances, decrees, policies and incentives and penalties. Mr. Enayetullah stressed that fiscal incentives can be particularly useful.

Mr. Udeni Chularathna, Executive Director, Sevanatha Urban Resource Center, Sri Lanka, outlined how having solid waste management strategies and policies in place creates favorable conditions for sustainable solid waste management practices. This is especially the case if policies are based on 3R principles.

Mrs. Sumaira Gul, Program Manager, Dr. Akhtar Hameed Khan Memorial Trust, Pakistan outlined how household surveys, which seek to understand the practice and needs of households, can provide a useful base on which to build a strategy for community mobilization for waste separation and 3R. Households are willing to pay waste collection fees if they receive a better service in return.

Mr. Yon Heng Kora, Executive Director, CSARO, Cambodia, reiterated that changing mindsets is a step-by-step process, and that in order to change mindsets an approach founded on advocacy on the importance of waste separation should be pursued. At the same time, a proper system to support source separation should be put in place, including proper infrastructure.

Mr. Rithy Uch, Director, Waste Management Projects, Cambodian Education and Waste Management Organization, COMPED, Cambodia, emphasized that monitoring and evaluation through regular site visits is a key aspect of achieving behavioral change. In particular, penalties should be considered in order to achieve higher compliance. Similarly, it is important to consider waste separation in terms of both source and transportation. There is no point in separating waste at source if it will be mixed in the trucks during transportation.

Mr. Sarto, Waste Refinery Center, University of Gadjah Mada, Yogyakarta, Indonesia, emphasized the importance of understanding the characteristics and capacity of the community and then basing waste

management strategies and advocacy and outreach based on these. The University of Gadjah Mada has a program whereby students have to work in the community for two months.

#### **Session 4 – Policies and incentives for the promotion of 3R in developing countries**

This session explored existing policies and programmes for promoting 3R in participating countries, and discussed challenges and opportunities related to the implementation of these.

Countries wishing to pursue 3R and waste-to-resource initiatives are struggling with lapses and gaps in the policy and institutional landscape:

- Policy coverage of solid waste management is often spread across a number of laws, decrees and strategies, without a single centralized policy for all aspects of solid waste management;
- The production of compost from waste is a current policy ‘blind-spot’: there is very little policy to support this. Similarly, separation of waste at source tends to get overlooked by policy-makers;
- Often policies seeking to encourage compost or separate of waste at source are not backed by incentives or disincentives;
- Institutions which support and can provide seed funding for waste-to-resources are limited. Without such institutions, it is very difficult to establish an IRRC or similar facility for want to capital and know-how;
- Policies and initiatives which seek to advance the principle of ‘Extended Producer Responsibility’ are often resisted by private sector manufacturers;
- Implementation of policy based on 3R is often limited due to budget constraints and a lack of community awareness;
- Lack of cooperation between agencies handling different waste streams and waste types are poorly coordinated. In part this is because different forms of waste are handled by different agencies.

The following options and recommendations were identified in terms of policy and programmes:

##### *Production and distribution of resources recovered from waste*

- Specific regulation and policy is needed to guide the production and distribution of compost. In particular, quality standards need to be set and enforced;
- Guidelines for linking the resources that can be recovered from waste via IRRCs with certain

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