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. Iftekhar 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 landfill 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 m³ 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 industries is a useful way to close urban systems. For example, in Indonesia, guidelines for producing refuse derived fuel (RDF) for utilization by the cement industry have been established;
- To help to ensure the local market for compost from waste, some cities have a policy of buying compost produced within the city for use in municipal parks and green spaces;
- In addition, policy should support waste composting at source so that households and offices who wish to establish small compost systems receive policy encouragement;
- Under policy, landfilling should only be utilized for materials which cannot be recycled or composted;
Private sector engagement

- Policy should encourage private sector participation in the production and distribution of compost;
- For greater private sector participation, the quality of compost needs to be improved in order to in turn improve the consumer base and market overall (see quality standards above);

Incentives and disincentives

- Programs whereby citizens can rate urban performance and service delivery quality are useful for incentivizing local government. In Indonesia, for example, local governments are ranked in four areas – solid waste management, urban greenery, water resources management and pollution control. The city which ranks most highly receives presidential recognition and an award;
- Policy should involve disincentives for waste generators: the more waste you generate the more you have to pay for its collection and treatment;
- Policy and programs for solid waste management should bring clear benefit to the cities, including economic and social benefits, otherwise cities are unlikely to agree to them.

Session 5 – Financing and operating decentralized and community-based 3R initiatives: economic incentives and partnership models

This session reviewed and discussed options for public-private partnerships and economic and incentives to promote decentralized and community-based 3R initiatives.

Mr. Joao Aleluia, Project Coordinator, ESCAP, outlined common policy, financial and institutional barriers to the uptake of 3R approaches, and provided an overview of the five aspects which 3R initiatives consider, including a) policy and political; b) institutional; c) social; d) technical and d) economic and financial. Linking different revenue streams to different incentive options is an important part of ensuring that the IRRCs operate successfully. Similarly, partnerships which are robust and combine and synergize the respective skill sets of diverse partners are most effective. The partnership model selected for an IRRC project should be as specific to the context as possible, considering the needs and limitations of nominated stakeholders.

Mr. K.A. Jayaratne, President, Sevanatha Urban Resource Center, Sri Lanka, outlined the use of public-private partnerships (PPP) for the operation of the IRRCs in Ratnapura and Matale, Sri Lanka, and stressed that the use of PPPs does not infer privatization. In the Sri Lankan case, Sevanatha, an NGO, started a private company called MEC to run the IRRCs. Mr. Jayaratne stressed that the operation of the IRRC should be undertaken as a business, and in this way, the business experience of partner organizations was seen as critical for ensuring the success of the IRRCs.

Mr. Mohammed Helmy, Board Member, Indonesian Solid Waste Management Association (InSWA), gave an overview of the policy structure in Indonesia and the respective obligations and roles of different government levels. In particular, both non-monetary and monetary incentives are deployed to achieve solid waste management goals. The Clean and Green Cities Award Program (locally known as the ADIPURA program) is a non-monetary incentive under which the cleanest cities are recognized and
awarded. Monetarily, a suite of incentives are in play including the provision of financial assistance to companies who invest in environmentally-friendly technologies; the establishment of an Environment Soft Loan Program; the reduction of import duty on waste management equipment; the establishment of a subsidy and grant program for waste management facilities; and a series of tax breaks for waste management activities.

Session 6 – Mechanisms for replicating and up-scaling decentralized and community-based 3R initiatives

This session examined mechanisms for replicating and expanding the uptake of waste-to-resource initiatives in the region. Mechanisms explored include:

- **Networks and associations of cities** – City associations and networks can undertake activities across all member cities, and in this way contribute to the dissemination and update of waste-to-resource models. ACVN, for example, has been working across over 100 Vietnamese cities on a range of issues including municipal solid waste management. City networks and associations publish good practices and promote new methods of urban development and management through various communication channels, such as bulletins, workshops, newsletters and reports.

- **National development programs** – National development programs can be utilized to spread the uptake of waste-to-resource initiatives such as the IRRC. The Pilisaru Program undertaken by the Sri Lankan government is a good example of this. The program sets national policy on solid waste management, prepared solid waste management strategies and delivered trainings and activities on solid waste management. Because the project spans over the course of 10 years, significant progress was made in terms of paradigm change.

- **National development funds** – National development funds can also prioritize waste-to-resource initiatives. In Bangladesh, the Bangladesh Municipal Development Fund operates across a number of urban issues and sectors, such as housing, poverty reduction, informal settlements, solid waste management and energy. The Fund signs a tri-partite agreement between the Fund, the municipality and the target beneficiary. Under this agreement needs of the beneficiaries are profiled and the response activities designed. The financing of solid waste management initiatives by the Fund can be made through a combination low-interest loans and grants.

- **International climate change mitigation mechanisms** – Because waste-to-resource initiatives can reduce the emission of methane, a powerful greenhouse gas, there is an opportunity to tap from climate change mitigation mechanisms as a platform for replication of such initiatives. Nationally Appropriate Mitigation Actions (NAMAs) are one possible mechanism for replication. The Institute of Meteorology, Hydrology and Environment (IMHEN) of Viet Nam, in partnership with ESCAP, is developing a NAMA program that aims to support the dissemination of waste management practices based on 3Rs and the conversion of waste into resources in cities in Viet Nam. This NAMA program is expected to enabling the up-scaling of the IRRC model in Viet Nam.
Session 7 – Promoting decentralized and community-based 3R initiatives

This session provided space for participants of the workshop to further and freely discuss options, policies and strategies for waste-to-resource and 3R initiatives. It was an open session with participants engaging in a stimulating discussion.

The following major points, comments and views were expressed during the session (only those which had not been raised in earlier session are summarised here):

- Solid waste management needs to be considered as a cross-cutting issue affecting numerous sectors from agriculture to construction to health;
- Consumer responsibility and producer responsibility are two sides of the same coin and should be tackled jointly;
- The linkages between municipal and wider provincial development needs to be considered carefully. IRRCs and waste-to-resource initiatives more generally have great potential to improve rural-urban resource flows;
- The possibility of small household level composting machines could be something worth investigating in order to encourage both separation and composting at source;
- Successful solid waste management innovations should be based on research and should respond directly to community needs and competencies;
- Multi-level educational involvement should be sought. It is not enough to teach solid waste management at primary school only. Rather, this topic should be present from kindergarten through to tertiary educational curricula and programs.

Session 8 – Conclusions and recommendations

This session afforded participants an opportunity to review the draft Conclusions and Recommendations (see Annex I) as the principal outcome document of the workshop. The draft conclusions and recommendations were formally discussed and broadly supported by the participants as accurate and reflective of the tenor, views and commitments expressed during the 3-day workshop.
Annex I

QUY NHON RECOMMENDATIONS FOR PRO-POOR AND SUSTAINABLE SOLID WASTE MANAGEMENT IN ASIA AND THE PACIFIC

1. Rapid urbanization and economic development in the Asia-Pacific region has resulted in a corresponding increase in the volume and complexity of solid waste. As a result, municipal governments in developing countries in the region have difficulties in managing solid waste, in spite of spending a large share of their annual budgets on solid waste management.

2. Current solid waste management practice relies on open dumping (often accompanied by partial burning) and uncontrolled landfilling. These practices generate significant environmental problems, including the contamination of waterways, soil and the air, as well as health hazards. At the same time, many landfills are quickly reaching capacity and it is increasingly difficult and costly to find new land for future sites.

3. Above all, current solid waste management practice overlooks the potential of turning waste into resources. The high percentage of organic matter in waste streams in developing counties in Asia-Pacific offers a tremendous opportunity to significantly reduce the waste going to landfill. To seize these opportunities, a paradigm change is required: waste must be understood as having an economic value and not merely as a cost for local governments.

4. Experiences in promoting waste-to-resource in the region show great potential. In particular, the Integrated Resource Recovery Centre (IRRC) model developed by Waste Concern and pioneered by a number cities in the region has proved effective in addressing solid waste management challenges through a decentralized, pro-poor, sustainable, low-cost and low-technology approach, which is particularly suitable for secondary cities and small towns. The IRRC approach can be scaled-up incrementally and multiple technologies can be used depending on the specific composition of waste, location and needs. The replication and up-scale of such successful experiences can contribute significantly towards the achievement of zero-waste cities in Asia-Pacific and a truly sustainable urban future.

5. It’s important to recognize the role of the informal sector in positively contributing to recycling and cleaner cities. Waste-to-resource initiatives should positively contribute to poverty reduction, including through enhanced livelihood and training opportunities for the urban poor, in particular those involved in waste picking and recycling and their families.

6. The replication of waste-to-resource approaches requires strong commitment from all levels of government, and overcoming a number of challenges and ensuring that a number of success factors are in place, including the following.

7. Promoting waste-to-resource initiatives requires changing mindsets of society at large, from decision-makers to households, and engaging communities in solid waste management. In particular, there is a need to promote waste separation at source, which is an essential keystone of good solid waste management practice. In this regard, governments should consider:
a. Developing long-term strategies and programmes to promote waste segregation at source. Mindsets cannot be changed overnight with one-off projects.

b. Setting up a system of incentives and disincentives for waste segregation at source, including penalties for non-compliance (such as “no-separation, no collection”) and “pay-as-you-throw” fee systems.

c. Engaging communities using public information and advocacy campaigns and door-to-door communication for improved waste segregation. In this regard, the role of the media, including social media, should be effectively leveraged. An international recycling day should be considered.

d. Integrating the ‘Reduce, Reuse and Recycle’ (3R) philosophy into educational policy, school curricula and educational facilities. School children are effective agents of change, both at household and community level.

e. Developing the necessary infrastructure to support waste segregation at source, including separate collection systems for organic, recyclables and other waste.

8. The responsibility of managing municipal solid waste generally lies with local governments. However, financial resources of local governments for these activities are usually limited, with waste collection fees in general very low and far from allowing full cost recovery of the services provided. In this regard, governments should consider:

   a. Increasing waste collection fees, as well as waste collection coverage. Experience shows that most residents of low and middle income cities are willing to pay more for improved collection services.

   b. Promoting the engagement of the private sector and social entrepreneurs in waste-to-resource initiatives by providing economic incentives, such as provision of land, shared risks, and establishing a framework for public-private partnerships.

   c. Developing national programmes for the replication and city-wide up-scale of decentralized and community-based waste-to-resource initiatives.

   d. Leveraging positive contributions from various stakeholders, including community-based organization and academia, through the development of multi-stakeholder partnership.

9. Waste management has important economic, social, health and environmental ramifications and should be regarded as a cross-cutting issue. The involvement of and coordination among different line ministries that have a key role to play, such as ministries responsible for environment, local government, health and agriculture, is critical for the effective advancement of waste-to-resource initiatives.

10. Considering the high organic content of waste in developing countries in the region, composting can be a viable route to reduce waste going to landfill, while creating positive urban-rural linkages. However, the up-take of composting in the region has been limited, due to a number of barriers, including lack of awareness and distrust of farmers, lack of quality control, and low market prices due to subsidies provided to chemical fertilizers. To address these barriers, governments should consider:

   a. Establishing standards of quality for compost production, as well as corresponding quality inspection and certification.

   b. Promoting the use of compost among farmers through agricultural extension and other programmes, such as the promotion of good agricultural practices and organic farming,
and facilitating its marketing. Guidelines for farmers should be developed on how to use compost for different crops.

c. Identifying, reviewing and reducing any market distortions created through subsidy to chemical fertilizers in order to level the playing field for compost products.

11. While the bulk of the waste in developing countries remains organic, waste composition is changing and due attention should be paid to growing inorganic waste streams. In particular, packaging waste and plastics present a considerable challenge. Moreover, viable solutions, such as sanitary landfills, should be provided for the safe disposal of waste residues that cannot be turned into resources.

12. Attention should be placed on ensuring adequate revenues for waste-to-resource initiatives, so as to cover, at minimum, the operational costs. In this regard, governments should consider:
   a. Putting in place incentives for waste-to-resource facilities, including tipping fees, feed-in tariffs for waste-to-energy, tax holidays, reduction in import duties and sales taxes, etc.
   b. Help develop markets for resources that can be recovered from waste.
   c. Facilitate access to financing for waste-to-resource initiatives.

13. Waste-to-resource approaches can effectively contribute to climate change mitigation, in particular through the avoided generation of methane from organic waste. Governments should prioritize waste-to-resource approaches as part of their climate change mitigation strategies, including Nationally Appropriate Mitigation Actions (NAMAs), and in particular decentralized and community-based initiatives which have large co-benefits. When selecting technologies for climate change mitigation, due attention should be given to the composition of waste.

14. ESCAP and regional partners, including UN-Habitat and other UN agencies and programmes, regional and national NGOs, networks and associations of cities, have an important role to play in promoting sustainable and pro-poor solid waste management practice and policy at the regional level. In particular, ESCAP, in collaboration with regional partners, should continue to facilitate knowledge-sharing and institutional strengthening, as well as to formulate associated policy recommendations.