Community related recycling initiative for solid waste management in Nonthaburi (Thailand)

Summary of the Practice

Keywords: community awareness, recycling, solid waste management, government led initiatives
Country: Thailand
Province: Greater Bangkok
Area: Nonthaburi
Sectoral Issues: Urban environment, Waste management
Cross-Sectoral Issues: Environmental Technologies, Human Capacity Building, Environment Information
Implementation Level: Local level
Duration: One year (2001-2002)
Sponsors: The Economic and Social Commission for Asia and the Pacific (ESCAP) provided U.S.$5,000 to the municipality (for awareness campaign materials, garbage bins, and plastic bags for the initial phase), and the municipality contributed approximately $50,000 ($40,000 for recyclable materials and a collection truck and $10,000 for administrative expenses).
Actors Involved: Local Government, Community, International Organisation, Private Sector

Description of the Practice

Background:
The municipality of Nonthaburi was established by Royal Decree on February 14, 1953. At the beginning the area was only 2.5 square km, but it expanded to encompass 38.9 square km by 1988. Nonthaburi is located on the east side of the Chao-Pha-ya River. The total population is 273,172, including 91,702 households. Land in this municipality is mainly distributed among residential, commercial, and agricultural areas. This city is well known for its many tropical fruits.
The municipality of Nonthaburi, as well as most of the cities in this region, are grappling with how to manage their waste. Waste is accumulating, as there is no wastewater treatment. The waste is typically stored in open dumps and as a result creates and spreads health problems and contaminates underground water resources. Therefore, it is creating immediate and long term liabilities for future generations.
Nonthaburi produces about 300 tons of solid waste a day. This amount of waste is sharply increasing due to the rapidly growing population of the city as well as higher living standards. The capacity of sanitary landfills is almost exhausted and new dumpsites are difficult to establish because of comprehensive legislation. This legislation was drafted over time due to growing public awareness and resistance over various health threats posed by chemicals polluting groundwater. Moreover, user fees were introduced to cover the costs of solid waste management, but the pressure on public funds was increasing from many development expenditures.
To overcome this financial challenge, the municipality started to impose user charges on households as well as on vegetable and fruit markets. Households have to pay a minimum of 20 baht per month and are charged extra for removing big materials like trees from their compounds. Another measure that the municipality considered was to promote recycling by waste separation at source. (The original at-source
The recycling rate was 3 to 5 percent. This activity could reduce the quantity of final solid waste and as a consequence, could release the pressure on public expenditures for the collection and sanitary disposal of this municipal waste. The following paper will discuss the successful implementation of this plan.

**Objectives:**

The objectives of this project are as follows:

- Maximize recycling by 20 percent and minimize waste generation by 30 percent in the pilot area.
- Study appropriate handling and implementation of the model in the community.
- Promote public participation and local coordination.
- Advocate capacity building.
- Develop solid waste management in the Nonthaburi municipality.

The duration of the project is one year from December 2001 to November 2002.

**Outline of Practices/Actions:**

In early 2001, the Nonthaburi municipality requested the assistance of a pilot activity under the Kitakyushu Initiative for developing a solid waste management plan for its municipality. The ESCAP/UN supported this activity with a budget of U.S.$5,000 to implement a pilot project, entitled “Maximizing Recycling and Minimizing Waste at Phibulsongkram and Suan Klang Muang 3 Village, Nonthaburi, Thailand.”

1. Kitakyushu Initiative for a Clean Environment:

In order to respond to environmental issues in the Asia-Pacific Region, environmental ministers adopted the “Kitakyushu Initiative for a Clean Environment” at the 4th Ministerial Conference on Environment and Development in Asia and the Pacific. The conference was organized by the United Nations Economic and Social Commission for Asia and the Pacific (UN/ESCAP) in September 2000. The Kitakyushu Initiative is a mechanism for the priority implementation of the Regional Action Programme for Environmentally Sound and Sustainable Development in Asia and the Pacific (RAP), 2001-2005, with a special focus on protecting the environment and promoting human health. The Kitakyushu Initiative has since been included as a Type I initiative in the Plan of Implementation at the World Summit on Sustainable Development in September 2002. As part of the activities under the Kitakyushu Initiative, UN/ESCAP, as the main promoter of the Initiative, and the Institute for Global Environmental Strategies (IGES), as the secretariat responsible for implementation of the Initiative, have undertaken various activities to promote the abilities of local governments to handle urban environmental management. These activities include: networking; the organization of thematic seminars; the collection and analysis of successful practices and the implementation of pilot activities. After the successful implementation of the pilot activities, these initiatives can be considered successful practices with the potential to be transferred to other cities.

2. Pilot Project of Nonthaburi:

The project locations are at the villages of Phibulsongkram and Susan Klang Muang 3 in the Nonthaburi municipality, Thailand. Normally, the Nonthaburi municipality provides garbage truck collection to each village twice a week. The amount of solid waste produced from the Phibulsongkram village is 1,000 kg/day and 200 kg/day from Suan Klang Muang 3 village. These two villages are in the central part of the city and most of the people are in the middle class and live in the residential area.

**First activity:** Establishing teams of 10 for surveying the Phibulsongkram and Suan Klang Muang 3 villages about household populations, and the amount of solid waste produced a day. (Table 1)

<table>
<thead>
<tr>
<th>Village</th>
<th>Households</th>
<th>Populations</th>
<th>Solid waste (Kg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phibulsongkram</td>
<td>539</td>
<td>930</td>
<td>1,008</td>
</tr>
<tr>
<td>Suan Klang Muang 3</td>
<td>120</td>
<td>350</td>
<td>214</td>
</tr>
<tr>
<td>Total</td>
<td>659</td>
<td>1280</td>
<td>1,222</td>
</tr>
</tbody>
</table>
Awareness for community participation: Meetings were held in both villages to inform people about the problems associated with solid waste management, to exchange ideas and to select the appropriate model to reduce solid waste in their villages. Cooperation and suggestions from the community committees and the participants was encouraged. The project proceeded with the following approaches:

- Providing a meeting with the villagers to let them know about the purpose of the project.
- Providing a refuse truck twice a week for garbage collection and a recycling truck once a week for collecting recyclable material.
- Distributing information about recycling and how to reduce solid waste to every household.
- Providing plastic bags for recyclable materials and distributing recycling bins for every household.

Awareness for waste management through recycling: Producing brochures about how to reduce waste to every household and setting up one public comment board for each village. Repeating the distribution of the brochures to every household. Follow up and monitorial notes left for some households.

Waste disposal and collection: Households dispose of normal waste and recycling waste separately in clear plastic bags or in yellow containers. The Nonthaburi municipality provided a garbage truck to collect garbage twice a week on the allotted days and a recycling truck once a week. Every truck must be weighed and the amount of garbage and recyclable materials must be recorded.
Motivation: The municipality has set up one sorting and selling center, where recyclable materials are brought and sorted out in different categories like paper, plastic, cans, and so on. The wholesale buyers of these materials buy them from the selling center. The earnings from the center are being equally distributed among the municipality workers and the communities. The municipal workers include the drivers and the other labor responsible for the collection and selling of the recyclable materials. The communities use the money for development activities in the streets.

Results/Impacts

Before starting the project the quantity of solid waste at the Phibulsongkram village was 1,008 kg/day and in the Suan Klang Muang 3 village it was 214 kg/day (Table 1). The villagers separated the recyclable materials by themselves. The initial weight of the recyclable materials in the Phibulaongkram village was 54.5 kg/day (5.4 percent) and increased to 138 kg/day (20.34 percent) in June. In the Suan Klang Muang 3 village recyclables initially weighed 11.2 kg/day (5.21 percent) and increased to 36.2 kgs/day (24 percent) in June (Tables 2 and 3).

Table 2 The weight of solid waste at Phibulsongkram Village

<table>
<thead>
<tr>
<th>Month</th>
<th>Solid waste (kg/day)</th>
<th>Recyclable material (kg/day)</th>
<th>Recycling rate (%)</th>
<th>Income Baht</th>
</tr>
</thead>
<tbody>
<tr>
<td>November, 01</td>
<td>1008</td>
<td>54.5</td>
<td>5.4</td>
<td>344</td>
</tr>
<tr>
<td>December, 01</td>
<td>996</td>
<td>50.1</td>
<td>5.2</td>
<td>438</td>
</tr>
<tr>
<td>January, 02</td>
<td>819</td>
<td>74</td>
<td>9.04</td>
<td>358</td>
</tr>
<tr>
<td>February, 02</td>
<td>776</td>
<td>78.4</td>
<td>10.1</td>
<td>428</td>
</tr>
<tr>
<td>March, 02</td>
<td>926</td>
<td>76.2</td>
<td>8.23</td>
<td>788</td>
</tr>
<tr>
<td>April, 02</td>
<td>897</td>
<td>105</td>
<td>11.74</td>
<td>866</td>
</tr>
<tr>
<td>May, 02</td>
<td>968</td>
<td>147</td>
<td>15.18</td>
<td>988</td>
</tr>
<tr>
<td>June, 02</td>
<td>680</td>
<td>138</td>
<td>20.34</td>
<td>993</td>
</tr>
</tbody>
</table>
Table 3. The weight of solid waste at Suan Klang Muang 3 Village.

<table>
<thead>
<tr>
<th>Month</th>
<th>Solid waste (kg/day)</th>
<th>Recyclable material (kg/day)</th>
<th>Recycling rate (%)</th>
<th>Income Baht</th>
</tr>
</thead>
<tbody>
<tr>
<td>November, 01</td>
<td>214</td>
<td>11.2</td>
<td>5.21</td>
<td>223</td>
</tr>
<tr>
<td>December, 01</td>
<td>215</td>
<td>10.1</td>
<td>4.8</td>
<td>260</td>
</tr>
<tr>
<td>January, 02</td>
<td>139</td>
<td>16.3</td>
<td>9.75</td>
<td>390</td>
</tr>
<tr>
<td>February, 02</td>
<td>173</td>
<td>20.2</td>
<td>11.64</td>
<td>420</td>
</tr>
<tr>
<td>March, 02</td>
<td>204</td>
<td>23.5</td>
<td>9.11</td>
<td>521</td>
</tr>
<tr>
<td>April, 02</td>
<td>150</td>
<td>20.2</td>
<td>13.42</td>
<td>577</td>
</tr>
<tr>
<td>May, 02</td>
<td>115</td>
<td>21.7</td>
<td>18.67</td>
<td>584</td>
</tr>
<tr>
<td>June, 02</td>
<td>151</td>
<td>36.2</td>
<td>24</td>
<td>637</td>
</tr>
</tbody>
</table>

Unless there is a sustainable partnership between the local community and the government, increasing public awareness and the potential to achieve the project goals may not be realized. In this case study the government initiated the awareness campaigns for the separation of recyclable materials at the source by the households, and provided the means to collect and sell the recyclable materials. Thereafter, the earnings were equally shared between the staff, who were responsible for the collection and selling of recyclable materials, and the community, who spent their share for other development works.

**Keys for success**

**Critical Instruments**

*Awareness*  
*Capacity Building*

This case study shows that public awareness is the most vital element to promote waste separation at the source for recyclable materials and for disposing of these materials properly. The awareness also assists in the implementation of user charges, as the community learns of their environmental responsibility as well as to trust government initiatives. The capacity building requires more than the
awareness, as there should be capacity to collect and sell the recyclable materials. The integration of these activities can help to achieve the objectives.

The most important feature of this study is the identification of the mechanisms for increasing public awareness and capacity building. Instead of NGOs, the local government, including the mayor, led the public awareness campaign. The involvement of the local government helped in two ways: the pace of awareness was fast as communities saw their elected members arranging corner meetings, distributing posters, and discussing the issues; and secondly, the local governments easily gained the confidence of the communities, the increased pace of waste separation at the source and proper disposal can be partly contributed to this confidence. Another important feature is that for the capacity building, the municipality provided one vehicle to collect the recyclable materials twice a week and storage for sorting and selling these materials.

Although the formal arrangements may be the same as in most countries often there is no motivation for the municipality staff to support this system, and communities lose hope as they do not see any visible returns either in terms of a cleaner environment or money to meet the basic costs of such an initiative, like buying transparent plastic bags for recyclable materials. In Nonthaburi, the earnings from the sale of recyclable materials are distributed half to the municipality staff, who are responsible for the collection and sale of the recyclable materials, and the other half goes back to the communities, for either buying the plastic bags or to carry out other community projects, like improving lighting systems on the streets.

**Partnerships**

As discussed in a previous paragraph, partnership between the government, communities, and private businesses are vital for any such initiative to succeed. In this case, the government is responsible for the collection and selling of recyclable materials, communities are responsible to separate waste at source and dispose of recyclables properly in plastic bags on the assigned days of the week, and private businesses are responsible for demanding recycled materials as well as for integrating the buying activities with the government store. Although these partnerships appear to be simple, they have not been forged in a successful manner in many of the cities in Thailand. The previous subsection on awareness/capacity building shows how these partnerships work in Nonthaburi.

**Lessons Learned**

- Strong political will in local governments is required to improve solid waste management. In most countries, the user charge system is not practiced for solid waste management, as it is considered to be a hard political decision to make. The Nonthaburi case shows that user charges could be established in developing countries. Moreover, Nonthaburi collects the user charges every six months to reduce collection costs.
- Community-based initiatives require public awareness. Increasing public awareness could be the responsibility of local governments, as they are directly responsible for the community’s betterment. Hence, to raise the social capacity for achieving the development objectives, local government can play a vital role. The other mechanisms, for example payback for recyclable materials, are also important.

**Applicability**

This is a very clear and simple experience that demonstrates how important it is for local governments to establish the political will to make hard decisions, to take a leading role in increasing public awareness about waste disposal, and to provide basic infrastructure such as by providing collection vehicles and storage for recyclable materials. Good potential exists for the replication of this project, although the mechanisms for public awareness, user charges, and motivation may differ due to different
socio-political systems in different places. These differences should be evaluated in the local context before this project can be replicated.

4 April 2003

References


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