Sihanoukville, Cambodia

ICM Solutions

Improving Sanitation through Community-based Solid Waste Management: Experiences in Cambodia and Lao PDR

- Effective solid waste management among unserviced, poor communities involves changing the behavior and practices of households, including strengthening their awareness, role, and responsibility in the provision of a safe and healthy community
- Partnerships between local communities and the private sector in solid waste management can be successful if implemented with the full awareness of the needs of the community and the private sector.
- A socialized user fee scheme ensures that all users of the solid waste management system pay for services, but within their respective capacities. This results in community ownership and financial viability and sustainability of the solid waste management system.

CMC UNDP WORLD BANK GROUP PEMSEA

The Sihanoukville ICM Program in Cambodia identified solid waste management (SWM) as a priority concern in its Coastal Strategy Implementation Plan. A pilot project was initiated in Village 1, Sangkat 4 in Sihanoukville Municipality in 2005. The pilot project covered 1,400 households in an inner village where no SWM system existed.

When the Sedone Integrated Riverbasin Management Project in Lao PDR was started in 2007, solid waste management was also identified as a major concern especially in the urban centers. Similar to the Sihanoukville experience, a pilot-scale community-based solid waste management project was implemented in 12 selected villages in Sedone covering about 3,000 households. The objective of the project was to address solid waste problems by strengthening local capacity to coordinate the implement solid waste management across different stakeholders.

Baseline studies in the Sedone river basin and the Sihanoukville Municipality indicated a daily per capita waste generation of about 0.3 to 0.5 kg, with urban areas producing the highest volume of wastes. Of those produced, about 45% were composed of organic wastes while the rest were a mixture of non-biodegradable/non-recyclable wastes. In Village 1, Sangkat 4 in Sihanoukville Municipality, there was no waste collection system prior to the implementation of the project, while in Sedone, waste was collected in Saravanne and Champasack Provinces twice a week. Sekong Province did not have a regular waste collection system.

Context

Inadequate waste management and sanitation has consequences on the health and well-being of communities and the local environment. In Sihanoukville (Cambodia) and the Sedone Provinces of Champasack, Saravanne and Sekong (Lao PDR), unsightly solid waste was a major concern with both locations relying on tourism for economic development and livelihoods. While a comprehensive analysis had not been done to determine the impacts, community members reported problems related to solid wastes including blocking natural drainage systems, flooding, the presence of vermin, illness/disease, etc.

Mismanagement of solid wastes also had knock-on affects to the economies of the area, including devaluation of property, loss of investments (e.g., tourism, fisheries), and erosion of job opportunities from tourism.

Solutions

How to respond … some lessons from communities in Sihanoukville and Sedone River Basin

Organize at the village level, where the waste management problem is most evident. In both Sihanoukville and Sedone, three main problems were identified, namely: (1) limited awareness of impacts of poor waste management on health and the environment; (2) poor waste handling and collection systems; and (3) limited cooperation between the private sector waste collection companies, the communities, and the local government, resulting in poor services provided to the communities.

To address these common problems, it was essential to get the community leaders involved at the beginning of the project. In Sedone, teams composed of at least five members, including the leaders of the villages, the leaders of the youth and women's organization, the security unit and the environment unit, were set up. In Preah Sihanouk, a team composed of village leaders was organized with the Provincial Government providing support.

Upon organization of lead teams, workshops were conducted wherein the roles and responsibilities of the teams were discussed and agreed upon. The inception workshops also provided an opportunity for the villagers, representatives from the waste collection companies, and the local governments to participate in the planning process, thereby strengthening ownership of the project and getting better cooperation from villagers and the private waste collectors.

Determine what's wrong and why. To come up with a solution, one needs to first understand the socioeconomic characteristics, environmental concerns and behaviour towards solid waste.

Interviews were undertaken and observations were recorded in the two study areas as part of the baseline assessments. By conducting baseline data gathering, the team members were able to familiarize themselves with the local conditions and behavior patterns in the respective sites. For instance, waste characterization enabled the teams to identify potential opportunities for improved management, such as the application of composting and recycling processes, noting that a high percentage of the household wastes in the communities were biodegradable.

Getting the schools involved in waste management in Saravanne Province.

In each case, support from academic institutions was important in the conduct of baseline data gathering and planning. This external support provided the provincial authorities with additional manpower and the required skills for baseline data gathering, analysis, and solid waste management planning. In both Sihanoukville and Sedone, the Royal University of Phnom Penh (RUPP), Department of Environmental Science, was tapped to provide support for local implementation, while gradually building the competence of the local teams in implementation.

Empower local stakeholders using a learning-by-doing approach. The RUPP support group provided a series of trainings and on-site coaching in order to build the knowledge and skills of local teams. A "ladder" approach was used for the training, starting off with basic information on waste generation and the related social/human health and environmental issues, then moving into the concepts and approaches of improved waste management, and finally concrete actions for improved waste management in the respective communities.

Define the community's role and a means to execute. One of the major constraints to improved waste management within the two communities was limited accessibility by waste collection trucks. To remedy the situation, it was agreed that the waste collection system should consist of two stages: (1) waste collected from the households would be deposited at a transfer station (primary collection); and (2) from the transfer station, which would be accessible by waste collection trucks, wastes would be transferred (secondary collection) to a final disposal site (i.e., dumpsite or landfill). In setting up the collection system, an understanding of community behavior as well as road access was necessary.

In Sihanoukville, a map of the transfer points was identified (see fig. 1). Based on the map, waste bins were installed and households were encouraged to utilize the waste bins. Since road access was poor within the community, a worker

was assigned by the waste collection company (CINTRI) to collect the wastes from the transfer points. CINTRI then transported the wastes to the dumpsite.

In Sedone, the households mainly used baskets and plastic bags for waste storage and one rubbish bin was assigned for every ten households. The community leaders were responsible for ensuring that the households were disposing of their wastes using the assigned bins. From the transfer points, secondary waste collection and transportation service is provided by the local government in both Pakse and Salavane and by a private contractor in Thatheng.

Sustain the system through an equitable user fee scheme. An important and challenging dimension of waste management services is financing the continuous implementation. A socialized user-fee scheme was developed for Sangkat 1, Sihanoukville, whereby the user service fees were based on the number of family members and the dwelling. The idea was to "share" the burden of waste management across households, with relatively better off families paying a higher share of the waste management service. The monthly user fee was pegged at 1,000 Riel (US$ 0.25) to 8,000 Riel (US$ 2). The scheme is shown in Table 1 with the number of households and monthly collection. The scheme was based on two aspects: the number of family members and the "type" of dwelling or the type of construction materials used for the house. For instance, a family living in a relatively bigger house made of concrete would pay much higher than those living in smaller houses. Affluent families also tended to purchase more and create more wastes. The type of dwelling was used as a proxy indicator for wealth and income. The second criterion was the number of household members. Most households pay 4,000 riel or US$ 1 per month for solid waste collection. By implementing the scheme, the village was able to collect US$ 272 per month, which was used to maintain the primary and secondary waste collection services.

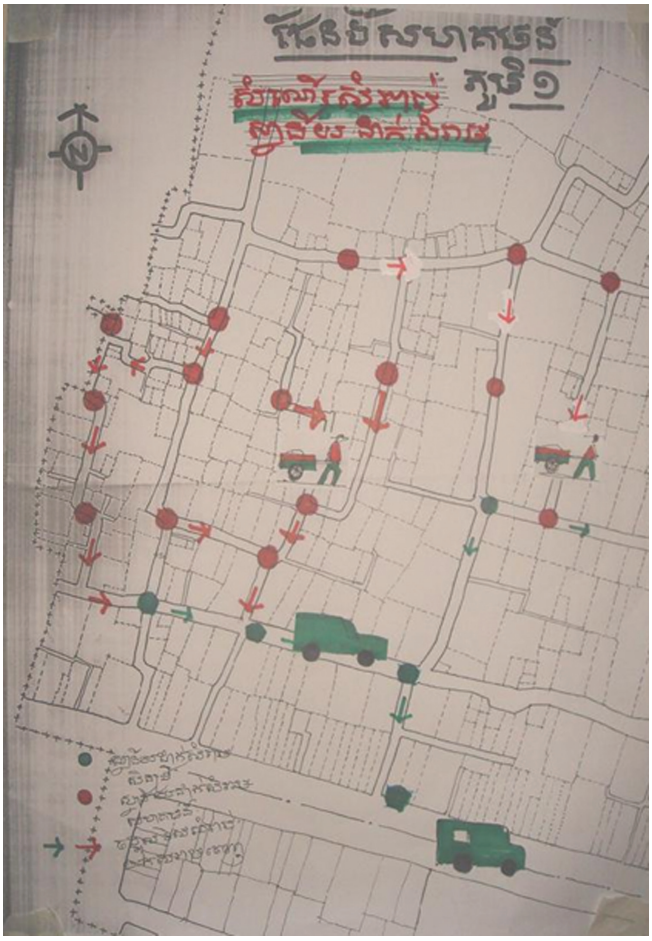

Figure 1. Community mapping and identification of transfer points .

Waste bins distributed among the households in Sedone.

This was not an easy task, particularly as some households were only renting, while others were informal settlers. Getting support from village leaders and engaging the households in regular dialogues resolved difficulties in collection.

User-fee systems are usually established as projects mature and communities recognize the importance of sustaining the implementation. In Sedone, the pilot-scale project was unable to set up this scheme due to legal issues. Despite this limitation, the cleanup activities and waste collection continued even after the pilot-scale implementation with public funding. The Province of Champasack has even proposed a follow-up phase and expansion to cover more villages in the Province.

Strengthen community awareness. A key strategy in waste management is to get stakeholders involved by engaging them in community activities, such as cleanups. In Sihanoukville, the initial activities focused on getting rid of the accumulation of wastes in public areas in order to demonstrate the immediate impact of the project and generate stakeholder support.

In Sedone, public awareness materials, including stickers and brochures on solid waste management were developed and used in various campaigns. Regular community cleanup activities were also conducted by the village members to demonstrate commitment to waste management and to maintain cleanliness in the village. These events proved popular and were continued on a weekly basis even after the project ended in most project sites. Consultations with community members indicated that a positive behavioral change among local people was observable through greater public involvement in cleanup activities and reduced incidences of burning wastes and dumping of wastes into the drainage system and river.

Community cleanup activity in Sihanoukville.

Table 1. Socialized user-fee scheme for Village 1, Sangkat 4, Sihanoukville.

No.	# of Household	Monthly Payment (in Riel)*	Total Amount
1	20	8,000	160,000
2	20	7,000	140,000
3	20	5,000	100,000
4	120	4,000	480,000
5	50	3,000	150,000
6	30	2,000	60,000
7	1	1,000	1,000
		0	0
	261		1,091,000

*Exchange rate is at 4,000 riel to 1 US$.

Develop the legal framework for waste management improvement. Using Lao PDR's Law on Environment Protection (LEP), local regulations on waste management were developed at district and village levels to provide a legal basis for implementation. In both Sekong and Saravanne provinces, regulations were approved at the District level while in Champasack Province, a regulation was developed at the village level with support from the project and approval by the village committees.

Results

Improved cleanliness and sanitation. Early results are an important part of getting community buy-in. In Sihanoukville, an estimated 175 tonnes of accumulated waste in public areas were collected and properly disposed of at the start of the project. The visual and physical changes that occurred as a consequence of the initial cleanup sparked interest in the community to continue to participate in solid waste management improvements in the area.

Cleaning up accumulated wastes

Before

After

Implementation of the project has created visible impacts on the environment in Sihanoukville.

In Pakse, Champasack Province, in order to maintain cleanliness in the municipality, waste collection has increased in frequency from twice a month to a weekly collection service.

Village leadership continues after the pilot projects. Organizing teams and getting village leaders to eventually lead the process entail on-site coaching, close guidance, and collaborative planning and implementation. At the start of the Sedone project, support was provided and made visible by the Provincial authorities as the village leaders were still acquiring knowledge and skills in waste management implementation. Eventually, village leaders were able to mobilize community support for regular community clean up, even after the pilot project ended, indicating the overall commitment to promote better sanitation in those communities.

In Sihanoukville, the village leader eventually became a key resource person in the expansion the coverage of the solid waste management collection system to other villages in the province.

Institutional arrangements established. Based on the experience of the pilot projects, village organizations have been set up to focus on improved solid waste management in Champasack Province. The village organizations are composed of village leaders, senior/elderly people, women's groups, and youth associations.

Improved relationship between local government officials and stakeholders. The pilot-scale waste management project was an effective exercise in getting communities and local government leaders to collaborate on community

governance. By working together and showing visible changes in cleaning up the community, the stakeholders were able to see the benefits of collaboration and partnership, thereby improving understanding and trust in one another.

Demonstrated success resulted to scaling up the efforts. In Sihanoukville, the experiences of the pilot-scale implementation was scaled up to cover more villages in Sangkat 4. The growing recognition to address the problem of wastes has also generated more attention at the provincial and national level, leading to enactment of policies and programs that assist urban centers across the entire province.

Lessons Learned

Getting the basic system started. Experiences in the two countries have shown that, while a comprehensive system of waste management is ideal, the basic needs and capacities of the communities must be addressed first. In both situations, the basic need was to remove the waste from the communities in order to avoid human health and environmental hazards. The implementation of waste segregation and recycling schemes can be introduced at a later point in time, when the basic set up has been established. For example, segregation of waste and waste recycling is now being introduced in collaboration with the schools in Sihanoukville. Also, as people see the immediate impact of a clean environment, the basic system becomes its own advertisement.

Adapting to changes in behavior. The location and size of the waste bins are important in maintaining cleanliness of the community and in encouraging communities to dispose properly. This is one of the key considerations of the baseline assessment. However, as the system is implemented, it is essential to monitor and adapt to change.

In Sedone, it was observed that as communities began to understand the importance of proper waste handling and collection, the waste bins provided at the start of the pilot project proved to be insufficient in capacity, particularly when secondary waste collection was being carried out only once every two weeks. In response, waste collection by the private collector was changed to once a week. While there was an increase in the frequency of the waste collection, there was no corresponding increase in the cost of the collection among the households.

Information and public awareness conducted in Village 1 Sangkat 4 at the start of the pilot project.

User pays for services rendered. Collecting user fees is one way of sharing the costs of waste collection services between the local government and the households that benefit from the service. User-pay schemes inherently entail a process of consultation, awareness building and negotiation among village leaders, households and local governments. A basic principle with such systems is that households pay within their respective capacities, but every household pays something. In addition, once the scheme is in place and implemented, transparency in managing the funds and demonstrating visible impacts are important in getting better compliance and collection.

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