

A STEP TOWARDS SOURCE SEGREGATION AND DOOR TO DOOR COLLECTION IN HILLY AREAS: CASE STUDY OF SHIMLA

City Profile

Shimla, the capital of Himachal Pradesh, is one of the most popular tourist destinations in India. The topography of the city is characterized by steep slopes and deep valleys with an elevation ranging between 1500 m to 2454 m. It has a subtropical highland climate and experiences extremely cold climate during winter and moderately warm climate during summer.

- Area: 35 sq. kms
- Total number of Wards: 25
- Population (Census 2011): 1,69,758
- Floating Population (Census 2011): 76,000
- Number of Households: 50,000 (approx.)
- Temperature: 0-30°C
- Average Rainfall: 1,437 mm

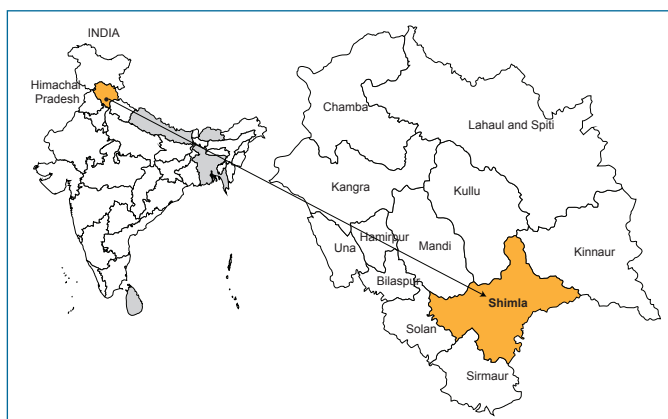
Municipal Corporation of Shimla (MCS) is the responsible authority for providing basic services to citizens including municipal solid waste management services. The health department of MCS is responsible for executing a well-planned municipal solid waste

management system through door to door collection of segregated waste, transportation, treatment and disposal. MCS uses a private agency or a private contractor for different components of MSWM.

Rationale for Selection of this Pilot Project

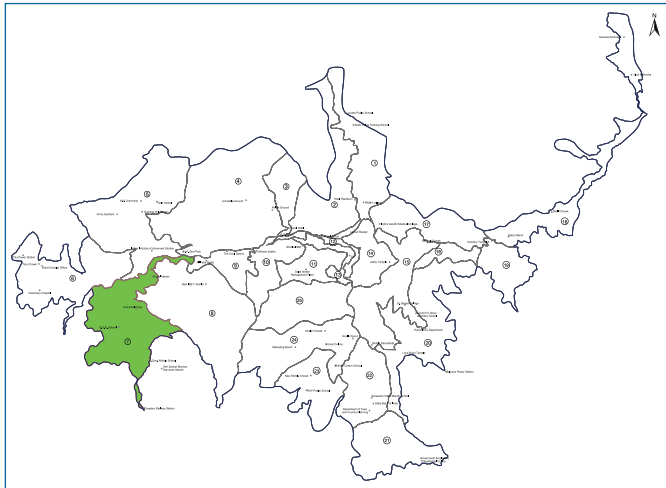
Municipal Corporation of Shimla, under Himachal Pradesh Municipal Corporation Act, 1994 enacted Door to Door Garbage Collection By-Laws in 2006. In order to enforce this by-law, the Shimla Environment, Heritage Conservation & Beautification (SEHB) Society was formed in 2010 under the aegis of MCS. The SEHB Society has since then been involved in door to door collection of garbage from households. However, there was no source segregation of waste. Collection and transportation of mixed waste was the norm. In fact, the 2012-13 Service Level Benchmarks for the city report only 15% waste segregation. Processing of mixed waste causes loss of valuable recoverable resources and unnecessary transportation of retrievable and reusable waste. The hilly terrain of the city also makes certain areas inaccessible, making door to door collection and transportation of waste difficult. Households in the lower reaches of the valley were not attended to by the MCS waste collectors, since they had to walk up with the waste. Consequently, households here disposed waste on their own, resulting in open dumping and unsanitary conditions.

Under the European Commission funded project “SUNYA - Towards Zero Waste in South Asia”, MCS decided that the opportunity of implementing a pilot project should be leveraged to generate awareness among citizens to segregate waste at source in households. The ragpickers who have been enlisted as part of the SEHB society in Shimla, were also considered and the pilot



Map of Shimla

project was designed so that they could collect and re-sell the recyclable waste from households, thereby supporting their livelihoods and also moving a step towards creating an inclusive society and alleviating



Pilot Project Area: Kachi Ghati in Ward Number 7

poverty. An inaccessible area was chosen for this initiative so that waste could be segregated and processed within the area, to showcase successful decentralized waste management.

Current Situation of Kachi Ghati

- Number of Households: 250
- Total number of garbage collectors in the area: 2
- Availability of space for compost pit: Not available. (Under the project, composting was done on forest land)
- Situation: Steep slope, inaccessible by vehicles and more than 500 stairs in the area

It was thus decided to implement a decentralized MSWM system at a pilot scale in Kachi Ghati area in Ward Number 7 (Boileauganj). The households in Kachi Ghati are spread over 500 steps which makes it very difficult for the waste collectors to carry waste to the top from the houses at the lower reaches. The idea was to involve citizens in segregating waste into two categories viz., dry and wet waste, collect, transport and treat them locally, thereby promoting resource recovery and reduction of waste going to landfills.

Objective

The overall objective of the pilot project was to successfully set up a decentralized municipal solid waste management facility at Ward No. 7. The main targets that helped in achieving the larger goal were:

- To create awareness among citizens regarding segregation of waste

- To instill the sense of importance of source segregation in the community
- To ensure 100% door to door collection of segregated waste in the area
- To set up a decentralized waste processing facility for biodegradable waste
- To generate revenue by selling recyclables that can support the livelihood of sanitary workers

Approach

The MCS strategically planned the collection and transportation of waste from the Kachi Ghati area to maximise the efficiency of collection, while at the same time ensuring effective and appropriate disposal of the waste. The MCS conducted a strong IEC campaign to encourage the citizens to segregate waste at source. This was coupled with segregated collection and transportation of waste from the households. Biodegradable waste was first collected from houses in the upper reaches and subsequently from houses lower down along the slope. This waste was then deposited in a compost pit at the bottom of the valley. The recyclable waste was collected from the houses at the bottom of the slope first, moving up to the main street which had a bin for depositing the dry waste that was taken away to the MSW processing plant in Shimla.

Methodology

The 250 residential and commercial units in Kachi Ghati area are distributed in the hilly terrain with 500 steps connecting them. Only about 50 residential and commercial units are easily accessible by a vehicle / have secondary storage bins, while the rest require manual collection. SEHB society deployed 2 waste collectors to collect the waste from these households.

Information, Education and Communication

- In order to involve citizens to ensure segregation of waste at source, MCS conducted a number of informal



Two bins at households

meetings/discussions with the households and with prominent local people, generating awareness among citizens. Since many of the households in the area were not members of the Door-to-Door Garbage Collection Scheme, a campaign was started to enroll all the residents in the area under this scheme.

- Residents were educated about the importance and benefits of segregation at source through a mass awareness drive. Two bins were distributed to the public – green for wet waste and yellow for dry, followed by practical demonstration of waste segregation. Simultaneously, waste pickers were also trained to ensure that they collect only the source segregated waste and also transport them separately.
- The awareness generation campaign included rallies, leaflets, posters, annual calendars, radio jingles and other print and electronic media.

Institutional, Managerial and Infrastructure Development

- Two bins were distributed to each household for storage of segregated waste. Bins, free of cost, were also given to the deprived section of society, who could not pay the membership fees of the collection scheme.
- Considering the hilly terrain of the area, it was strategically planned that waste pickers will be collecting wet and dry waste on alternate days so that the load is bearable.



Compost Pit in Ward No. 7

- Considering the amount of wet/kitchen/biodegradable waste collected from the area, a small compost pit, was made at the bottom of the pilot area. The wet waste being collected is segregated once more before putting into the pit for composting finally.

Day	Type of Waste Collected
Monday	Wet
Tuesday	Dry
Wednesday	Wet
Thursday	Dry
Friday	Wet
Saturday	Dry

- Regular turning of waste was done to ensure enough moisture and air for composting. Because of shady conditions around the pit, more efforts were needed than normal for pit composting. Through continuous efforts of more than seven months, 4 tons of compost was formed. MCS is planning to use the compost in public gardens and parks.

Results/Outcomes

The pilot area is the first area in Shimla to achieve 100 percent segregation and collection of waste. Citizens have been sensitized and cooperate with waste collectors. The initiative has decreased the amount of waste going to RDF processing plants and landfill. Moreover, since recyclables are not soiled and collected separately, it created opportunities for additional income for waste collectors. The success of the pilot project has inspired the municipal corporation to plan other such decentralized systems that can reduce waste transportation, processing and landfilling needs.

Success Factors

The main factors that contributed to the successful implementation of the pilot project include the following:

- The project saw commitment and perseverance from the officials in MCS. Regular monitoring of activities and composting site by the Corporation Health Officer and other officials ensured success in the project. Regular interaction and visit by the political representatives and senior officials also helped in maintaining the momentum among households who started taking pride in their initiative.
- Massive and continuous awareness generation campaigns and regular interaction with households created trust in the community and helped in gathering support for implementation of the project. This also encouraged people to pay for these services.
- Training and capacity building of waste collectors was an important factor that helped to generate awareness about segregation and encouraged segregated collection and transportation of waste.



Waste Collector with dry waste

Lessons Learnt

The Pilot project was implemented in an area where people were not aware of the benefits of segregation and were reluctant to segregate waste at source. This problem could be overcome only by consistent and continuous awareness campaigning. It was also realized that open-pit composting is not a suitable option for cities like Shimla with very low temperature and shaded, forested areas, mechanical support could be useful in such cases. Mechanical / electrical composters such as the organic waste convertor (OWC) could be considered as one of the options for processing waste at a decentralized level. Awareness is also needed among waste collectors regarding use of Personal Protection Equipment (PPEs) like gloves, masks, etc., regarding segregated collection and transportation of waste and benefits of segregated waste collection.

Sustainability and Replication

This pilot project demonstrated a low cost participatory approach for setting up a decentralized municipal solid waste management system at the ward level. Collection of user charges and various recycling opportunities have resulted in financial sustainability of the project and have showcased that such an initiative can be sustained even without the support of a regular municipal budget. MCS is planning to replicate the initiative in 6 other wards with a similar terrain, but this time using mechanical or electrical organic composters. Such initiatives are also suitable for vegetable markets which generate a lot of biodegradable waste. Gradually efforts will be made to develop decentralized solid waste management systems in all the 25 wards of Municipal Corporation Shimla.

Project Partners



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About SUNYA

SUNYA - Towards Zero Waste in South Asia is a project supported by the European Commission conducted in the South Asian countries of India, Nepal, Bhutan, Bangladesh and Sri Lanka. The seven cities of Shimla, Coimbatore, Hetauda, Tansen, Phuentsholing, North Dhaka and Matala partnered in the project, which was led by Municipal Association of Nepal and technically supported by ICLEI South Asia, VVSG (Association of Flemish Cities and Municipalities, Belgium) and ARGE (Association of Waste Prevention, Austria). The project focused on introduction of principles of 3R for municipal solid waste management, promoting reduction, reuse and recycling of waste through community mobilization and involvement, and scalable pilot demonstrations of reduction of waste generation and sustainable management. For more information, please visit: <http://www.sunyaproject.org/>

This document has been produced with the financial assistance of the European Commission. The contents of this document are the sole responsibility of the SUNYA – Towards Zero Waste in South Asia and can under no circumstances be regarded as reflecting the position of the European Commission.

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