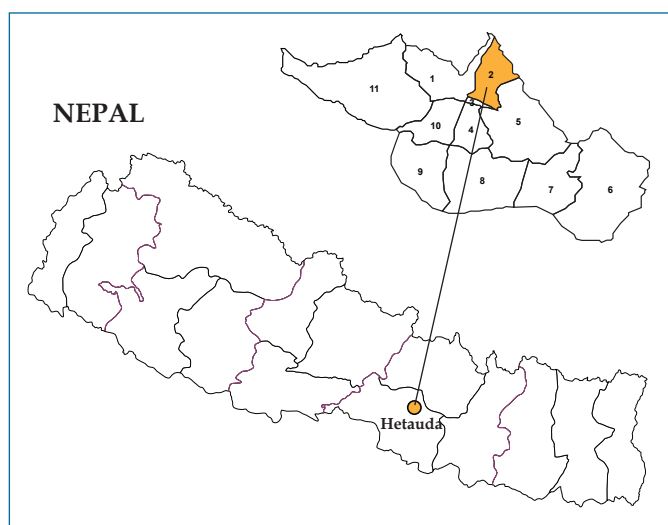


# SOURCE SEGREGATION – KEY TO SUSTAINABLE MUNICIPAL SOLID WASTE MANAGEMENT SYSTEM: CASE STUDY OF HETAUDA, NEPAL

## City Profile

Hetauda is a rapidly growing sub-metropolitan city located in the Central lowlands of Nepal. It lies at a distance of 132 kms from Kathmandu and is the administrative headquarters of Makwanpur district. The city is surrounded by hills of the Shiwalik range and the Mahabharata range and is encircled by three rivers i.e Samari, Karra and Rapti. Hetauda is the third largest industrial city in Nepal; the cement industry is predominant followed by the booming manufacturing and cottage industries.

- Establishment: 1969
- Area: 44.5 sq. kms
- Total number of Wards: 11
- Population (Census 2011): 100,000
- No. of Households: 25000 (approx.)
- Temperature: Tropical



Location of pilot project area in Hetauda

Hetauda Municipality is responsible for providing basic services like water supply and municipal solid waste management in the city. Particularly, the Environment and Sanitation section of the municipality under the Planning, Research and Environment Management division, is responsible for managing municipal solid waste in the city.

## Rationale for Selection of this Pilot Project

Hetauda is one of the rapidly growing industrial cities in Nepal. A large floating/migratory population flockes to the city for economic opportunities. A survey conducted in 2012 revealed that of the total amount of waste generated, only 40 percent was being collected. Littering and dumping in the forest area was common. Moreover, recently the administrative boundary of Hetauda has been expanded up to 261 sq. km and upgraded into a Sub-Metropolis with a subsequent increase in population to 152,000, increasing the pressure on the municipality to build its capacity to provide basic services to the extended area.

In the absence of source segregation, the entire municipal solid waste management chain was not effectively managed. Improper segregation meant mixed waste collection, and landfilling of mixed waste. This led to loss of valuable recoverable resources from the waste and unsustainable waste management. The Municipality realized that if citizens could be involved and encouraged in segregating waste into dry and wet waste at the source, then this waste could be collected, transported and treated locally, thereby promoting resource recovery and reduction of waste.

Under the European Commission supported project “SUNYA - Towards Zero Waste in South Asia”, Hetauda

Municipality took up a pilot initiative in Ward No. 2 to provide sustainable municipal solid waste management services to its citizens. Along with the stakeholders it was decided to start a decentralized solid waste management initiative in this ward with support from community based organizations called TLOs (Tole Lane Organizations). The pilot ward falls within the core area of the city and is important in terms of its location as it consists of businesses, commercial areas, institutional area as well as households. The initiative was hinged on generating awareness among citizens to segregate waste at household level.

### Objective

The overall objective of the pilot project was to promote basic source segregation at household level and encourage resource recovery through household level composting and recycling of dry waste. The major targets to be achieved in the city through the pilot project are briefly described below:

- To instill the importance of source segregation in the community
- To create awareness among citizens regarding proper segregation of waste
- To provide 100% door to door collection of segregated waste
- To promote practice of household level composting
- To promote reuse and recycling of dry waste

### Approach

Ward No. 2 which was selected as the pilot area consists of institutional, commercial and residential areas and the municipality found it challenging to collect segregated waste from all these different generators. The municipality adopted a strategic approach for ensuring 100 percent source segregation and collection of waste by following an intensive awareness generation campaign coupled with institutional arrangements of separate collection, recycling of dry waste and composting of wet waste.

#### Current Situation of Ward No. 2

- Area: 2.2 sq.km
- Population: 7275
- Number of Households: 1965
- Tole Lane Organizations: 14

### Methodology

The Municipality followed a two pronged methodology for implementing the pilot initiative. This involved both soft measures of awareness generation and hard measures of distribution of bins and actual collection and processing of waste.

### Information, Education and Communication

- Recognizing that community mobilization is a critical pre-requisite for effective decentralized waste management, the municipality conducted a campaign for mass awareness generation, educating citizens regarding segregation of waste into wet and dry and its importance. IEC materials such as hand bills, hoarding boards, street dramas and local media were used to disseminate the information.
- Towards the end of the campaign, 1st January, 2014 was declared as the official date of initiation of source segregation in the pilot ward. With the support of the community, around 95 percent of source segregation was achieved.
- Community was trained in practicing bin composting at the household level to reduce disposal of wet waste. Waste pickers were also trained to ensure that they collect only the source segregated waste and also transport them separately.



*Compost bins in household*

### Institutional, Managerial and Infrastructure Development

- The municipality provided one green bin to each household for storage of wet waste. Blue bins for recyclables were maintained by the people themselves for storing dry waste separately. Red bins were distributed to all nursing homes and medical stores for storing hazardous waste and biomedical wastes. It is strictly ensured that wastes from red bins are not mixed with municipal waste at any point and transported separately to incinerators.
- The municipality has hired a private partner for collecting and transporting segregated wastes from pilot area. Wet waste is collected on 5 days in a week while dry recyclables are collected twice in a week (Saturday & Tuesday).





*Blue Bin (Dry Waste), Green Bin (Wet Waste) & Red Bin (Biomedical Waste)*

### Results/Outcomes

The pilot project helped in generating awareness among people in Ward No. 2 regarding source segregation and waste management resulting in almost 90 percent source segregation. The collection in the pilot area is more than 80 percent which in itself is highly remarkable. Citizens have become disciplined, sensitized and cooperate with waste collectors. The pilot initiative has led to an increase in household composting thereby, decreasing the amount of wet waste going to compost plant and landfill. More than 50 percent of households have started practicing bin composting. Waste previously dumped on forest land has been cleared and open dumping has also stopped.



*Pet Bottles Collection*

Around 10 collection points for pet bottles are established near intersection of roads and commercial areas. Dry recyclables collected are segregated at secondary points and sold off to recycling units in Hetuuda Industrial District (HID), supplementing the income of sanitary workers while also promoting resource recovery and reuse.

With these concerted efforts, on the occasion of the World Environment Day (5th June, 2014), Hetauda Municipality was declared as the cleanest city in Nepal.

### Success Factors

Factors that contributed to the successful implementation of the project include:

- Intensive and sustained mass awareness generation campaigns were key to effective community mobilization. Regular interaction helped generate support in the community for the project and also resulted in convincing people to pay for these services.
- Torch bearers/leaders from within the community motivated their neighbours to promote segregation and bin composting.
- Training and capacity building of waste collectors and distribution of Personal Protection Equipment (PPEs) like gloves and masks motivated the workers to participate in the pilot initiative.
- Strict monitoring and penal action for violators encouraged people to segregate waste properly. Money generated through fines was used for media campaigns.
- Strong commitment and involvement of senior officials from the municipality during implementation of the project helped to sustain the high motivation levels in the community.



*Composting in process*



*Awareness Generation Program*

## Lessons Learnt

Some houses are inaccessible to the municipal waste collectors because of their location in narrow lanes. Thus door to door collection is not always suitable and provision needs to be made for kerb side collection or community bin collection. A strong community mobilization campaign is key to the success of sustainable municipal solid waste management. With consistent efforts, the city can actually begin its journey towards zero waste.

## Sustainability and Replication

This success of the pilot project in Ward No. 2 encouraged the municipality to replicate the model in other wards (Ward No. 3 and Ward No. 10). Collection of user charges and sale of recyclables have made the project financially sustainable. The awareness generation campaign and activities promoting the concept of zero waste have been integrated into the annual planning, programming and budgeting of the municipality. The municipality plans to replicate the model in the entire city.

## Project Partners



## Project Partners



## 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, Phuntsholing, 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/>

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