

## Solid Waste Management in **Bidur Municipality**



His Majesty's Government  
**Ministry of Local Development**  
Solid Waste Management and Resource Mobilisation Center



Clean Energy Nepal



Environment and Public Health Organisation

## Preface

**Solid Waste Management in Bidur Municipality<sup>1</sup>** is one among a series of 58 reports, which briefly describes the current situation of solid waste management in each of the 58 municipalities in Nepal. The information presented in this report was obtained from a review of relevant literature, interviews with key municipal staff as well as other stakeholders, and a waste generation and composition survey. As the report is based on information collected over a short period, including a one-week field visit conducted in September 2003, this is not a comprehensive study, but it provides a brief overview of the solid waste management situation in the municipality.

This study was commissioned by Solid Waste Management and Resource Mobilisation Centre (SWMRMC) of the Ministry of Local Development. A team of four experts, Dr. Nawa Raj Khatiwada, Bhushan Tuladhar, Ashok Tuladhar and Dinesh Raj Manandhar, coordinated the study. The field investigations in each of the 58 municipalities were conducted by a team of environmental officers under the guidance of the coordination team.

This series of reports will be valuable for researchers as well as planners and managers of solid waste management systems. An analysis of the key findings from all the 58 municipalities is presented in a separate report published by SWMRMC.

Clean Energy Nepal (CEN) and Environment and Public Health Organization (ENPHO) wishes to thank Mr. Surya Man Shakya, General Manager of SWMRMC, for taking this bold and innovative initiative of gathering information on the solid waste management situation in all the 58 municipalities of Nepal for the first time. We also wish to thank the coordination team, as well as Mr. Murali Ranjit and Mr. Nirmal Acharya of SWMRMC, for their valuable input. Finally, we are very grateful to all the environmental officers who visited the municipalities to collect the required information and the municipal staff and the local people who have provided us with this information.

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<sup>1</sup> This report was prepared by Bhushan Tuladhar and Gopal Raj Joshi, based on field investigation done by Pradeep Thapa.

## 1 Introduction

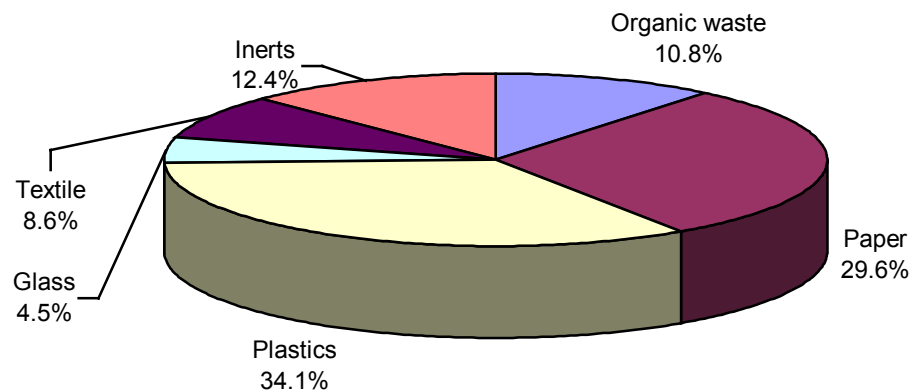
Bidur is a small municipality located on the banks of Trishuli River in Nuwakot district of Central Development Region. It is bordered by Khani VDC in the east, Charghare khadka Bhanjyan and Kalyanpur VDC in the west, Tupche and Gerkhu VDC in the north and Belkot VDC in the south. The Pasang-Lahmu highway joins Bidur municipality with Kathmandu. The municipality was established in 2044 BS.

**Table 1: Background Information**

NAME	BIDUR MUNICIPALITY
District	Nuwakot
Year of Establishment	2044 B.S.
No. of Wards	11
No. of Urban Wards	6 (ward no. 1, 3, 4, 6, 10, 11)
No. of Rural and semi urban Wards	5 (ward no. 2, 5, 7, 8, 9)
Total Area	33.48sq. km
Built-up Area	46.2 ha
Major Rivers and Ponds	Tadi, Trishuli Samari rivers and Chandi pond
Total Road length	Black-topped: 17km Graveled: 22.4 km Earthen: 25km
Population (2001)	10854
No. of Households (2001)	4234
No. Shops	796
No. of Restaurants, hotels and shops	290
Annual Population Growth Rate (1991-2001)	1.3 percent
Estimated Population for 2003	21,748
Population Density	633 per sq. km

## 2 Waste Generation and Composition

According to the field survey done in 2003, the average per capita household waste generation rate in Bidur was 0.237 kg/person/day. This is similar to the average waste generation rate in urban areas of Nepal, which is 0.25 kg/person/day. Considering the total population of Bidur in 2003, which is estimated to be 21,732, the total amount of household waste generated in the municipality comes out to be 5.15 tons per day. If we assume that household waste makes up 75 percent of the total municipal waste, then the total amount of municipal waste generated in Bidur Municipality becomes 6.87 tons per day. The actual amount of household waste generated is probably lower because about half of Bidur's population live in rural areas where the waste generation rate is probably very low.

**Figure 1 Waste Composition**

The composition of waste shows that inorganic waste such as plastics and paper is the largest portion of the waste stream and the percentage of organic waste is very low compared to other municipalities. The findings of the waste characterization survey are very unusual for a relatively rural municipality like Bidur and very different from the character of waste found in other municipalities. On average, organic waste makes up more than 65 percent of the total waste stream, while plastics and paper make up 8.0 and 8.9 percent of the total waste stream in Nepalese municipalities. The reason for unusual results in Bidur is not known.

The loose density of household waste in Bidur was calculated to be 195.97 kg per m<sup>3</sup>.

Information on Bidur's waste generation and composition is based on waste collected from 92 households in wards 1, 3, 4, 7, 10, and 11, that had waste from 593 people.

### 3 Waste Collection

According to the municipality, it is collecting approximately 6m<sup>3</sup> of waste daily which is equivalent to about 1.2 tons of waste per day. Assuming that the total amount of waste generated in Bidur is 6.87 tons per day, the city is collecting about 17 percent of the total waste generated. Most of the waste that is not being collected is probably waste from rural areas within the municipality.

Bidur municipality has 12 sweepers, all of whom are temporary employees, who sweep approximately 7 kms of city streets on a daily basis.

Sweeping is done using ordinary brooms with long handles and the waste is collected in handcarts and wheelbarrows using shovels. The municipality has a total of 11 of handcarts and 8 wheelbarrows with capacity of 0.08m<sup>3</sup>. Once the carts and wheelbarrows are filled, the waste is loaded on to a tractor-trailer. The municipality has one tractor with trailer having a capacity of 3.06m<sup>3</sup>.

The municipality does not have bulk containers service but the door-to-door collection system has been practiced since last year. A local group called Battar Youth Club is involved in door to door waste collection and street sweeping .It

has distributed 202 waste bins of capacity 25 litres. The waste is collected on alternate days. The club is also responsible for sweeping 2 km of road daily.

The municipality has roadside pick up service throughout the week, as a result all the waste is placed on to the roadside for pick up by the municipal sweepers. The municipality does not have transfer station so collected waste is kept in temporary open piles.

## **4 Final Disposal**

The collected waste is disposed in a crude dumping site on the banks of the Trishuli River, about 6-km from the city. The site with an area of 200 ropanies has been used for the past 15 years. It is expected that the present site could be used for 15 more years.

The municipality has plans to construct a landfill site at Ward 6 Khampa Camp by the end of 2007 AD. The proposed site is located at a distance of 6 km from the city and has an area of about 300 ropani (15 ha). The municipality feels that this site, if developed, can be used for about 45 years.

## **5 Composting and Recycling**

Bidur Municipality does not have any programs promoting recycling and composting at the household and community level. The municipality, however, plans to build a compost plant in ward no.6 by the end of 2007 AD.

The city also has a few scrap dealers involved in recycling.

## **6 Special Waste Management**

Bidur municipality has 1 hospital with 25 beds, 1 health pose and 1 clinic. However, it does not have a system for collecting and managing medical waste separately. Medical waste from hospital, clinic, and drugstores is dumped along with municipal waste.

Similarly the city does not have any system to collect other types of special waste such as construction/demolition debris, industrial waste and dead animals.

## **7 Community Mobilization**

Recently local group called Battar Youth Club has started work on waste collection and mass education. The club, which was established in 2057 BS by local youths, is conducting mass education program regarding solid waste. The major activities conducted by club are community clean -up, setting up hoarding boards, pamphlets and television programs on local cable TV transmission. But the club lacks necessary resources.

## **8 Organizational and Financial Aspects**

The main responsibility for solid waste management lies with the Environment and Sanitation unit of Bidur Municipality. The unit has 12 sweepers and a supervisor.

The municipality spends approximately Rs. 6,25,532 in waste management each year. The total expenditure of the municipality in the fiscal year 2058/59 was Rs. 13,648,368.

## **9 Major Problems and Issues**

The main problem associated with waste management in Bidur is the lack of a sanitary landfill and composting facilities. The municipality has selected a site for a central compost plant and landfill but it does not have the necessary resources to develop the site.

The municipality also requires additional vehicles, collection equipment, and trained manpower.

Municipality has also identified lack of public awareness on waste management as a major problem

## **10 Conclusion & Recommendations**

As Bidur is a small municipality, solid waste does not seem to be a major problem at present. However, it still needs a proper landfill and composting facility along with an effective collection system. This can be done with the support of ongoing Urban and Environment Improvement Project of the Asian Development Bank.

### **Recommendations:**

1. The environmental section should be equipped with additional equipment, and trained manpower.
2. The proposed landfill site and compost site in Ward 6 should be assessed and if it found to be feasible, technical and financial support should be provided to develop this site.
3. The door to door waste collection system should be expanded throughout the city to the extent possible. With an effective waste collection system, it will not be necessary to sweep the streets twice a day. This can save valuable resources. Similarly, a door-to-door collection system will also prevent waste from being dumped on the streets before it is collected.
4. Some local groups like the Battar Yuva Club is doing a good job raising awareness on solid waste management and also helping the municipality in waste collection. Initiatives, such as these need to be supported and more local participation should be encouraged in managing the city's waste.
5. The hazardous medical waste should be collected and treated separately.

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## **Annex 1: Photographs**



**Waste Collection Bins Distributed by Battar Yuva Club**



**Household Waste Collection Bins**



**Transfer of Waste from Bins to Tractor**



**Hand Cart Used for Waste Collection**



**Wheelbarrows Used for Waste Collection**



**Tractor Trailer Used for Waste Collection**



**Waste Disposal at Devi Ghat along the Trishuli River**



**Haphazard Waste Disposal along the Trishuli River**



**Burial Site for Dead Animals**



**Proposed Landfill Site**