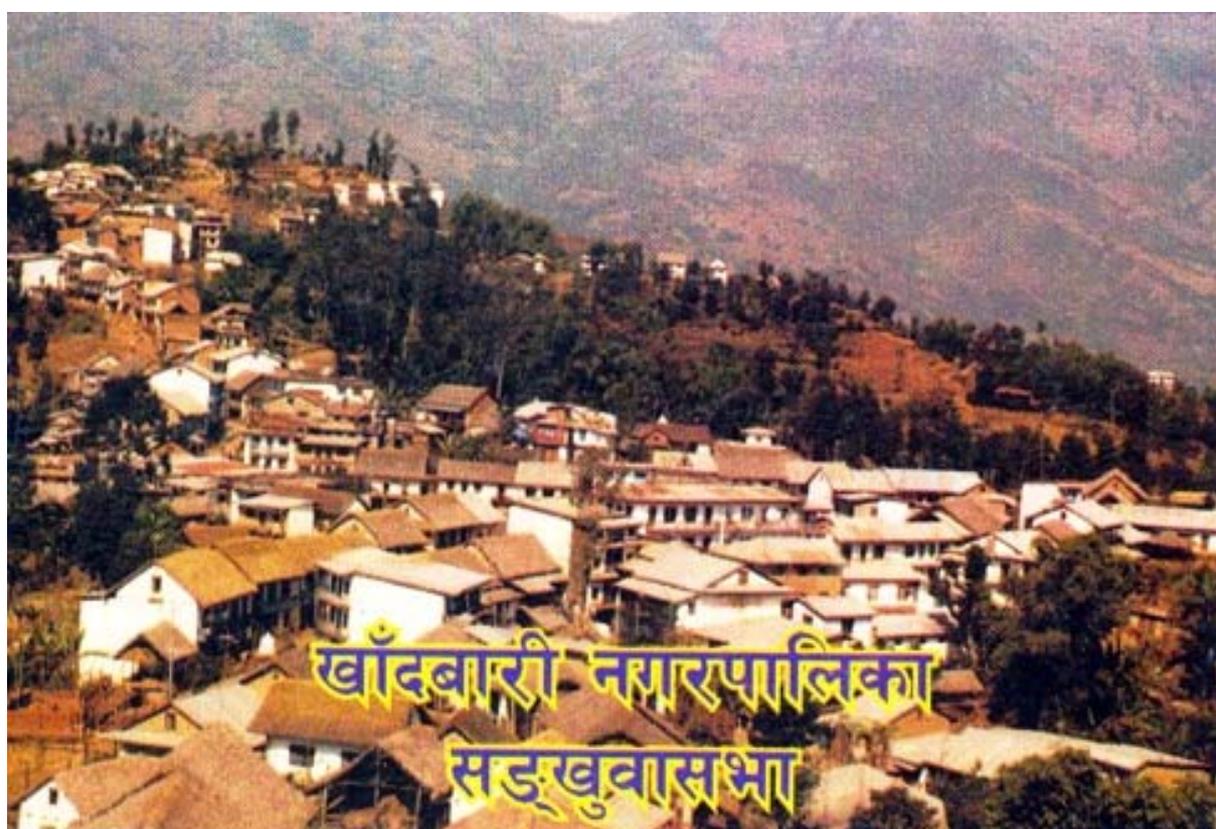


## Solid Waste Management in **Khandbari Municipality**



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 Khandbari 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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Executive Director  
Clean Energy Nepal

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Executive Chairman  
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July 2004

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<sup>1</sup> This report was prepared by Bhushan Tuladhar and Bhumika Vaidya based on field investigations conducted by Sushil Nepal.

## 1 Introduction

Khandbari Municipality is a small and rural municipality established only in 2053 B.S. The municipality is the headquarters of Sankhuwasabha district in east Nepal. The municipality was formed by combining three village development committees and it still retains its rural characteristics. Although it has a market centre and an airport, it does not have road access to the rest of the country. The Municipality is surrounded by Dhupu VDC in the East, Arun River and Sitalpati VDC in the West, and Dhading VDC and Matshya Pokhari in North. The municipality is a tourist destination and the gateway to the Makalu Barun National Park. The major occupation in the municipality is agriculture.

**Table 1: Background Information**

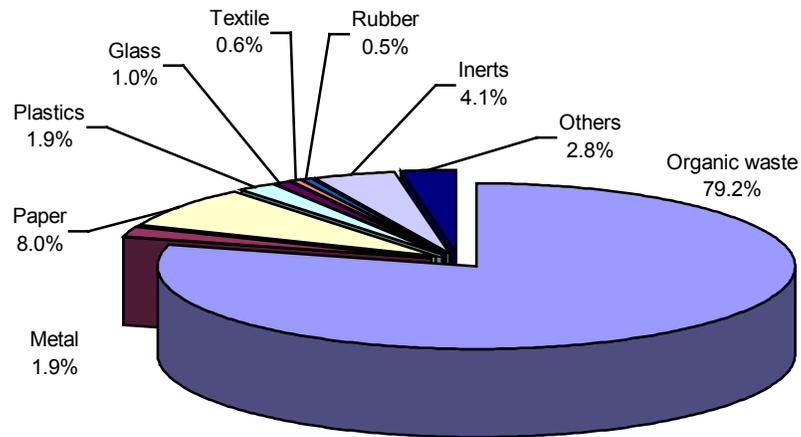
NAME	KHANDBARI MUNICIPALITY
District	Sankhuwasabha
Year of Establishment	2053 B.S
No. of Wards	13
No. of Urban Wards	3
No. of Rural Wards	10
Total Area	91.03 sq. km (CBS data)
Built-up Area	NA
Major Rivers and Ponds	Arun Khola, Sankhuwa Khola, Sabha Khola
Total Road length	NA
Population (2001)	21789 (CBS data)
No. of Households (2001)	4624 (CBS data)
No. of Shops	NA
No. of Restaurants, hotels and lodges	NA
Annual Population Growth Rate (1991-2001)	1.5 percent
Estimated Population for 2003	22,448
Population Density (2001)	239.36 per sq. km (CBS data)

## 2 Waste Generation and Composition

According to a field survey done in 2003, the average per capita waste generation rate in Khandbari was 0.195 kg/person/day. This is slightly less than the average waste generation rate in urban areas of Nepal, which is estimated to be 0.25 kg/person/day. Considering the total population of Khandbari in 2003, which is estimated to be 22,452, the total amount of household waste generated in the Municipality comes out to be 4.4 tons per day. The actual waste generation rate in the Municipality may be lower because most of the people live in rural areas.

The survey also indicated that about 80 percent of the waste is organic in nature, which is to be expected for a predominantly rural municipality like Khandbari. But the percentage of paper at 8 percent seems fairly high.

**Figure 1 Waste Composition**



The loose density of household waste in Khandbari was calculated to be 362.66 kg per m<sup>3</sup>.

Information on Khandbari's waste generation and composition is based on waste samples collected from 66 households that had waste from 280 people.

### **3 Waste Collection**

As the Municipality does not have a regular waste collection system, there is no data available for the amount of waste collected or the collection rate. Street cleaning is done only in some special events. There are no sweepers and no supervisor for waste management. The municipality has a tractor trailer with the capacity of 4 m<sup>3</sup>, which is occasionally used for waste collection. When waste is collected it is dumped or burned.

### **4 Final Disposal**

The collected waste is placed in open piles near the newly constructed municipality building. The municipality does not have any plans to build landfill site in the future.

### **5 Composting and Recycling**

The Municipality claims that 100 percent of households in rural area and 45 percent in urban area practice composting. But according to the field survey, the organic waste in the waste stream is quite high.

### **6 Special Waste Management**

Khandbari municipality has 1 hospital, 1 clinic and 2 laboratories that generate medical waste. Hospital manages their waste themselves by dumping it or burning it in the open. The industrial waste is also dumped in nearby land and the dead animals are buried.

## **7 Community Mobilization**

No community groups or private organization are involved in waste management in Khandbari Municipality.

## **8 Organizational and Financial Aspects**

Khandbari Municipality does not have any unit or staff with responsibilities for waste management and it does not allocate any budget for this purpose.

## **9 Major Problems and Issues**

The main problem of Khandbari Municipality is that there are no systems of waste management. Although very little waste is generated in the municipality, the municipality should have at least some basic system for managing the town's waste.

## **10 Conclusion & Recommendations**

Being a small, relatively rural, municipality, waste management is not a major problem, but with increasing population and urbanization it may be a problem in the future. Already there are some places in the municipality with open piles of waste. Therefore, Khandbari Municipality needs to start developing structures and system for effective waste management. Effective waste management is also necessary for the Municipality to retain its charm as a tourist destination.

Recommendations:

1. Solid waste management section or unit should be established so that there are some staff responsible for waste management and appropriate systems can be developed.
2. Proper waste collection system should be developed so that open waste piles are discouraged.
3. Municipality should make arrangements to at least bury the collected waste.
4. As the municipality does not have a waste collection system, it should also promote composting, reuse and recycling, particularly in households in urban areas.
5. There is no involvement of community and private organization for solid waste management in the municipality. For effective solid waste management, municipality should involve local community as well as private organizations.
6. The special wastes should be managed separately. Medical waste should be burned in a simple incinerator
7. Solid waste management trainings should be held for municipality staffs as well as in community level.

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## Annex 1: Photographs



**Tractor Used for Waste Collection and other Purposes**



**Board to Raise Awareness on Waste Management**



**Waste Disposal Site Near the Municipality Building**



**Waste Disposal Site above a Drinking Water Source**



**Burning and Disposal of Medical Waste Within the Hospital Premises**



**Burning of Waste**