

## Solid Waste Management in **Lahan 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 Lahan 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.

Bhushan Tuladhar  
Executive Director  
Clean Energy Nepal

Dr. Roshan Raj Shrestha  
Executive Chairman  
Environment and Public Health Organization

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 Dipen Dahal.

## 1 Introduction

Lahan is a small municipality located in Siraha District in the eastern Terai region. The municipality was established in 2032 B.S. Like most other small municipalities, Lahan is a primarily rural municipality, with 61.5 percent of the area covered by agricultural land. However, the town is growing rapidly because it is located on the East-West Highway and it connects the Hill areas to the Terai.

**Table 1: Background Information**

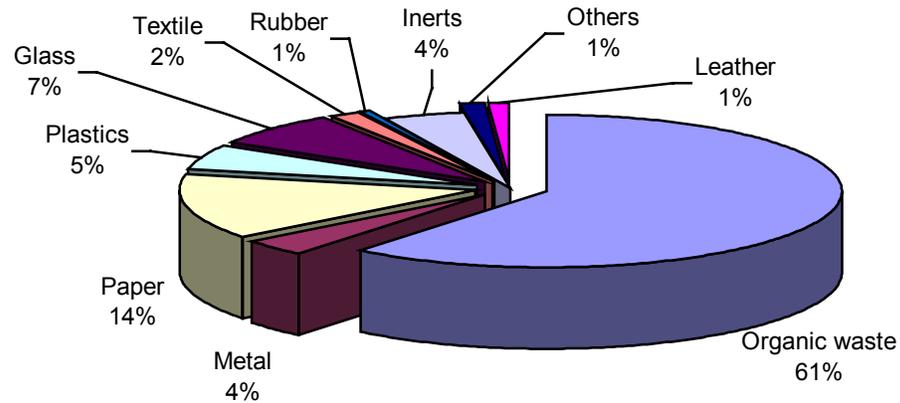
NAME	LAHAN MUNICIPALITY
District	Siraha
Year of Establishment	2032 B.S
No. of Wards	10
No. of Urban Wards	6
No. of Rural Wards	4
Total Area	20.23 sq. km (CBS data)
Built-up Area	NA
Major Rivers and Ponds	Khuti Khola
Total Road length	Black-topped: 7.5 km Gravel road: 16.25 km Earthen road: 10 km
Population (2001)	27,654
No. of Households (2001)	5,262
No. of Shops	986
No. of Restaurants, hotels and lodges	35 / 107 / 10
Annual Population Growth Rate (1991-2001)	3.8 person
Estimated Population for 2003	29,796
Population Density	1,366.98 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 Lahan was 0.32 kg/person/day. This is slightly higher than the waste generation rate in Nepalese municipalities which is estimated to be 0.25 kg/person/day. Considering the total population of Lahan in 2003, which is estimated to be 29,804, the total amount of household waste generated in the municipality comes out to be 9.5 tons per day. If we assume that 75 percent of the total municipal waste is generated by households, then the total waste generation in Lahan becomes 12.7 tons per day. The actual waste generation rate is probably lower because many people live in rural areas where the waste generation rate is probably much lower.

The composition of waste shows that although organic waste is the largest portion of the waste stream, the percentage of organic waste is relatively low compared to some other municipalities. This may be due to the composting practices in household level. Similarly, the portion of paper and plastic is fairly high for a relatively rural municipality like Lahan.

**Figure 1 Waste Composition**



The loose density of household waste in Lahan was calculated to be 193.8 kg per m<sup>3</sup>.

Information on Lahan waste generation and composition is based on waste sample collected from 60 households with 272 people in wards 5, 6 and 7.

### **3 Waste Collection**

The Municipality estimates that it collects about 2.4 tons of waste per day. Assuming that the total amount of waste generated in Lahan is 12.7 tons per day, the municipality is collecting about 19 percent of the total waste generated.

Lahan Municipality has 1 supervisor, 9 permanent and 16 temporary sweepers involved in waste management. They sweep 5 km of street daily from 7 to 10 AM and clean drainage after 2 PM.

The Municipality has a tractor trailer with 2.55 m<sup>3</sup> capacity and 2 wheel barrows in operation for the waste collection.

The Municipality does not have any container service or door-to-door collection service. As a result all the waste is placed on the road-side for pick up by municipal staff. As much of this waste lands up in road-side drains, clogging of drains is a major problem. Municipality provides roadside pick up service daily.

### **4 Final Disposal**

The collected waste is disposed in a crude dump site in Khutki Khola. The site with an area of 10 bigha has been in use since the past 28 years. It is about 1 km far from the city. The life span of the site is infinite as dumping is done in the river and during the rainy season the flood takes waste away. Municipality does not have any plans to construct a landfill site.

### **5 Composting and Recycling**

The Municipality estimates that about 10 percent of the people practice composting, but it does not have any programmes to promote composting or

recycling. The municipality also allows scavenging in collection as well as dumping site. About 10 scrap dealers are dealing with the scrap materials in the Municipality.

## **6 Special Waste Management**

Lahan Municipality has 2 hospitals and 25 clinics. The hospital waste, along with other special waste such as industrial waste, construction/demolition debris, is disposed along with the municipal waste. Dead animals are buried.

## **7 Community Mobilization**

The municipality has not initiated any activities to mobilize local communities in waste management and there are no community groups or NGOs involved in waste management related activities.

## **8 Organizational and Financial Aspects**

Currently the Health and Sanitation Section of Municipality is responsible for solid waste management related activities in Lahan. The section has 25 sweepers and 1 supervisor. The amount of funds allocated for solid waste management is not available.

## **9 Major Problems and Issues**

The problems associated with waste management in Lahan include poor waste collection system which results in frequent clogging of drains, lack of landfill site, inadequate budget, equipment, and skilled manpower for waste management and lack of awareness among people. Also no private sector or community group is involved in waste management, thus public participation in waste management is lacking.

## **10 Conclusion & Recommendations**

Though Lahan is a small municipality, the problem of waste management is already visible. The municipality should establish a proper waste management system with an effective collection system, promotion of recycling and a controlled disposal site.

Recommendations:

1. Proper waste collection system should be developed so that open piles on the streets are discouraged. This will also solve the problem of clogging of drainage. The municipality should ask the people to place their waste directly in to collection vehicles.
2. The municipality feels that waste dump site is not a problem because there is plenty of vacant land and putting the waste in the local river has been an easy way to dispose it. As a result, municipality has no plans to construct a landfill site. However, as open waste dumps are an environmental hazard, simple landfill site should be developed, where waste can be buried.

3. Waste composting and recycling should also be promoted at the household level as well as the municipal level.
4. Community and school-based programmes should be launched to increase awareness.
5. Medical waste should be burned in a controlled manner or buried safely.
6. The staff responsible for waste management should be trained and the municipality should provide adequate resources.

For more information please contact:

Mr. Devi Prasad Nepal  
Lahan Municipality  
Phone: 033-560138  
Fax: 033-560137

**Annex 1: Photographs**



**Waste Collection Using a Tractor**



**Cleaning of Drains Clogged by Solid Waste**



**Hand Cart and Tractors Used for Waste Collection**



**Cleaning Equipment**



**Waste Dumping Site at Khuti Khola**



**Women Washing Clothes Near Waste Dumping Site**