

# Solid Waste Management in **Prithvi Narayan 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 Prithvi Narayan (Gorkha) 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 Nisha Manandhar based on field investigations conducted by Rohini Prasad Devkota.

## 1 Introduction

Prithvi Narayan Municipality is a place of great historic interest located in Gorkha District in the Western Development Region. It has been named after founder of Nepal, king Prithvi Narayan Shah and was established in the year 1996 A.D. The municipality is located at an elevation of 328-1522 m from the sea-level and has areas such as Phinam, Mirkot, Khoplang, Bhogteni as its municipal boundaries. The Municipality is divided into 11 wards, out of which wards 1, 2, 3 and 6 are urban in nature but the rest of the wards are rural.

**Table 1: Background Information**

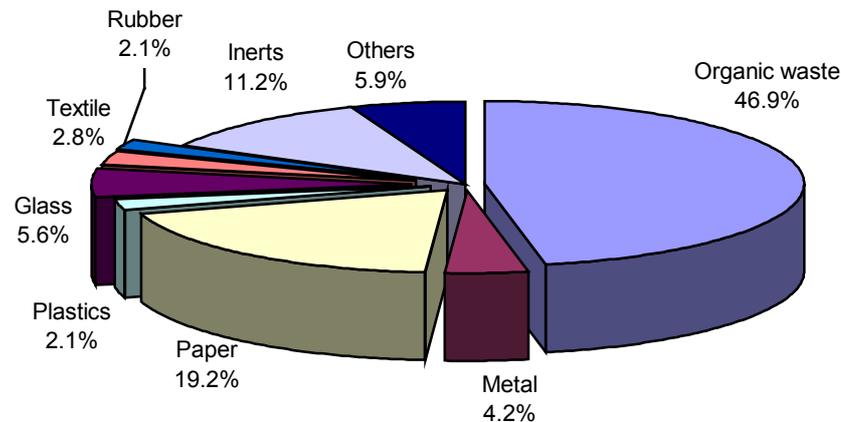
NAME	PRITHVI NARAYUAN MUNICIPALITY
District	Gorkha
Year of Establishment	2053 B.S.
No. of Wards	11
No. of Urban Wards	4
No. of Rural Wards	7
Total Area	60.28 sq. km (CBS data)
Built-up Area	30.8 ha
Major Rivers and Ponds	Darundi, Rani Pokhari
Total Road length	Black-topped: 18.5 km Graveled: 16 km Earthen: 58 km
Population (2001)	25,783 (CBS)
No. of Households (2001)	5,588 (CBS)
No. of Shops	473
No. of Restaurants, hotels and lodges	4/39/-
Annual Population Growth Rate (1991-2001)	2.3 percent
Estimated Population for 2003	26,983
Population Density	427.72 per sq. km (CBS)

## 2 Waste Generation and Composition

According to the field survey done in 2003, the average per capita waste generation rate in Prithvinarayan Municipality was 0.26 kg/person/day. This is similar to the national average of 0.25 kg per person per day. Considering the total population of Prithvinarayan Municipality in 2003, which is estimated to be 26,958, the total amount of household waste generated in the municipality comes out to be 7 tons per day. Assuming that household waste consists of 75 percent of the total municipal waste, the total amount of waste generated in the city becomes 9.3 tons per day. The actual amount of household waste generated is probably lower because most of Gorkha's population live in rural areas, where the waste generation rate is probably lower and the municipality has very few industries, offices and commercial establishments. The municipality estimates the waste generation rate to be approximately 2 tons per day.

The survey also indicated that organic matter consisted of 47 percent of the waste stream. Although this is the largest component of the waste, the percentage of organic waste is lower than that found in similar municipalities in Nepal. On average about 65 percent of the waste in Nepalese municipalities is organic waste. The survey also indicated that the amount of paper in the waste was 19.2 percent, which is much higher than the national average of 8.9 percent. The reason for this is not known.

**Figure 1: Waste Composition**



The loose density of household waste in Prithvi Narayan Municipality was calculated to be 286 kg per m<sup>3</sup>.

Information on Prithvi Narayan Municipality's waste generation and composition is based on waste collected from 68 households in wards 1, 3 and 6.

### 3 Waste Collection

According to the Municipality, it collects 1.5 tons of waste per day. The Municipality has a tractor-trailor for waste collection. The municipality estimates that the total amount of waste generated is 2 tons per day and it is therefore collecting about 75 percent of the waste generated. However, as the 2 ton per day figure is probably an underestimate, the collection rate is probably lower. If we assume that the total waste generation rate is 9.3 tons per day, then the collection rate is only 16 percent. The waste that is not being collected is probably waste from rural areas within the municipality.

Prithvi Narayan Municipality has 2 permanent and 2 temporary sweepers, who sweep approximately 400 m city streets three days a week working under a supervisor. Sweeping is done using ordinary brooms with long handles and the waste is collected using 4 shovels and the waste is loaded on to a tractor-trailer.

The municipality has door-to-door collection system, and it has also placed containers along roadsides to facilitate waste collection.

### 4 Final Disposal

The collected waste is disposed near the banks of river Daraudi, which is about 18 km from the city. The crude dump site has been under use since one and a half years.

The municipality has no further plans to construct a landfill site in the near future due to lack of financial and human resources.

## **5 Composting and Recycling**

Prithvi Narayan Municipality has not been carrying out any recycling and composting programs. However, scavenging is allowed and four scrap dealers are involved in collecting recyclable materials from the waste. But no private groups, NGOs and CBOs are being collaborated in this recycling and composting programme.

## **6 Special Waste Management**

The municipality has one hospital, two clinics and 12 mobile clinics, which generate some medical waste. The city also has 32 small-scale industries, which generated very little industrial waste. Gorkha municipality, however, has no separate system for collecting and managing special waste such as industrial waste, medical waste and construction debris. As a result, all types of waste is mixed and dumped with ordinary municipal waste.

## **7 Community Mobilization**

Two local NGOs – Goreto, established in 1995, and Rotary Club – have shown interest in helping the municipality manage solid waste. These organizations are helping to generate awareness among the local people and also increase people's participation providing support in promoting ideas of waste management from household level. Goreto has also submitted a proposal for managing waste in wards 1 and 2, which are the main settlements in the municipality. The municipality has also conducted some school-based programmes to raise awareness among students.

## **8 Organizational and Financial Aspects**

The main responsibility for solid waste management lies with the Sanitary Sub-Section under the Community Development Section of Gorkha Municipality. The municipality has only four sweepers, one driver and one supervisor involved in waste management. In addition, the NGO- Goreto and the Rotary club are providing support and are also showing interest in waste management of the municipality. But no fixed budget is being provided for waste management.

## **9 Major Problems and Issues**

The main problems associated with solid-waste management in Prithvi Narayan Municipality are the lack of a landfill site, lack of trained manpower, and lack of programmes to promote composting and recycling at the household and community level. Unnecessary political interference and lack of coordination within the municipality have also been identified as major problems. The municipality also requires additional vehicles and collection equipment, employees and more awareness programmes.

## **10 Conclusion & Recommendations**

Although Prithvi Narayan Municipality is a relatively small municipality where the problems of waste management may not be very visible, the municipality should start developing appropriate systems for managing the city's waste. Because of the limited resources in the municipality, community participation in waste management should be promoted.

Recommendations:

1. A suitable, economically viable, environmentally sound and social acceptable landfill site should be developed.
2. The waste collection system should be improved so that waste is collected door-to-door in main urban areas of ward 1 and 2, using the existing tractor. In these areas, open piles of waste on the streets should be discouraged.
3. Composting and recycling should be promoted at the household level as well as community level.
4. NGOs such as Goreto and Rotary have expressed interest in working with the municipality in waste management. The municipality should join hands with these as well as other NGOs and community groups to increase community participation and improve the efficiency of the waste management system.
5. The capacity of the Sanitary Sub-Section should be enhanced by providing trained manpower and adequate resources.

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**Annex 1: Photographs**



**Waste Collection Bins in Market Area**



**Hospital Waste Dumped Haphazardly in an Open Land**



**Waste Collection Tractor**



**Land fill site at Abuwa, in Ward no. 10 (Presently not Used)**



**Waste Collection Bins in Municipality Office Premises**



**Waste Collection Bins in Market Area**



Municipality Staffs Collecting Waste from Market Area



Notice Issued by Municipality "Don't Dump the Waste in Paraini River"