

## Solid Waste Management in **Dipayal Silghadi 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 Dipayal Silgadhi 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 based on field investigations conducted by Sagar Nepal.

## 1 Introduction

Dipayal, Silgadhi is a small municipality located in the hills of Doti district of Mahakali zone in the Far Western Development Region. It was established in 2047 BS.

**Table 1: Background Information**

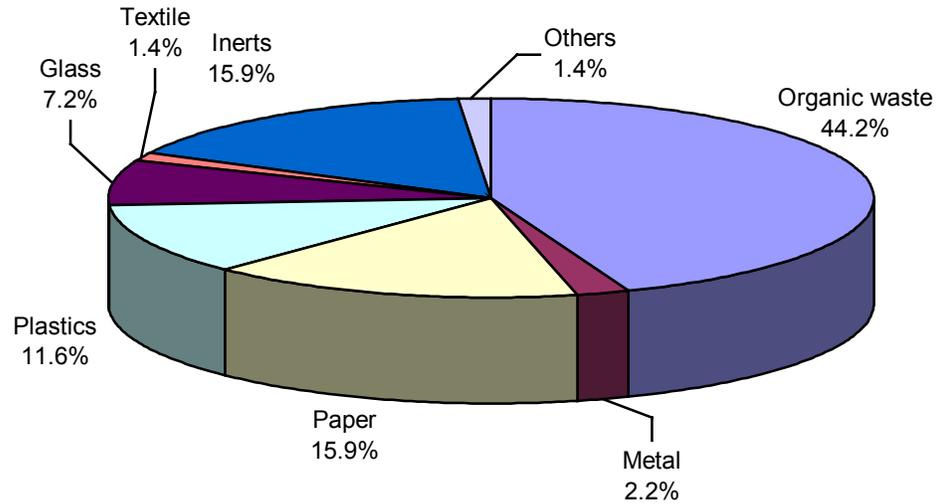
NAME	DIPAYAL SILGHADI MUNICIPALITY
District	Doti
Year of Establishment	2047 B.S.
No. of Wards	14
No. of Urban Wards	7
No. of Rural and semi urban Wards	7
Total Area	73.98 sq. km
Built-up Area	NA
Major Rivers and Ponds	Seti, Dunari
Total Road length	23 Km
Population (2001)	22,061
No. of Households (2001)	4,203
No. Shops	250
No. of Restaurants, hotels and shops	150
Annual Population Growth Rate (1991-2001)	6.0
Estimated Population for 2003	24,788
Population Density (2001)	298.2 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 Dipayal Silgadhi was 0.28 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 Dipayal Silgadhi in 2003, which is estimated to be 24,771, the total amount of household waste generated in the municipality comes out to be 6.9 tons per day. If we assume that 75 percent of the total municipal waste is generated by households, then the total amount of municipal waste generated in Dipayal Silgadhi becomes 9.2 tons per day. The actual amount of household waste generated is probably a bit lower because most of Dipayal Silgadhi's population live in relatively rural areas and their waste generation rate is probably lower.

The field survey indicated that organic materials made up 44 percent of the waste stream. This is very low for a relatively rural municipality such as Dipayal. On average 65 percent of the waste in Nepalese municipalities consist of organic waste. Similarly, the percentage of paper and plastics were found to be 15.9 and 11.6 percent respectively. The amounts of these materials seem high compared to the national average of 8.9 percent paper and 8.0 percentage plastics. One possible reason for the high values for paper and plastics and low value for organic waste is that much of the organic waste never enters the waste as it is recycled at source.

**Figure 1 Waste Composition**



The loose density of household waste in Dipayal Silgadhi was calculated to be 282.78 kg per m<sup>3</sup>.

Information on Dipayal's waste generation and composition is based on waste collected from 56 households in Silgadi, Pipala in ward no. 1, 2 and 4 that had waste from 245 people.

### **3 Waste Collection**

According to the estimation done by the municipality, the city collects approximately 3 tons of waste per day. Assuming that the total amount of waste generated in Dipayal Silgadhi is 9.2 tons per day, the city is collecting about 33 percent of the total waste generated. Most of the waste that is not being collected is probably waste from rural areas within the municipality.

The municipality has 9 sweepers, 2 of whom are permanent employees, who sweep approximately 6 km of city streets on a daily basis. Sweeping is done using ordinary brooms with long handles.

The municipality does not have bulk containers or door-to-door collection system. As a result, all the waste is placed on to the roadside for pick up by the municipal sweepers. The sweepers carry out the roadside pick up service through out the week. After sweeping and picking up waste from roadside areas, they collect the waste in sacks of 100 kg. Once the sacks are filled, the waste is carried to the place where waste is placed in temporary open piles. The municipality does not have any kind of vehicles for collection and transportation of the waste.

### **4 Final Disposal**

The collected waste is a disposed in a crude dumping site on the banks of the river and roads, about 0.5 km from the city. A site with an area of 3 ropani has been used as a dump site for the past one year. Sometimes, waste is also

dumped in open areas of the city and the jungle in a haphazard manner. It is estimated that the present dumping site could be used for 3 years.

The municipality has plans to construct a landfill site at Silgadhi, Pipala, but requires financial and technical assistance as well as land for this purpose. The proposed site is located at a distance of 2 km from the city and has an area of about 10 ropani. The municipality feels that this site, if developed, can be used for about 25 years.

## **5 Composting and Recycling**

Dipayal Silgadhi Municipality does not have any program to promote recycling and composting. Although many rural households probably compost their waste, such practice is not noticeable in the urban areas. The city does not have any plans to build compost plant.

The Municipality does not have scavengers and scrap dealers involved in recycling.

## **6 Special Waste Management**

The municipality has not developed any system for collecting and managing medical waste separately. The city has altogether 7 institutions involved in providing health care. Medical waste generally is buried by the hospital and clinics. Sometimes such waste is mixed and dumped along with municipal waste.

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**

The Municipality does not have any programmes to involve local communities and NGOs in waste management. Community and school based activities are rarely organised. The city lacks proper vision and strategy to enhance public participation in solid waste management practices.

## **8 Organizational and Financial Aspects**

The main responsibility for solid waste management lies with the Sanitation Sub Section of Dipayal Silgadhi Municipality. The Sub section has 9 sweepers.

The Municipality spends approximately Rs. 1,60,000 in waste management each year. This is approximately 2 percent of the total budget of the municipality, which is about Rs. 8 million.

## **9 Major Problems and Issues**

In the absence of necessary resources (financial as well as technical), Dipayal Silgadhi does not have a proper waste management system, including organizational structure, equipment and plans and programmes. Lack of a vehicle for waste transportation is also a major constraint. The municipality also needs to involve local communities in waste management. Another major problem is the lack of a sanitary landfill and compost plant.

## **10 Conclusion & Recommendations**

As Dipayal Silgadhi Municipality is a small municipality solid waste management does not seem to be a major problem concern at present. So far, the municipality has given little priority to solid waste management, but it should not be ignored for long. Because this is a small municipality basic systems and minimal resources should be enough to improve waste management services. Therefore, the municipality needs to start the process of developing an effective waste management system. This could start by establishing a controlled dump site and encouraging the public to compost their waste.

### **Recommendations:**

1. The municipality should consider solid waste management as an important issue and develop plans and programmes to manage waste effectively.
2. The staff in the sanitation section needs proper training and they should also be provided with adequate resources, including appropriate equipment and vehicles for waste collection and transportation.
3. The municipality should stop dumping waste in a haphazard. A simple compost plant and a controlled dumped site should be developed. SWMRMC should assess the proposed landfill site at Silgadhi Pipala and provide technical and financial assistance in developing the site for composting and landfilling.
4. At present the municipality is collecting waste in the sacks. Larger carts or rickshaws with detachable containers would probably be more effective.
5. The municipality should initiate community mobilization activities to promote household composting and proper disposal of waste.

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**Waste collection bins thrown in drainage canal due to security reason**



**Waste collection in an open area**



**Waste Dumping Site in a bushy area**



**Final waste disposal site used by Dipayal Municipality**