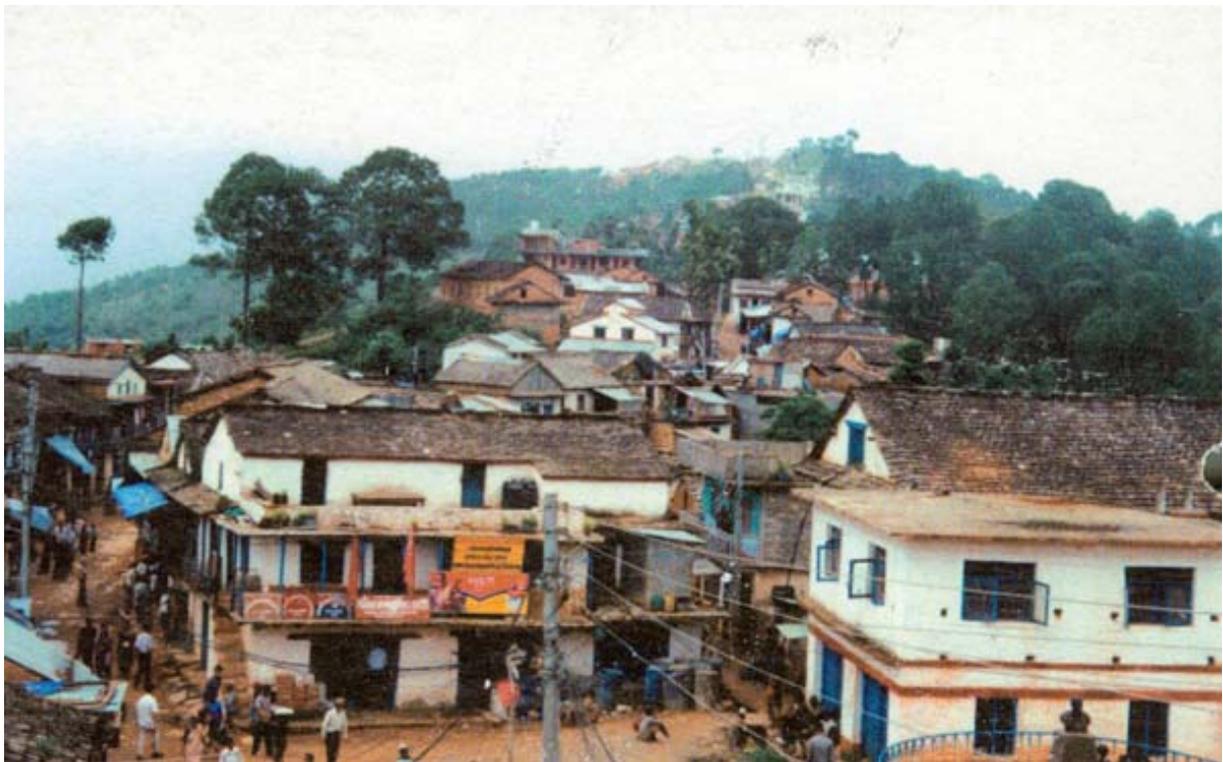


Solid Waste Management in Narayan Dailekh Municipality



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 Narayan Municipality¹ 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
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Dr. Roshan Raj Shrestha
Executive Chairman
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¹ This report was prepared by Bhushan Tuladhar and Bhumika Vaidya based on field investigations conducted by Rohini Prasad Devkota.

1 Introduction

Narayan is a small rural municipality located in the hills of Dailekh district in Bheri zone of Mid-Western Development Region. The municipality was established in 2053 B.S. It has 11 wards, out of which only 3 (wards 1, 2 and 3) are in relatively urban area. Only 33 percent of the population live in these three wards. The municipality is surrounded by Halabaar VDC in eastern border, Pawan nagar VDC in West, Dhanwang VDC in North and Tarigaun VDC in South. The majority of the land (53 percent) is forest area and 39 percent (37.50 km) of the land is agricultural land.

Table 1: Background Information

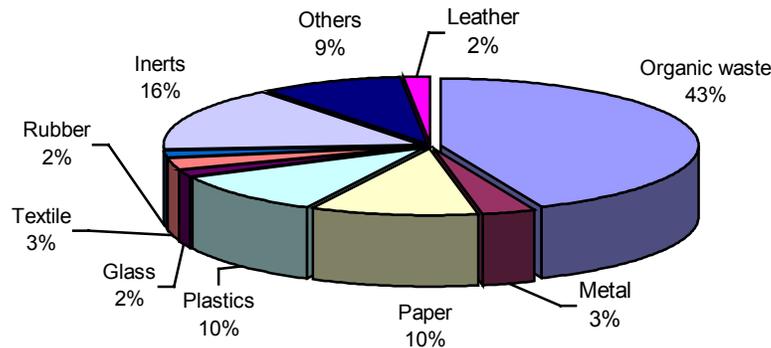
NAME	NARAYAN MUNICIPALITY
District	Dailekh
Year of Establishment	2053 B.S
No. of Wards	9
No. of Urban Wards	3
No. of Rural Wards	6
Total Area	67.01 sq. km (CBS data)
Built-up Area	NA
Major Rivers and Ponds	Chupra river
Total Road length	43.38 km
Population (2001)	19446
No. of Households (2001)	3854
No. of Shops	203
No. of Restaurants, hotels and lodges	61
Annual Population Growth Rate (1991-2001)	2.1 percent
Estimated Population for 2003	20,271
Population Density	290.20 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 Narayan was 0.23 kg/person/day. This is similar to 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 Narayan in 2003, which is estimated to be 20,286, the total amount of household waste generated in the municipality comes out to be 4.7 tons per day. If we were to assume that 75 percent of the total municipal waste is generated by households, then the total municipal waste generated in Narayan Municipality comes out to be 6.2 tons per day. The actual waste generation rate is probably lower because most of the people live in rural areas where the waste generation rate is probably 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 other municipalities. Similarly, the portion of plastics and paper is relatively high. On average, approximately 65 percent of the municipal waste is organic material, while paper and plastics make up 8.9 and 8 percent respectively.

Figure 1 Waste Composition



The loose density of household waste in Narayan was calculated to be 22.54 kg per m³. This is a very low value compared to waste from other cities.

Information on Narayan Municipality's waste generation and composition is based on waste sample collected in ward 1 Devkota Chowk from 63 households that had waste from 252 people.

3 Waste Collection

Narayan Municipality estimates that it generates 2 tons of waste per day of which 1.5 tons comes from urban areas and 0.5 tons from rural areas. The municipality also estimates that it collects approximately 1.2 tons of waste per day. If this is the case, the municipality is collecting about 60 percent of the total waste generated. However, if we assume the municipality is generating 6.2 tons per day as indicated by the field survey, then the Municipality is collecting 19 percent of the total waste generated. Most of the waste that is not collected is probably waste generated in rural areas.

The municipality has 2 permanent sweepers, 1 supervisor and 1 driver who clean the main streets daily. The waste is collected in waste bins and open piles along the road side.

4 Final Disposal

The collected waste is disposed in a crude dumping site about 1 km away from the city. The site, which covers an area of 0.5 ropani, has been in use since 2056. As the rain-washes away the waste, the site can be used for a long time.

The municipality plans to construct a permanent landfill site in Ward 2, which is 5 km far from the city. It covers an area of 10 ha and its estimated life span is 15-20 years. The site is considered to be suitable because it is state owned and there are no houses around it. But it is not certain when this site will be developed.

5 Composting and Recycling

Although many of the rural households probably compost their waste, the municipality does not have any composting or recycling related programmes. The municipality does not have any scrap dealers. Bottles are reused for locally.

6 Special Waste Management

Narayan Municipality has one hospital and four sub-health posts. But it does not have any system for the management of medical waste or any other type of special waste such as industrial waste and construction/demolition debris. Medical waste is managed by the hospital itself.

7 Community Mobilization

The Municipality does not have any special programme to involve the public in waste management. No community groups or NGO in the municipality is involved in waste management. But the municipality is having informal talks with Everest Club, an NGO, to get involved in waste management, particularly waste collection and public education. The NGO has done some activities on waste management in the past. Municipality also wants to introduce some school-based programmes.

8 Organizational and Financial Aspects

No section or unit in the municipal organizational structure is directly responsible for solid waste management. But the municipality has 2 permanent sweepers, 1 supervisor and 1 driver who work on waste management.

No fix budget is allocated as the annual budget for solid waste management. The municipality estimates that about Rs. 100,000 is spent annually for waste management including salary of drivers and sweepers. The total expenditure of the Municipality in the fiscal year 2058/59 was Rs. 6,333,839. Therefore the Municipality is spending only about 1.6 percent of its total budget on solid waste management.

9 Major Problems and Issues

The main problems associated with waste management in Narayan are the lack of basic system for waste management, which includes a unit within the organizational structure, trained manpower, proper equipment, proper disposal site, and adequate financial resources. The lack of programmes for community mobilization and composting and recycling is also a problem.

10 Conclusion & Recommendations

As Narayan is a small rural municipality, waste management is not taken as a serious issue. However, with increasing urbanization, the problem is bound to increase in the future. Therefore, Narayan Municipality needs to start developing structures and system for effective waste management.

Recommendations:

1. A solid waste management unit should be established with trained staffs.
2. A simple landfill where the waste can be buried should be developed.
3. Along with the landfill site municipality should also promote composting.

4. Municipality complains about lack of support from public regarding waste management, so public awareness campaigns in waste management should be brought up.
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 organization.
6. The municipal needs a vehicle, such as a tractor trailer, for waste collection and transport.

For more information please contact:

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Haphazard Waste Disposal Along a Road in Ward 1



Tractor-Trailer Used for Waste Collection In Narayan Municipality



Leachate Formation at a Waste Disposal Site



A Board to Raise Awareness on Waste Management