

Solid Waste Management in **Panauti 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 Panauti 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.

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¹ This report was prepared by Bhushan Tuladhar and Gopal Raj Joshi based on field investigations conducted by Merina Ranjit.

1 Introduction

Panauti is a relatively small municipality in Kavre Palanchowk district of Bagmati Zone of the Central Development Region. The municipality lies 32 Km east of Kathmandu and immediately south of Banepa Municipality. Panauti is bordered by Sharada Batase, ShankhuPati Chaur VDC and Dhulikhel Municipality on the east; Kushadevi, Mahendrajyoti and Kalati VDC on the west; Janagal VDC and Banepa Municipality on the north; and Kalati Danda, Chalal Ganesthan and Balthali VDC on the south. As the main town of Panauti is a historical city with a rich culture, it is also a tourist destination. Much of the municipality however, lies in rural areas.

Table 1: Background Information

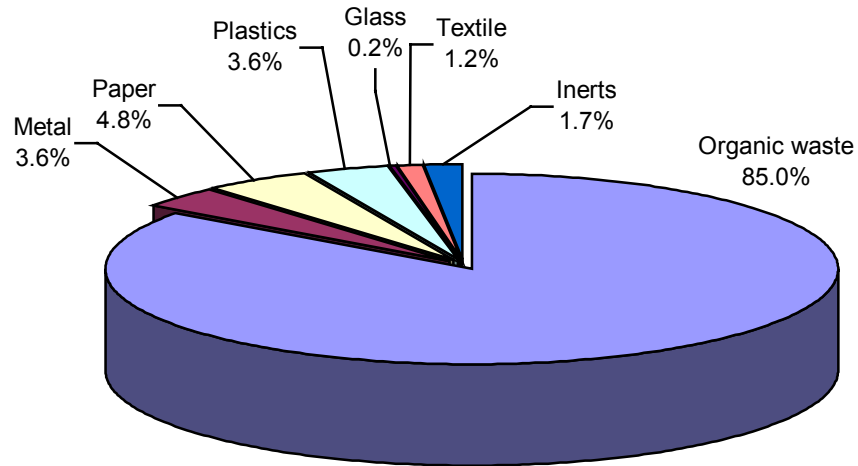
NAME	PANAUTI MUNICIPALITY
District	Kavre Palnchowk
Year of Establishment	2053 B.S.
No. of Wards	13
No. of Urban Wards	4
No. of Rural and semi urban Wards	9
Total Area	31.73sq. km
Built-up Area	175 ha
Major Rivers and Ponds	Punyamayta, Roshi River
Total Road length	Black topped: 9 Km Graveled: 22 Km Earthen: 65 Km Mule track: 106 Km
Population (2001)	25,563
No. of Households (2001)	5134
No. Shops ,Restaurants, hotels and shops	101
Annual Population Growth Rate (1991-2001)	2.2 percent
Estimated Population for 2003	26,700
Population Density	805.64 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 Panauti was 0.18 kg/person/day. This is slightly lower 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 Panauti in 2003, which is estimated to be 26,725, the total amount of household waste generated in the municipality comes out to be 4.8 tons per day. If we assume that household waste makes up approximately 75 percent of the total municipal waste, then the total municipal waste generated in Panauti comes out to be 6.4 tons per day. The actual amount of household waste generated is probably a bit lower because most of Panauti's population live in relatively rural areas where the waste generation rate is probably lower.

The survey also indicated that 85 percent of Panauti's waste is organic, while paper and plastics make up only 4.8 and 3.6 percent of the waste stream. This indicates that any system to manage Panauti's waste should first focus on managing the organic waste.

Figure 1 Waste Composition



The loose density of household waste in Panauti was calculated to be 316.4 kg per m³.

Information on Panauti's waste generation and composition is based on waste collected from 54 households in wards 7 and 8, that had waste from 277 people.

3 Waste Collection

According to the Municipality, the city collects approximately 1 ton of waste per day. Assuming that the total amount of waste generated in Panauti is 6.4 tons per day, the city is collecting about 16 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 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 collect the waste from road-side on the daily basis.

The municipality has 6 sweepers, 2 of who are permanent employees, who sweep approximately 2 km of city streets on a daily basis.

Sweeping is done using ordinary brooms with long handles. The waste is collected in wheelbarrows with the help of shovels and traditional equipment made from the buffalo ribs. The Municipality has total of 6 wheelbarrows of capacity 0.1m³. Once the wheelbarrows are filled the waste is loaded on to a tractor-trailer. The municipality has one tractor.

4 Final Disposal

The collected waste is disposed in a crude dumping site on the banks of Punyamata and Roshi River, located very near to the town center. The site with an area of about 2000 sq. metre has been used for the past 8 years. It is estimated that the present site could not be used for more than 2-3 years. Previously, waste was also dumped near the Panuti Pul, Buspark. As the waste is dumped from the road and it is located next to residential areas, it is having environmental impacts on the surrounding area.

Panuti Municipality has plans to construct a landfill site at Salwitar but requires financial and technical assistance for this purpose. According to the municipality, the proposed site, which is about 6 km away from the city, could be used for more than 100 years. The main problem associated with the proposed land fill site is the possible adverse environmental impact of landfilling. Salwitar is situated near to a natural spring. So the detail EIA of the landfill site should be carried out before transporting waste there.

5 Composting and Recycling

Panauti Municipality does not have any program to promote recycling and composting at the household level. Recently the municipality has distributed composting bins to some households after providing training with the help of USAID, Clean Energy Nepal and Kathmandu Metropolitan City.

Till now the municipality has not operated any compost plant at the community and municipal level.

The city has some individual scavengers and scrap dealers involved in recycling.

6 Special Waste Management

Panauti Municipality has not developed any system for collecting and managing medical waste separately. The medical waste generated from 7 clinics and 1 laboratory is generally mixed and dumped along with municipal waste. Some times the waste is also burnt.

The city also does not have any system to collect other types of special waste such as construction/demolition debris, industrial waste and dead animals. Dead animals are simply buried along the bank of the river. The construction and demolition waste is used for land filling.

7 Community Mobilization

Although the municipality has done some community mobilization related activities to promote biogas plants, it has not initiated any community-based programmes on waste management. The municipality has not conducted activities for raising public awareness and it is not involved in school-based programmes either.

8 Organizational and Financial Aspects

The Municipality does not have a separate section responsible for solid waste management. Solid waste management is looked after by Urban Development Section. The section has 1 supervisor and 5 sweepers.

The Municipality does not have any information regarding how much it spends on waste management each year. However, this amount is probably low because it has very few staff and activities related to waste management.

9 Major Problems and Issues

The main problem associated with waste management in Panauti is the lack of a sanitary landfill and compost plant. Similarly, the lack of interest shown by the municipality and the public is also a major concern. The municipality does not have a separate section for waste management and its activities are limited to sweeping the streets and dumping the waste in the river bank.

10 Conclusion & Recommendations

As Panauti is a small municipality, solid waste management does not seem to be a critical problem. However as the main centre of the municipality is a dense settlement and it is a historic city as well as a tourist destination, the municipality should put in an extra effort to properly manage the waste generated in central Panauti. Because the city centre is relatively small, this will not be a major problem, if the municipality develops proper systems for waste management with the involvement of local people.

Recommendations:

1. The municipality should stop to dump waste on the bank of the Punyamata and Roshi rivers. The present dumping site is located at the center of the city so it is posing serious environmental problems.
2. The city should develop a simple compost plant and a landfill for burying the rejects. As the amount of waste generated is fairly small and most of the waste is organic in nature, a compost plant can be very useful.
3. SWMRMC should also assess the proposed landfill site at Salwitar and provide technical and financial assistance in developing the site for composting and landfilling. The possibility of developing a combined compost plant and landfill for Banepa, Dhulikhel and Panauti should also be explored.
4. A solid waste management unit should be established within the municipality with trained staff and adequate resources.
5. The waste collection system should be improved so that waste is collected door-to-door to the extent possible and open piles on the streets are discouraged.
6. Medical waste should be managed separately. They should be burned in a controlled manner or buried separately.
7. Public awareness campaigns should be done in communities, schools and among municipality staffs.

For more information please contact:

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Annex: Photographs



Handcart Used for Waste Collection



Waste Disposal at the Dump Site in the Centre of the City