

Solid Waste Management in **Kamalamai 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 Kamalamai 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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July 2004

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

1 Introduction

Kamalamai Municipality is situated in Sindhuli district of Janakpur Zone in the Central Development region. It is a relatively small municipality in terms of population but the area is large. Sindhulimadhi Bazaar, a market centre in the municipality lies 37 Km east of Bardibas on the Mahendra east west Highway. The Banepa-Bardibas Highway (under construction) passes through the Municipality. After the completion of Banepa-Sindhuli-Bardibas highway Kamalamai could develop into a major commercial center. For now, however, it is a relatively rural municipality with some areas that do not even have access to electricity. The municipality is bordered by Ranichuri, Ranibas, Bhhimsthan and Belghari VDC in the east, Dadhigurase and Bhadrakali VDC in the west, Sarhali, Mahotari and Dhanusha Districts in the south and Ratanpura and Bhadrakari VDC in the north.

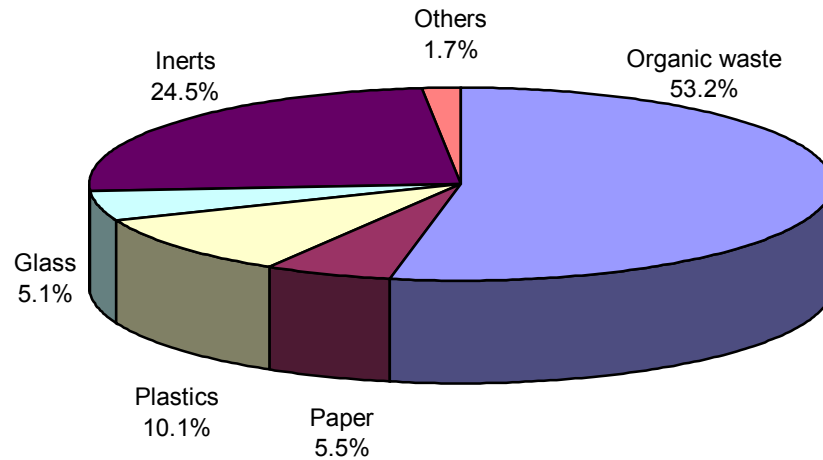
Table 1: Background Information

NAME	KAMALAMAI MUNICIPALITY
District	Sindhuli
Year of Establishment	2053 B.S.
No. of Wards	18
No. of Urban Wards	6
No. of Rural and semi-urban Wards	12
Total Area	207.95 sq. km
Built-up Area	1323 ha
Major Rivers and Ponds	Kamala, Chadaha, Bhiman, Gadhauli, Buka, Gwankho, Labdaha and Marin river
Total Road length	Black topped:4.5 Km Graveled :20 Km Earthen: 40 Km
Population (2001)	32,838
No. of Households (2001)	6,447
No. Shops	220
No. of Restaurants, hotels and shops	66
Annual Population Growth Rate (1991-2001)	3.0 percent
Estimated Population for 2003	34,838
Population Density	953.73 per sq. km

2 Waste Generation and Composition

According to a field survey done in 2003, the average per capita household waste generation rate in Kamalamai was 0.15 kg/person/day. This is slightly lower than the average waste generation rate in urban areas of Nepal, which is 0.25 kg/person/day. Considering the total population of Kamalamai in 2003, which is estimated to be 34,857, the total amount of household waste generated in the municipality comes out to be 5.2 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 Kamalamai comes out to be about 7 tons per day. The actual amount of household waste generated is probably lower because more than half of Kamalamai's population live in relatively rural areas where the waste generation rate is lower.

Figure 1 Waste Composition



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 national average of 65 percent. This may be because a significant portion of the organic waste is composted at source and never enters the waste stream.

Information on Kamalamai's waste generation and composition is based on waste collected from 81 households in ward 4 (Madhu Tole) and ward 6 (Dhura Bazaar) that had waste from 398 people.

3 Waste Collection

According to the estimation of Kamalamai Municipality, the city collects approximately 0.5 ton of waste per day. Assuming that the total amount of waste generated in Kamalamai is 7 tons per day, the city is collecting about 7 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 road-side pick up service is provided on a daily basis.

Kamalamai Municipality has 4 sweepers who sweep roads of ward no. 6 and 9 on a daily basis. Sweeping is done using ordinary brooms with long handles and the waste is collected in hand-carts. The municipality has 3 wheelbarrows with capacity 0.2 m³. Once the wheelbarrows are filled the waste is transported for disposal.

4 Final Disposal

The Municipality does not have any fixed disposal site. The collected waste is disposed haphazardly in a crude dump site on bank of the Gwang River. Beside

this, the waste is also dumped on a piece of open land at ward no. 6. Previously, waste was also dumped in some community forest and bank of the Sisne Khola. Some local communities dispose waste in their backyards and roadside area either by burning or burying in the pit.

Kamalamai Municipality has plans to construct a landfill site at Kwande Khola, but requires financial and technical assistance for this purpose. The proposed site is 1.5 Km away from the city and could be used for 10-15 years. But the municipality has to construct the road and manage the vehicle for the transportation of waste.

5 Composting and Recycling

Kamalamai Municipality does not have any special programs dedicated for promoting recycling and composting. The city estimates that about 20 percent of the households are involved in household composting using traditional methods.

The city does not have any information regarding individual scavengers and scrap dealers involved in recycling.

6 Special Waste Management

Kamalamai Municipality has not developed any system for collecting and managing medical waste separately. There are altogether 4 healthcare institutions (1 hospital and 3 clinics) in the municipality. The hospital is managing its waste itself by burning it.

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. The construction and demolition waste is used for land filling.

7 Community Mobilization

Kamalamai Municipality has not taken any initiation to involve local communities and NGOs in conducting activities to raise awareness on waste management and promote recycling and composting.

8 Organizational and Financial Aspects

The main responsibility for solid waste management lies with the Public health and Environment Section of Kamalamai Municipality. The section has one Mukhiya, 1 supervisor, and 4 sweepers.

The municipality does not have any figures on annual expenditure on waste management. A part of the budget allocated for the health and sanitation is used as per requirement.

9 Major Problems and Issues

The main problem associated with waste management in Kamalamai is the lack of a sanitary landfill and composting facility. The Municipality has selected a site for a central compost plant and landfill but it does not have the necessary resources to develop the site. The Municipality also requires a vehicle, some

additional collection equipment and trained manpower to improve present waste management practices.

10 Conclusion & Recommendations

As Kamalamai is a relatively rural municipality solid waste management is not a major problem, but it should make some provisions for developing an appropriate system for waste management. This includes regular waste collection services, a small composting facility, activities to mobilize local communities in waste management and a controlled dump.

Recommendations:

1. The municipality should stop to dump waste haphazardly and have a controlled dump where the waste is at least covered.
2. SWMRMC should assess the proposed landfill site at Kwande Khola and provide technical and financial assistance in developing the site for composting and landfilling.
3. The waste collection system should be improved so that waste is collected door-to-door to the extent possible. The municipality may require at least a tractor and some hand carts for this purpose.
4. The municipality should encourage local communities of urban area to practice household composting. For this the municipality should organise training and awareness campaign.

For more information please contact:

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Annex 1: Photographs



Sweeper with Wheelbarrow



Overflowing Concrete Container



Dumping Site on the Banks of Gwang Khola



Dumping Site Near Bus Park



Compost Pit in Private Garden



Compost Pile for Agricultural and Kitchen Waste



Medical Waste Disposal and Burning at Sindhuli Hospital



Disposal of Liquid and Solid Medical Waste in a Pit