Solid Waste Management in Nepalese Municipalities

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Solid Waste Management in
Ramgram 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 Ramgram Municipality[1] 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 Bhumika Vaidya based on field investigations conducted by Dipak Regmi.

1 Introduction

Ramgram is a small and rural municipality in Nawalparasi District in the Terai region of Lumbini zone. It was established in 2053 B.S. The Municipality has 13 wards, out of which only 5 are in urban area.

Table 1: Background Information

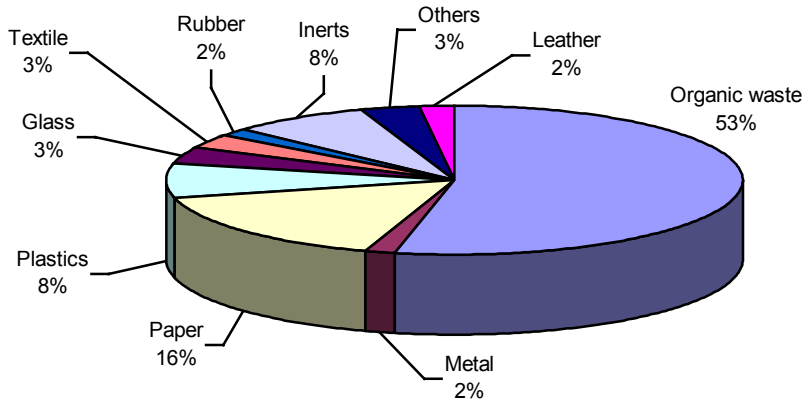
NAME	RAMGRAM MUNICIPALITY
District	Nawalparasi
Year of Establishment	2053 B.S.
No. of Wards	13
No. of Urban Wards	5
No. of Rural Wards	8
Total Area	34.72 sq. km (CBS data)
Built-up Area	264 ha
Major Rivers and Ponds	Jharahi and Bhaluhi khola, Rabarkhanda, Thulo pokhari
Total Road length	184 km
Population (2001)	22,630 (CBS data)
No. of Households (2001)	3,893 (CBS data)
No. of Shops	253
No. of Restaurants, hotels and lodges	13/ 7/ 5
Annual Population Growth Rate (1991-2001)	1.8 percent
Estimated Population for 2003	23,452
Population Density	651.79 per sq. km (CBS data)

2 Waste Generation and Composition

According to a field survey done in 2003, the average per capita household waste generation rate in Ramgram was 0.24 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 Ramgram in 2003, which is estimated to be 23,457, the total amount of household waste generated in the municipality comes out to be 5.6 tons per day. If we assume that 75 percent of the total municipal waste is generated from households, the rest coming from commercial centres, institutions and industries, then the total municipal waste generation comes out to be 7.5 tons per day. This is, however, probably an over estimate as most of Ramgram's population live in rural areas. If we consider only the population in the market area, which is 7,370, then the total amount of waste generated from the market area comes out to be 2.4 tons per day.

According to the municipal staff, Ramgram Municipality generates approximately 4.5 tons of waste per day, out of which 2.5 ton is from urban areas and 2 tons is from rural areas. Based on the estimates provided by the municipal staff and the calculations from the field, the total waste generation rate in the municipality is probably about 5 tons per day.

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 other municipalities. On average about 65 percent of the waste generated by Nepalese municipalities is organic waste. Similarly, the portion of plastics and paper is surprisingly high for a relatively rural municipality like Ramgram. The national average for paper and plastics in the municipal waste is 8.9 percent and 8 percent respectively.

The density of waste was calculated to be 60.6 kg per m3. This is a fairly low density. This may be because of the high percentage of paper and plastic in the waste.

Information on Ramgram's waste generation and composition is based on waste sample collected from 93 households that had waste from 515 people.

3 Waste Collection

The municipal staff estimate that they are collecting about 2. 5 tons of waste per day. Assuming that the total waste generation rate is about 5 tons per day, the waste collection rate is approximately 50 percent.

Ramgram Municipality has 4 permanent sweepers who sweep 5 km of the street daily. For waste collection municipality has a tractor trailer with a capacity of 3 m3 and 4 carts with a capacity of 0.3 m3. It also has 4 handcarts for waste collection. The collected waste is piled up on the street or placed in waste bin and transported to the disposal site with the help of tractor.

The municipality has containers service and roadside pick up service daily. The municipality does not have door-to-door collection system.

4 Final Disposal

The collected waste is disposed in a crude dumping site along the river, about 1 km from the city. The site with an area of 4 ropani has been used for the past 7 years. The estimated life span of the site is 5 years. The municipality has no plans to construct a landfill site.

5 Composting and Recycling

Ramgram Municipality does not have any composting programme. However, the municipality allows scrap dealers for scavenging in collection and dumping site and 3 scrap dealers are dealing with scrap materials within the municipality.

6 Special Waste Management

The hospitals and industries in the municipality manage their waste themselves. The municipality has five health centres, 16 clinics and 5 laboratories that generate medical waste. The municipality manages dead animals, while construction and demolition waste is managed by either the waste generator or municipality.

7 Community Mobilization

Ramgram Jaycees has provided 30 street side bins (half-cut 200 litre oil drums) for waste collection. These bins are used by about 300 households. The waste collected in the bins is collected by the municipality. Jaycees is also planning to conduct training and public awareness campaigns on solid waste management and mobilize other clubs and students as well.

8 Organizational and Financial Aspects

Although the municipality does not have a separate section for solid waste management, it has assigned 1 supervisor and 4 sweepers for managing the city's garbage.

The municipal budget for solid waste management was Rs. 2,96,839 is fiscal year 2059/60. This is about 4.5 percent of the total municipal expenditure in that year.

9 Major Problems and Issues

The main problem associated with waste management in Ramgram is the lack of a proper landfill site, recycling facilities and adequate resources (financial, as well as human). Lack of public awareness and the involvement of communities in waste management is also a major concern.

10 Conclusion & Recommendations

Being a small and relatively rural municipality, waste management is not a critical issue in Ramgram. However, with increasing urbanization, the problem is bound to increase in the future. Therefore, Ramgram Municipality needs to start developing structures and system for effective waste management.

Recommendations:

1. The municipality should increase vehicles and equipments for waste management.

2. 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 should be discouraged.

3. The municipality should promote composting and recycling, as effective waste collection, treatment, and disposal can be expensive.

4. The municipality should prepare specific strategy to involve local CBOs, NGOs, and private parties in waste management.

5. Community and school-based programmes should be launched to increase awareness.

6. A simple landfill site should be developed, where waste can be buried. For this municipality may need some technical as well as financial assistance.

7. The special wastes like medical wastes should be treated separately. Hazardous medical waste should be buried or burned in a controlled manner.

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Annex 1: Photographs

Street Sweeping to Form a Waste Pile Next to a Collection Bin

Waste Piles Created After Street Sweeping

Unloading Waste from the Tractor at the Dumping Site

Waste Dumping Site