

Solid Waste Management in **Mechinagar 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 Mechinagar 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 Bhumika Vaidya based on field investigations conducted by Sagar Nepal.

1 Introduction

Mechinagar is a small municipality located in Jhapa district in the Terai region at the far east end of the country at the end of the East-West highway. The municipality was formed by merging Kakarbita and Dhulabari VDCs in 2053. It is bordered by Bahundangi and Shantinagar VDC to the north, Dhajjan VDC to the west, Dhuwagadi and Jyamirgadi VDC to the south and Mechi River and India to the east. It has 13 wards of which 5 are located in urban areas. Kakarbita and Dhulabari are the two main settlements in the municipality.

Table 1: Background Information

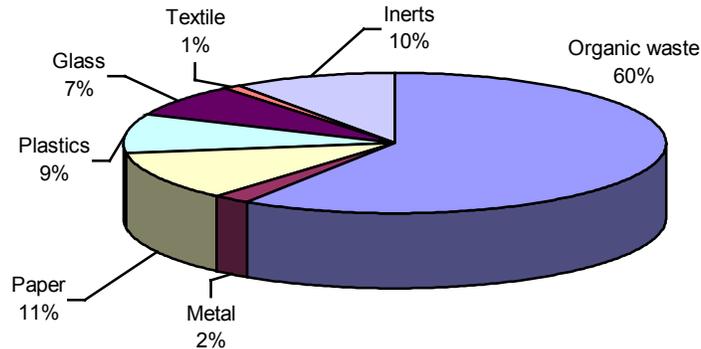
NAME	MECHINAGAR MUNICIPALITY
District	Jhapa
Year of Establishment	2053 B.S.
No. of Wards	13
No. of Urban Wards	5
No. of Rural Wards	8
Total Area	55.72 sq. km (CBS data)
Built-up Area	573 ha
Major Rivers and Ponds	Mechi and Ninda River
Total Road length	117.88 km
Population (2001)	49,060 (CBS data)
No. of Households (2001)	9926 (CBS data)
No. of Shops	702
No. of Restaurants, hotels and lodges	194
Annual Population Growth Rate (1991-2001)	2.8 percent
Estimated Population for 2003	51,846
Population Density	880.47 per sq. km (CBS data)

2 Waste Generation and Composition

According to the field survey done in 2003, the average per capita household waste generation rate in Mechinagar was 0.29 kg/person/day. This is slightly higher 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 Mechinagar in 2003, which is estimated to be 51,878, the total amount of household waste generated in the municipality comes out to be 15 tons per day. If we assume that 75 percent of the municipal waste is generated by households, then the total amount of waste generated by Mechinagar Municipality comes out to be about 20 tons per day. The actual waste generation rate may be a bit lower because most of the people live in rural areas, where the waste generation rate is lower.

The composition of waste shows that although organic waste is the largest portion of the waste stream, the percentage of organic waste is lower than most other municipalities. Similarly, the portion of plastics and paper is relatively high for a relatively rural municipality like Mechinagar. On average, organic waste consists of 65 percent of waste in Nepalese municipalities, while paper and plastics make up 8.9 percent and 8 percent respectively.

Figure 1 Waste Composition



The loose density of household waste in Mechinagar was calculated to be 138.27 kg per m³.

Information on Mechinagar's waste generation and composition is based on waste sample collected from 71 households that had waste from 332 people. About half of the sampled households were in Kakadvitta and the other half were in Dhulabari.

3 Waste Collection

According to Mechinagar Municipality, it collects 9.4 m³ of waste per day. Assuming that the on-tractor density of waste is 0.4 tons per m³, then the total amount of waste collected is 3.76 tons per day. Assuming that the municipality generates 14.2 tons of waste per day, the daily collection rate is 26 percent.

Mechinagar Municipality has 2 permanent sweepers and 10 temporary sweepers who sweep 6 km of the street daily and 1km of street once a week. For waste collection, municipality has a tractor trailer with a capacity of 2.43 m³.

The Municipality has roadside pick up service 6 days a week. The municipality does not have any door-to-door collection and container services. The collected waste is disposed as temporary open piles in the bank of Mechi riverbank.

4 Final Disposal

The collected waste is disposed in a crude dumping site, about 1 km from the city. The site has been used since 4-5 month and its lifespan is a not mentioned. Before this site the banks of Mechi River and Ninda River was used as dumping site.

Municipality plans to construct landfill sites at three different locations within the next five years. One site is at Joshimal in Ward 13. The site will have area of 2 ha and is 3 km from the city. The second site is at Lal Pani in Ward 2. The site will have area of 2 ha and is 3.5 km from the city. The third proposed site is at Jyamilgodi in Ward 17. It will be set in operation after 5 years. The site will have area of 2.5 ha and is 3 km from the city. Its estimated life span is 20 years.

5 Composting and Recycling

The Municipality estimates that about 60% of the total households practice composting in Mechinagar. The municipality does not have any programmes to promote composting or recycling but it is planning to set up a compost plant in Bhanu Tole within a year. Municipality allows scrap dealers for scavenging in collection and dumping site.

6 Special Waste Management

Mechinagar Municipality has two hospitals and two clinics. These facilities manage the medical waste they generate on their own. Other special waste such as dead animals, industrial waste and construction waste is dumped along with regular municipal waste.

7 Community Mobilization

Mechinagar municipality does not have an active programme to promote community mobilization in waste management. Dhulabari Jaycees in Arjundhara was involved in street and open space cleaning for about 2 years (2054/2055). Similarly, Jhapa Organic Udhog in Kankadvitta has been involved in composting for 2-3 months.

8 Organizational and Financial Aspects

The Environment and Sanitation Sub-Section within the Community Development Section of the Municipality is responsible for waste management. The municipality has 12 sweepers for solid waste management. One of the staff from the Environment and Sanitation Sub-Section, Mr. Agni P. Dahal, has received a six-month training on waste management from Urban Development Through Local Efforts (UDLE) programme of GTZ.

The municipality spends approximately Rs. 6,90,000 per year on waste management. This is about 5 percent of the total annual municipal expenditure.

9 Major Problems and Issues

The main problems associated with waste management in Mechinagar are the lack of proper landfill site, inadequate resources (financial and human), and lack of community involvement in waste management, composting and recycling.

10 Conclusion & Recommendations

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

Recommendations:

1. A simple landfill site should be developed, where waste can be buried. The municipality has proposed three potential sites. The feasibility of

these sites should be evaluated carefully. For this Municipality needs technical as well as financial assistance.

2. Along with construction of landfill site, municipality should also promote composting and recycling programs.
3. 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.
4. The municipality should establish basic statistical records related to waste management to formulate effective plan and strategies.
5. The municipal should increase vehicles and equipments for waste management.
6. The waste management staff should receive adequate training.
7. Community and school based programmes should be launched to increase awareness and community participation in waste management.

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Annex 1: Photographs



Waste Collection in Kakadbhitta



Cleaning of Drains Clogged by Waste in Dhulabari



Waste Dumped in Mechi River



Waste Dumped & Filled at Ring Road Construction Site



Proposed Landfill Site at Ward 2 Lalpani



Proposed Landfill Site at Ward 13, Joshimal