

Solid Waste Management in **Damak 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 Damak 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 and Gopal Raj Joshi based on field investigations conducted by Rikesh Chitrakar.

1 Introduction

Damak is a mid-sized municipality located in Jhapa district, Mechi zone of Eastern Development Region. It lies on the bank of the Ratuwa and Mawa Rivers. It was established in 2039 BS. The municipality is bordered by Lakhanpur VDC in the east, Urlabari, Madhumalla, and Rajghat VDC in the west, Chulachuli VDC in the north and Kohwara VDC in the south. The municipality has tropical and sub tropical climate and is situated at an elevation of only 132m from mean sea level.

Table 1: Background Information

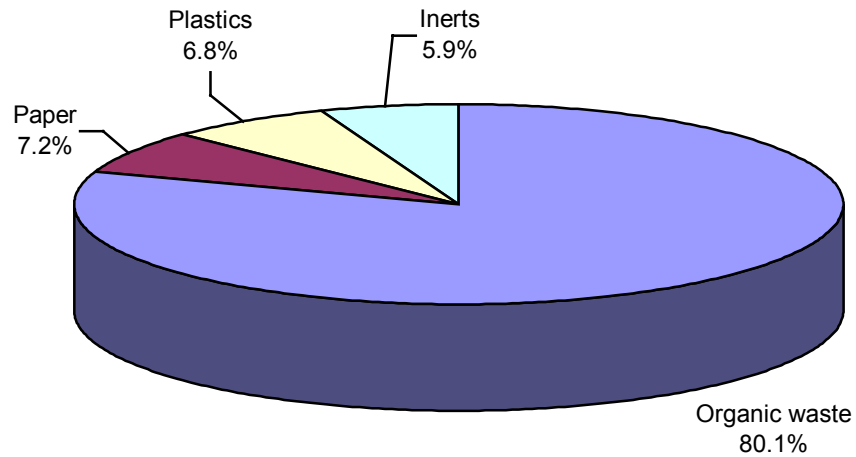
NAME	DAMAK MUNICIPALITY
District	Jhapa
Year of Establishment	2039 B.S.
No. of Wards	19
No. of Urban Wards	6
No. of Rural and semi urban Wards	13
Total Area	70.63 sq. km
Built-up Area	1711ha
Major Rivers and Ponds	Ratuwa, Mawa
Total Road length	Black-topped: 29 km Graveled: 200 km Earthen: 300 km
Population (2001)	35009
No. of Households (2001)	7178
No. Shops	1419
No. of Restaurants, hotels and shops	301
Annual Population Growth Rate (1991-2001)	2.5
Estimated Population for 2003	55,443
Population Density	495.67 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 Damak was 0.18 kg/person/day. This is slightly less than the average waste generation rate in urban areas of Nepal, which is 0.25 kg/person/day. Considering the total population of Damak in 2003, which is estimated to be 55,417, the total amount of household waste generated in the municipality comes out to be approximately 10 tons per day. If we assume that household waste makes up 75 percent of the total municipal waste, then the total amount of municipal waste generated in Damak comes out to be 13.3 tons per day. The actual amount of household waste generated is probably a bit lower because most of Damak's population live in relatively rural areas and their waste generation rate is probably lower. The municipality estimates the total waste generation in the city to be about 4 tons per day.

The field survey also indicated that more than 80 per cent of the waste consisted of organic materials. Although it is not surprising that organic waste was found to be the highest among all materials, the survey did not indicate the presence of materials other than organics, plastics, paper and inerts.

Figure 1 Waste Composition



The loose density of household waste in Damak was calculated to be 269.26 kg per m³.

Information on Damak's waste generation and composition is based on waste collected from 50 households in ward no. 11, that had waste from 272 people.

3 Waste Collection

According to estimates done by Damak Municipality, the city collects approximately 3 tons of waste per day. As the municipality estimates the total waste generation rate to be 4 tons per day, it estimates that it is collecting about 75 percent of the total waste generated. If we were to assume that the total amount of waste generated in Damak is 13.3 tons per day, then the city is collecting about 23 percent of the total waste generated. Most of the waste that is not being collected is probably waste from rural areas within the municipality.

Damak municipality has 10 sweepers, all of whom are temporary employees, who sweep approximately 29 kms of city streets on a daily basis.

Sweeping is done using ordinary brooms with long handles and the waste is collected in handcarts using shovels.

The municipality has a total of 3 of handcarts. Once the carts are filled, the waste is loaded on to a truck. The municipality has one truck of capacity 5 m³. The municipality has bulk containers and daily roadside pick up service. But door-to-door waste collection system is not practiced within the city. The municipality has kept 35 containers in the various part of the city. The local people as well as sweepers place waste in the container. The container filled with waste is transported in 2 to 3 days.

4 Final Disposal

The collected waste is transported to ward 12 Damak, where waste is placed in temporary open piles. The municipality intends to build a transfer station at ward no 3, which is 3 km away from the main city. The municipality plans to have the proposed site with an area of 4 kattha, in operation by 2061.

The collected waste is disposed in a crude dumping site on the banks of the Ratuwa and Mawa River, about 1km from the city. The site with an area of one Bigha has been used for the past two years. It is estimated that the dumping site could be used for 3 more years.

The municipality does not have any plans to construct a landfill site.

5 Composting and Recycling

Damak Municipality has not started any programs and activities for promoting recycling and composting at the household level. But the municipality intends to set up a compost plant at ward 3, approximately 3 km away from the city. The proposed plant will have a capacity of 1 ton per day. The municipality is seeking financial and technical assistance in this regard.

The city also has scavengers and scrap dealers involved in recycling.

6 Special Waste Management

Damak Municipality does not have a system for collecting and managing medical waste separately. Every generator of medical waste (2 hospital, 20 clinic, and 9 drugstores) is managing their waste themselves. Sometimes they bury the waste and sometimes it is mixed with municipal waste to dump at the common site.

The city does not have any system to collect other types of special waste such as construction/demolition debris, industrial waste and dead animals. Municipality or waste generator is managing such waste by dumping.

7 Community Mobilization

Damak Municipality has not been working with local communities and NGOs in conducting activities to raise awareness on waste management and promote recycling and composting programmes. Public participation and awareness regarding solid waste management practices seems to be very low in the city.

8 Organizational and Financial Aspects

The municipality does not have any section/unit that is directly responsible for solid waste management. The municipality is managing waste with the help of 10 sweeper, who are temporary employees. The Solid Waste Management Technician, Mr. Drona Thapa, has however received a six-month training on waste management from UDLE.

The municipality spends approximately Rs. 5,40,000 in waste management each year. The municipality's total expenditure in the fiscal year 2058/59 was Rs. 16,709,102. Therefore, the city is spending approximately 3 percent of its total budget on solid waste management.

9 Major Problems and Issues

The main problem associated with waste management in Damak is the lack of a sanitary landfill and compost plant. Although the municipality has plans to set up a compost plant, it needs financial and technical assistance. The municipality also needs additional vehicles and collection equipment. The lack of community involvement in solid waste management is another concern.

10 Conclusion & Recommendations

Damak Municipality is a relatively small town but it is growing rapidly. Therefore, the issue of waste management needs to be taken seriously. Waste from the large number of Bhutanese refugees living nearby can also be a problem in the future. The municipality is interested in setting up a compost plant and has already identified an area to do so. This should be supported. The municipality also needs to involve local communities in waste management.

Recommendations:

1. The Municipality should stop dumping waste on the riverbanks as it may cause serious environmental impact and at least have a controlled dump-site, where the waste is covered.
2. SWMRMC should provide financial and technical assistance to the municipality in implementing its plans to set up a compost plant.
3. The collection system should be improved by introducing door-to-door waste collection system.
4. Once the municipality has a compost plant, it should introduce source-separated collection. For this, households should be provided with two buckets to collect organic and inorganic waste separately. This should be implemented in a phased manner. In order to make this effective, it should be supplemented by a public awareness campaign.
5. The local people should be encouraged to practice waste minimization measures such as reducing, recycling and composting at the household level. The municipality should regularly organize training on household composting and distribute compost bins at subsidized rate if necessary.
6. The municipality should set up a separate section/unit responsible for the solid waste management. It should be equipped with trained manpower, collection equipment and vehicles. The municipality should also allocate more funds for the section.

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Annex 1: Photographs



Waste Collection Using a Truck



Ratuwa Khola Dumping Site