Solid Waste Management in Nepalese Municipalities

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Solid Waste Management in
Amargadhi 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 Amargadhi 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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[1] This report was prepared by Bhushan Tuladhar based on field investigations conducted by Arun Acharya.

1 Introduction

Amarghadi is a new municipality, which was formed in 1996 by combining 5 Village Development Committees. It is located in Dadeldhura District Far Western Development Region. Although the municipality covers a relatively large area, only 0.3 percent (30.8 ha) of the land is covered by housing settlements. The majority of the land (61.23 percent) is covered by forests. This is followed by agriculture (30.23 percent).

Table 1: Background Information

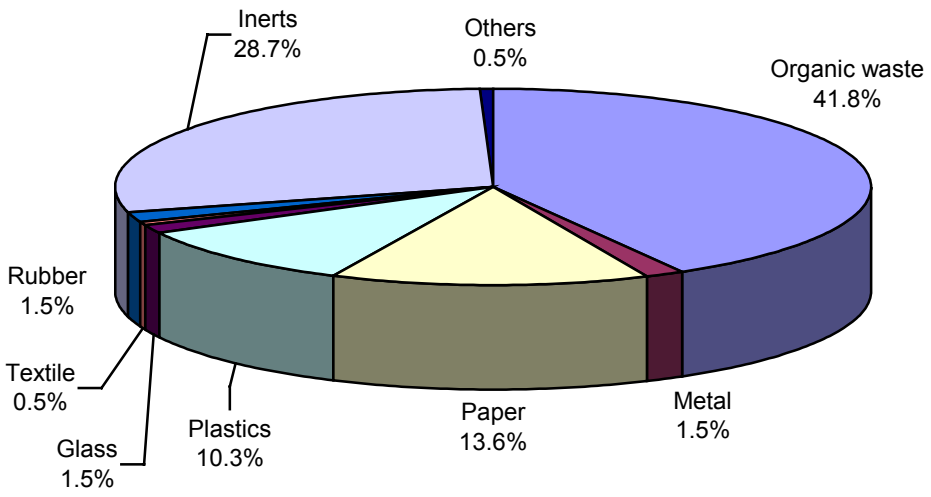
NAME	AMARGADHI MUNICIPALITY
District	Dadeldhura
Year of Establishment	2053 B.S.
No. of Wards	11
No. of Urban Wards	NA
No. of Rural Wards	NA
Total Area	138.95 sq. km (CBS data)
Built-up Area	30.8 ha
Major Rivers and Ponds	Doti
Total Road length	Total: 32 km Black-topped: 25 km
Population (2001)	18,390
No. of Households (2001)	3,538
No. of Shops	400
No. of Restaurants, hotels and lodges	49
Annual Population Growth Rate (1991-2001)	1.1 percent
Estimated Population for 2003	18,797
Population Density	132.35 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 Amargadhi was 0.29 kg/person/day. This is similar to the average household waste generation rate in urban areas of Nepal, which is 0.25 kg per person per day. Considering the total population of Amargadhi in 2003, which is estimated to be 18,804, the total amount of household waste generated in the municipality comes out to be 5.45 tons per day. Assuming that household waste constitute 75 percent of the total waste, then the total amount of waste generated in Amargadhi becomes 7.27 tons per day. The actual amount of waste generated is probably much lower because most of Amargadhi's population lives in rural areas where the waste generation rate is probably lower and the municipality does not too many industries, offices and commercial establishments.

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 waste in Nepalese municipalities is organic materials. Similarly, the portion of plastics and paper is surprisingly high for a relatively rural municipality like Amargadhi. This is probably because a significantly large portion of the organic waste is composted at source and therefore never enters the waste stream. Amargadhi's waste also has a high percentage of inert materials.

Figure 1 Waste Composition



The loose density of household waste in Amargadhi was calculated to be 401 kg per m3.

Information on Amagadhi's waste generation and composition is based on waste sample collected from 70 households in Bagbazar area of wards 2 and 4 that had waste from 333 people.

3 Waste Collection

The municipality estimates that it collects approximately 5.8 m3 or about 2.3 tons of waste per day. Assuming that the total amount of waste generated in Amargadhi is 5.3 tons per day, the city is collecting about 43 percent of the total waste generated. Most of the waste that is not being collected is probably waste from rural areas within the municipality.

Amargadhi municipality has 6 sweepers, who sweep some areas daily and some areas three times a week.

The municipality has a total of 7 of handcarts, with a capacity of 0.48 m3 and a tractor with a capacity of 3.25 m3 for waste collection.

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.

4 Final Disposal

The collected waste is a disposed in a crude dumping site along the highway, about 1 km from the city. The site with an area of 0.05 has been used for the past nine years. The municipality does not have any plans to construct a landfill site.

5 Composting and Recycling

Amargadhi Municipality does not have a recycling or composting programme. However, the municipality estimates that about 80 percent of the people probably compost their waste at home. The municipality is not aware of any private party or NGOs involved in waste recycling.

6 Special Waste Management

Amargadhi municipality does not have any system for the management of special waste such as medical waste, industrial waste or construction & demolition debris. This is either managed by the generators themselves or dumped with the rest of the waste. Dead animals are normally buried.

7 Community Mobilization

Amargadhi Municipality does not have any programmes to involve community groups in waste management and there aren't any active groups in this sector.

8 Organizational and Financial Aspects

Amargadhi municipality does not have any section or unit responsible for waste management. The six sweepers in the municipality are under the Administration section and the tractor driver is part of the planning and technical section.

Reportedly, the municipality spends approximately Rs. 230,000 per year on waste management, but it is not clear where or how this is spent. The total budget of the municipality is approximately -.

9 Major Problems and Issues

The main problem associated with waste management in Amargadhi is the lack of institutional structures, systems and resources. The waste management system is crude and unplanned. The lack of a sanitary landfill and composting and recycling facilities is also a problem.

10 Conclusion & Recommendations

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

Recommendations:

1. The municipality should establish a waste management unit within the Planning and Technical Section and provide training to the staff involved in 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. Although many people already practice composting, the municipality should further promote composting as effective waste collection and treatment and disposal can be expensive.

4. A simple landfill site should be developed, where waste can be buried.

For more information please contact:

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Annex 1: Photographs

Waste Collection bin

Tractor used for waste collection

Waste Disposal Site