

Solid Waste Management in **Dhankuta 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 Dankuta 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 and Gopal Raj Joshi based on field investigations conducted by Pratap Rai.

1 Introduction

Dhankuta is a small municipality located in the hills of eastern Nepal. It is the head quarters of Eastern Development Region. The municipality was established in the year 2035 BS. The Municipality is bordered by Bhirgaon VDC to the east, Belhara VDC to the west, Hattikharka VDC to the north and Tamor River to the south. The municipality has nine wards out of which, wards 1, 5, 6 & 8 are located in relatively urban settings, while the remaining wards are in rural areas. Hile a major market centre in the region is located in ward 1. The municipality is an administrative and commercial centre and has potential for tourism.

Table 1: Background Information

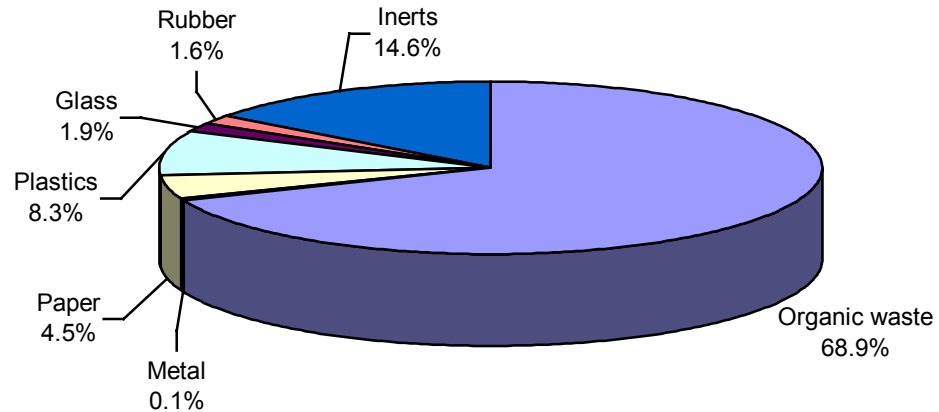
NAME	DHANKUTA MUNICIPALITY
District	Dhankuta
Year of Establishment	2035 B.S.
No. of Wards	9
No. of Urban Wards	5
No. of Rural and semi urban Wards	4
Total Area	48.21 sq. km
Built-up Area	880 hector
Major Rivers and Ponds	NA
Total Road length	20.9 km
Population (2001)	20,668
No. of Households (2001)	4,789
No. Shops	510
No. of Restaurants, hotels and shops	190
Annual Population Growth Rate (1991-2001)	1.9
Estimated Population for 2003	21,461
Population Density	428.71 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 Dhankuta was 0.2 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 Dhankuta in 2003, which is estimated to be 21,473 the total amount of household waste generated in the municipality comes out to be 4.3 tons per day. If we assume that 75 percent of the municipal waste is generated by households, then the total municipal waste generated by Dhankuta becomes 5.7 tons per day. The actual amount of household waste generated is probably a bit lower because about half of Dhankuta's population live in relatively rural areas and their waste generation rate is probably lower.

The field survey also indicated that the composition of Dhankuta's waste is similar to waste composition found in most other municipalities, with organic materials making up almost 70 percent of the waste stream.

Figure 1 Waste Composition



The loose density of household waste in Dhankuta was calculated to be 108.79 kg per m³.

Information on Dhankuta's waste generation and composition is based on waste collected from 91 households in Upper and Lower Kopche, Dada Gaon and Saugam in wards 5 and 7, that had waste from 505 people.

3 Waste Collection

According to Dhankuta municipality, it collects approximately 2 tons of waste per day. Assuming that the total amount of waste generated in Dhankuta is 5.7 tons per day, the city is collecting about 35 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 has one tractor, which has a trailer with a volume of 3 m³. Similarly, the municipality has 10 pushcarts, which have a volume of 0.15 m³.

Dhankuta municipality has 12 sweepers, 4 of whom are permanent employees, who sweep approximately 2 km of city streets twice a week.

Sweeping is done using ordinary brooms with long handles and the waste is collected in handcarts and wheelbarrows using shovels. Once the carts are filled, the waste is placed in containers and temporary open piles. Then waste is loaded on to a tractor trailer for disposal.

The municipality has bulk containers, which is emptied every week. But it does not have door-to-door waste collection system. As a result, most of the waste is placed on to the roadside for pick up by the municipal sweepers.

4 Final Disposal

Dhankuta municipality is disposing its waste in a crude dumping site in a forest area, about 1 km from the city. The site with an area of 33 ropani has been used for the past seven years. It is estimated that present site could be used for 20 years more. Previously, waste was also dumped at Ghumaune Chautara.

The Municipality has plans to construct a landfill site near Karmitar, Salleri Jungle, and Kalchure Dada. But the municipality requires financial and technical assistance for this purpose. The proposed site is located at a distance of 2.5 km from the city and has an area of about 3 ropani. The Municipality feels that this site, if developed, can be used for about 30years. But the Municipality is facing political interference in this regard.

5 Composting and Recycling

The municipality has not initiated any programmes to promote recycling and composting practices at the household level and community level. But It has planned to build a compost plant near Buspark 150 m away from the city. The proposed compost plant will have out put capacity of 3 m³ per day. But the local people are not willing to establish compost plant nearby their locality.

6 Special Waste Management

Dhankuta Municipality does not have a system for collecting and managing medical waste separately. There are altogether 15 health-care institutions including one hospitals, 12 clinics and 2 laboratories. All generators of medical waste (hospital, clinic and drugstores) are managing their waste themselves and the process for such management is unknown to the municipality.

The city does not also have any system to collect other types of special waste such as construction/demolition debris, industrial waste, and dead animals.

7 Community Mobilization

Dhankuta Municipality is trying to work with local communities and NGOs in conducting activities to raise awareness on waste management and promote recycling and composting. But community based activities are not conducted so frequently. School based activities like cleaning, sweeping streets are done on only special occasions like Environment day. The municipality has prepared solid waste management and environment conservation guidelines to increase public participation in solid waste management. The municipality has formed 122 groups of local people with the help of UNCHS, UNDP and MOLD. These groups will plan and manage programmes regarding waste management.

8 Organizational and Financial Aspects

The main responsibility for solid waste management lies with Sanitation sub Section of Dhankuta Municipality. The section has altogether 14 staffs. Tej B. Thapa, the Solid Waste Management Technician, in the municipality has received a six-month training on waste management from Urban Development Through Local Efforts (UDLE), a German funded project.

The municipality spends approximately Rs. 939,290 in waste management each year. This includes Rs. 804,688 for staff salary, Rs. 79,000 for fuel, Rs. 46,602 for maintenance of tractor. Rs.125,602 for fuel and vehicle maintenance and Rs. 9,000 for cleaning equipment and materials. The total expenditure of the Municipality in the fiscal year 2058/59 was Rs. 9,247,916. Therefore, the municipality is spending approximately 10 percent of its total budget on waste management.

9 Major Problems and Issues

The main problem associated with waste management in Dhankuta is the lack of proper sanitary landfill and compost plant. Insufficient funds and equipment is another important issue. The municipality also suffers from lack of community-based activities and public participation in waste management.

10 Conclusion & Recommendations

As Dhankuta is a relatively small municipality, solid waste management is a not yet a major problem or a priority for the municipality. But as the municipality grows it is the problem of waste management will also increase. Therefore, the municipality needs to take appropriate steps to handle the waste that is generated in a cost effective and environment friendly manner. The should be done by effectively mobilizing local communities and initiating innovative programmes such as plastic recycling, medical waste management and household composting. The local staff need additional resources and training and the municipality also requires additional vehicles and collection equipment to improve the present system.

Recommendations:

1. The waste dump site should be at least controlled by covering the waste with soil and minimizing the drainage of runoff in the dump.
2. As the municipality has very limited resources and the communities are spread over a large area, the municipality should promote household composting and recycling. This should be done by providing local people training and technical assistance.
3. SWMRC should assess the proposed landfill site and provide technical and financial assistance in developing the site for composting and landfilling.
4. The waste collection system should be improved by introducing door-to-door waste collection system in urban clusters to the extent possible. This may be done by distributing waste collection bins in households and asking them to place their waste straight in to the collection vehicle when it comes.
5. The municipality needs additional equipment for waste management.

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Annex 1: Photographs



Public Container for Waste Collection



Two Boys Stand in Front of an Old Container Still in Use



A Handcart Used for Waste Collection



Tractor Used for Waste Collection



A Waste Dump



Waste Dumping Site



Waste Dumping Site



Office Complex of Dhankuta Municipality