

Solid Waste Management in **Kirtipur 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 Kirtipur 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 based on field investigations conducted Shivani Malla.

1 Introduction

Kirtipur is the smallest municipality in Kathmandu Valley, in terms of population. Located south of Kathmandu and west of Lalitpur, the municipality was formed in 2053 by combining 8 village development committees. Although the municipality is located next to Kathmandu, most of the people in Kirtipur live in rural areas and depend on agriculture for their livelihood. Only five of its wards (ward no. 2, 3, 5, 9 and 17) are located in urban areas. The historic core of Kirtipur is a traditional old town. Because of the presence of Tribhuvan University, the northern part of Kirtipur has also developed as a university town with many students.

Table 1: Background Information

NAME	KIRTIPUR MUNICIPALITY
District	Kathmandu
Year of Establishment	2053 B.S.
No. of Wards	19
No. of Urban Wards	5
No. of Rural and semi urban Wards	14
Total Area	14.76 sq. km
Built-up Area	168.6 ha
Major Rivers and Ponds	Bagmati, Taudaha
Total Road length	Approximately 110 km
Population (2001)	40,835
No. of Households (2001)	9,487
No. Shops	457
No. of Restaurants, hotels and shops	74
Annual Population Growth Rate (1991-2001)	2.7 percent
Estimated Population for 2003	43,070
Population Density (2001)	per sq. km

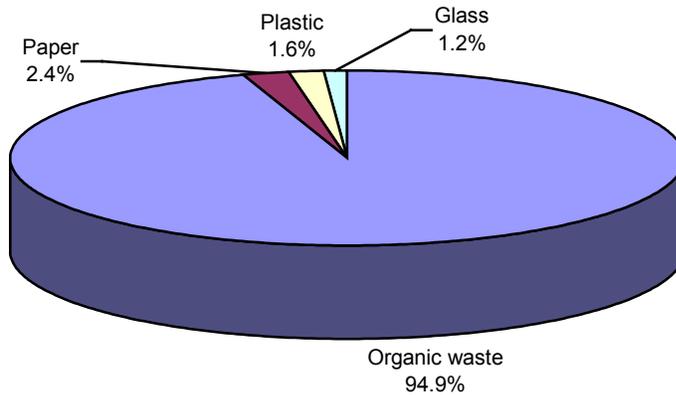
2 Waste Generation and Composition

According to a field survey done in 2003, the average per capita household waste generation rate in Kirtipur was 0.34 kg/person/day. This is a bit 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 Kirtipur in 2003, which is estimated to be 43,055, the total amount of household waste generated in the municipality comes out to be 14.6 tons per day. If we assume that 75 percent of the total municipal waste is generated by households, then the total amount of municipal waste in Kirtipur becomes 19.5 tons per day. The actual amount of household waste generated is probably a bit lower because most of Kirtipur's population live in relatively rural areas and their waste generation rate is probably lower.

The survey also indicated that the about 95 percent of the waste is organic in nature. Although it is not surprising that organic materials are the main component of the waste stream, 95 percent seems quite high. On average 65 percent of the waste generated by municipalities consists of organic waste. Furthermore, the low amount of plastics and paper and the absence of inerts in Kirtipur's waste also seem a bit surprising. An earlier study done by the municipality indicated that 74.24 percent of the waste was organic while 8.83

percent was plastics, 5.72 percent was paper, 2.91 percent was glass, 1.94 percent was metal, 1.93 percent was textile and the remaining 4.43 percent consisted of other materials. This seems to be a more realistic composition of solid waste.

Figure 1 Waste Composition



The loose density of household waste in Kirtipur was calculated to be 234 kg per m³.

Information on Kirtipur's waste generation and composition is based on waste collected from 60 households that had waste from 348 people.

3 Waste Collection

Kirtipur Municipality does not have any section or unit for solid waste management and it is not directly involved in waste management related activities such as street sweeping, waste collection, transfer, recycling and disposal.

The Municipality has an agreement with two NGOs – Unique Group and National Environmental Pollution Control (NEPCO) – for waste collection. Unique Group has been collecting waste from wards 16 and 17 since 1998 and the municipality has allowed the group to use its equipment (two rickshaws, a mini dumper, mini tipper, and a tractor) for waste collection and transportation. Currently Unique Group also has its own tractor and it is collecting waste from about 2000 households in Naya Bazar, Na Gaon, Panga, Kasi Bazar areas.

NEPCO is providing waste collection service to about 1000 households in Baghbhairav, Tyanglaphant, and Gakhel areas.

According to a recent study done by JICA, Unique Group and NEPCO collect about 30 to 40 percent of the waste generated in Kirtipur. JICA further estimates that the total waste generation rate in Kirtipur is approximately 12 tons per day and out of this about 4 tons per day is being collected. NEPCO and Unique Group charge Rs. 30 to Rs. 110 per household for providing waste collection services. The collection is done from 7 am to 2:00 pm.

4 Final Disposal

Kirtipur Municipality does not have a landfill. The waste collected by Unique Group and NEPCO used to be dumped in a crude manner along the Balkhu Khola but more recently, the waste is being dumped on the right bank of the Bagmati River in Sundarighat, where Kathmandu Metropolitan City disposes its waste.

The Balkhu Khola dumping site is located approximately 1 km from the city. It covers an area of approximately 3 ropanis and was used for approximately one and half years.

The Municipality does not have any plans to construct a landfill site. However, if a landfill is developed for Kathmandu in the future, the municipality may take its garbage to this site.

5 Composting and Recycling

Kirtipur Municipality does not have any recycling or composting programmes of its own, but the two NGOs that are involved in waste management have some composting and recycling programmes. In some areas, some people still practice traditional methods of composting in “Noga” and “Saaga.” There are scavengers who go around collecting recyclable waste but there are no scrap dealers in the city.

In the year 2001, Unique Group started a small community compost plant using the windrow method. But about a year ago, it was closed due to complaints from neighbours regarding odour. Unique Group wants to restart its composting operation at the community level and also promote household composting.

NEPCO has started vessel composting programme in 21 households. This programme produces approximately 30 kg of compost per month. NEPCO is also involved in recycling paper to make various products, such as files, greeting cards and visiting cards.

Kirtipur Municipality has submitted a proposal to the Solid Waste Management and Resource Mobilization Centre for establishing a compost plant with a capacity of 9 tons per day. Recently the municipality, with support from Kathmandu Metropolitan City and Clean Energy Nepal, has also organized a training on household composting.

6 Special Waste Management

Kirtipur Municipality has only one health post and as a result, the amount of medical waste generated in the municipality is very small. Similarly, the municipality has 124 industries but most of these are small cottage industries, which do not generate large amounts of waste. The municipality does not have any system for collecting special waste such as medical waste, industrial waste, construction/demolition debris, and dead animals.

7 Community Mobilization

Jana Sewa School has a Prakriti Club and it occasionally conducts awareness programmes. The two NGOs involved in waste management, Unique Group and

NEPCO, and a CBO called Naya Bazar Byawasahi Tatha Ghardhani Samuha, also conduct occasional activities to raise awareness on solid waste management.

8 Organizational and Financial Aspects

Although, the municipality does not have any section or unit dealing with solid waste management, few municipal staff are involved in waste management related activities. One municipal staff has also received a six-month training on waste management from Urban Development Through Local Efforts (UDLE), a GTZ funded programme.

The municipality spends about Rs. 300,000 on waste management. This is less than 2 percent of the total municipal expenditure of about Rs. 20 million.

9 Major Problems and Issues

The main problem associated with waste management in Kirtipur is the lack of a unit responsible for waste management and the necessary systems for an integrated waste management system. This includes manpower, equipment and facilities such as compost plant and landfill.

10 Conclusion & Recommendations

So far, Kirtipur does not have an organized waste management system. Although this is a major problem, this can also be seen as an opportunity. The municipality has already done a good job of working with two local groups for waste collection. Now if it can develop a small unit and develop an integrated waste management system in a planned manner, it can become a model for urban waste management. However, as the population of Kirtipur is increasing, this has to be done immediately.

Recommendations:

- i. The municipality should form a small unit within its organization to be responsible for waste management. The unit does not have to be directly involved in waste collection, treatment and disposal but it should work with NGOs, private parties and local communities for this purpose. In order to do this effectively, the unit should develop a clear strategy and action plan.
- ii. The waste collection system should be improved so that waste is collected door-to-door to the extent possible. The existing two NGOs could be used for this purpose.
- iii. As most of the waste consists of organic waste and most of the people are farmers, composting should be promoted. This includes both household composting and a central composting facility. Household composting will especially be beneficial in scattered settlements where waste collection and transportation can be difficult.
- iv. Although Kirtipur is currently using Kathmandu's dumpsite along the Bagmati River, it is highly unlikely that Kirtipur will be able to take its waste to Okharpauwa once that landfill is developed. Therefore, Kirtipur

should develop its own composting facility and may be even a small landfill.

- v. In order to promote household composting, community mobilization programmes should be expanded.

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Annex 1: Photographs



Waste in Bins Waiting for Collection



Door-to-door Collection of Waste in Tipper



Haphazard Disposal of Waste Along a Road



A Rickshaw Used for Collecting Waste



An Old Dump Site



Waste Being Dumped at Balkhu Dump Site Operated by Kathmandu Metropolitan City