

## Solid Waste Management in **Kalaiya 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 Kalaiya Municipality**<sup>1</sup> 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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<sup>1</sup> This report was prepared by Bhushan Tuladhar and Gopal Raj Joshi based on field investigations conducted by Reetu Hyoju.

## 1 Introduction

Kalaiya is a relatively small municipality situated in Bara District of Narayani Zone of the Central Development Region. Located in the Terai with altitudes ranging from 152 m to 915 m above the mean sea level, the municipality has tropical and sub tropical climate. Kalaiya is administrative and market centre in Bara district. Although the municipality has 14 wards, only 6 of them (ward no. 3, 4, 5, 6, 7, and 8) are located in urban areas.

**Table 1: Background Information**

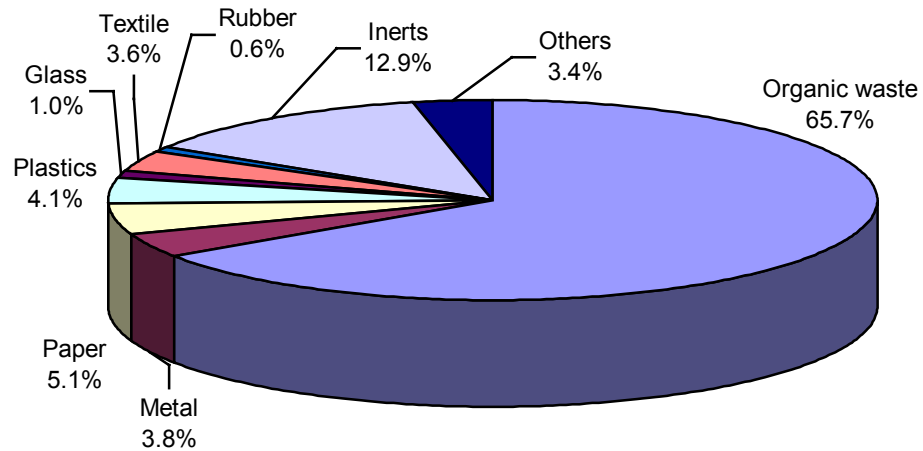
NAME	KALAIYA MUNICIPALITY
District	Bara
Year of Establishment	203 9B.S.
No. of Wards	14
No. of Urban Wards	6
No. of Rural and semi urban Wards	8
Total Area	18.98 sq. km
Built-up Area	NA
Major Rivers and Ponds	Teng rahar River
Total Road length	52 Km
Population (2001)	32,260
No. of Households (2001)	5113
No. Shops	426
No. of Restaurants, hotels and shops	71
Annual Population Growth Rate (1991-2001)	5.7 percent
Estimated Population for 2003	36,042
Population Density (2001)	1699.68 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 Kalaiya was 0.4 kg/person/day. This is higher than the average waste generation rate in urban areas of Nepal, which is 0.25 kg/person/day. Considering the total population of Kalaiya in 2003, which is estimated to be 36,056, the total amount of household waste generated in the municipality comes out to be 14.4 tons per day. If we assume that households contribute about 75 percent of the total municipal waste, then the total municipal waste generation in Kalaiya becomes, 19.2 tons per day. The actual amount of waste generated is probably lower because a large number of Kalaiya's population live in relatively rural areas.

The field survey also indicated that more than 65 percent of the waste is organic in nature, while paper and plastics make up approximately 5 and 4 percent respectively.

**Figure 1 Waste Composition**



The loose density of household waste in Kalaiya was calculated to be 196.66 kg per m<sup>3</sup>.

Information on Kalaiya's waste generation and composition is based on waste collected from 90 households of ward 6 (Bazar Tole) and ward 4 (Chautariya Tole) that had waste from 837 people.

### 3 Waste Collection

According to the estimation done by Kalaiya Municipality the city collects approximately 9 tons of waste per day. Assuming that the total amount of waste generated in Kalaiya is 19.2 tons per day, the city is collecting about 47 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 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. The municipality has placed some containers on the roadside but they are not being used effectively. The roadside pick up service is provided twice a day.

Kalaiya municipality has 25 sweepers, of which only 2 are permanent employees. The sweepers sweep approximately 12 kms of city streets on a daily basis. The cleaning of streets and public places is carried out daily in the urban areas only.

Sweeping is done using ordinary brooms. The collection of the waste from road side and other places is done by shovels and the waste is loaded on to a tractor-trailer. The municipality has one tractor with trailer (3 m<sup>3</sup>). The municipality has 70 handcarts, out of which about 20 are useless but the municipality is not effectively using these carts.

## **4 Final Disposal**

The collected waste is disposed in a crude dumping site on piece of land located about 0.5-1km from the town center near Cinema hall. The site with an area of about 6.66 ropani has been used for the past 1-2 months. It is estimated that the present site can not be used for much longer. Previously, waste was also dumped in roadside area and open place near Barewa Durbar.

Kalaiya Municipality has intention to construct a landfill site but does not have any concrete plans.

## **5 Composting and Recycling**

Kaliya Municipality does not have any plans or programmes to promote recycling and composting. The city has individual scavengers and scrap dealers involved in recycling. Three of such scrap dealers are registered in the municipality.

## **6 Special Waste Management**

Kalaiya Municipality has not developed any system for collecting and managing medical waste separately. There are 11 healthcare institutions, including 3 hospitals, 3 clinics, and 5 drugstores, in the city. The municipality collects the medical waste along with normal municipal waste and dumps it in the common site.

The city also does not have any system to collect other types of special waste such as construction/demolition debris, industrial waste, and dead animals. Dead animals are simply buried and the construction and demolition waste is used for land filling.

## **7 Community Mobilization**

There are very few activities related to community mobilization in Kalaiya Municipality. The municipality has conducted some awareness programmes in ward 8 and some school-based awareness programmes have been conducted in coordination with the Nepal Water Supply Corporation.

Recently Tange Rahar Bikash Samiti, a local CBO has started to co-operate with the Municipality in the field of solid waste management. The CBO, located in ward no.12 Tange Rahar, conducts awareness programmes and community-clean up activities. The CBOs is not formally registered and seeks more help from the municipality.

## **8 Organizational and Financial Aspects**

The main responsibility for solid waste management lies with the Sanitation unit under Community Development section of Kalaiya Municipality. The unit has 1 sanitation in-charge, 3 supervisor and 25 sweepers (2 permanent, 18 temporary and 5 on wage basis).

The municipality does not have any information regarding the budget spend in waste management each year.

## **9 Major Problems and Issues**

The main problem associated with waste management in Kalaiya is the lack of a sanitary landfill and compost plant. The municipality also lacks the necessary resources (technical, financial, manpower) for the effective solid waste management. The municipality requires additional vehicles, collection equipment and trained manpower to improve present waste management services. Lack of public awareness is also a major issue.

## **10 Conclusion & Recommendations**

Although Kalaiya is a relatively small municipality, with rural characteristics, it needs to provide more effective waste management services. For this it requires trained personnel, adequate equipment and a waste processing and landfilling facility. The municipality also needs to be more active in involving the local communities in waste management.

Recommendations:

1. The municipality should immediately start a controlled dump site and also start planning for the establishment of a composting facility and a landfill site. SWMRMC should provide technical and financial assistance for this purpose.
2. The waste collection system should be improved so that waste is collected door-to-door to the extent possible. Larger carts or rickshaws with detachable containers instead of patari and dauri would probably be more effective to collect the waste.
3. The containers placed at the different corners of the city should be used properly.
4. The municipality should encourage local communities of urban area to practice household composting and the municipality should also plan to have a central composting facility.
5. The Environment and Sanitation Section needs additional collection equipment, vehicles, and trained manpower.

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**Annex 1: Photographs**



**Waste Collection Using Traditional Basket**



**Sorting of Waste At Dump Site**



**Waste Collection Using Pieces of Wood**



**Dumping Site**



