

## Solid Waste Management in **Rajbiraj 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 Rajbiraj 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 Sunita Kumari Yadav.

## 1 Introduction

Rajbiraj is the headquarters of Saptari district as well as Sagarmath zone in eastern Nepal. Unlike most other settlements in Nepal, Rajbiraj is a planned city that was developed after floods in the Sapta Koshi River in 1994 and 1995 B.S. started damaging the original district headquarters of Saptari called Hanumanagar. Rajbiraj was planned on a 60 bigah plot, based on the design of Jaipur city in India and the town of Hanumannagar was shifted to Rajbiraj in 1998 B.S. The market developed over the next decade and it was declared a municipality in 2016 B.S. Today, Rajbiraj is still a small town and it retains its planned layout. There is a lane or road after every three houses and there are separate markets areas, residential areas and office areas.

**Table 1: Background Information**

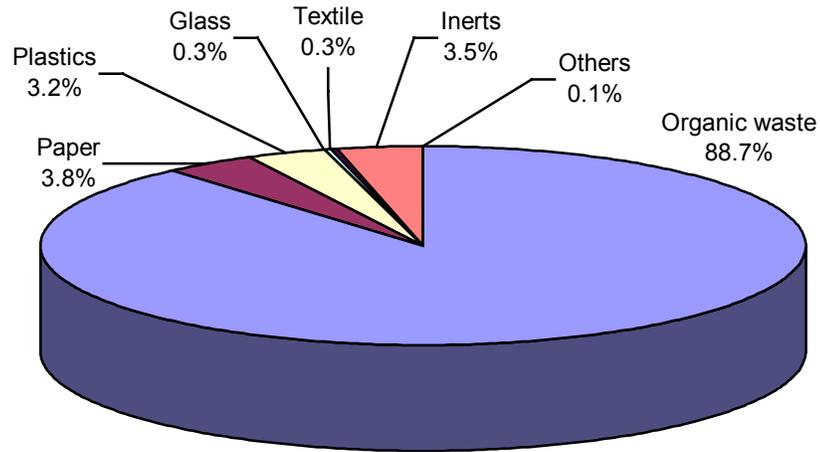
NAME	RAJBIRAJ MUNICIPALITY
District	Saptari
Year of Establishment	2016 B.S.
No. of Wards	10
No. of Urban Wards	6
No. of Rural and semi urban Wards	4
Total Area	11.96 sq. km
Built-up Area	386.95 ha (Municipal Data)
Major Rivers and Ponds	Bhaluwahi Khola, Bhagwati Pokhari, Purni Pokhari, Rajdevi Pokhari
Total Road length	Black topped:2.5Km Graveled :4 Km Earthen :5 Km
Population (2001)	30,353
No. of Households (2001)	5445
No. Shops	527
No. of Restaurants, hotels and shops	32
Annual Population Growth Rate (1991-2001)	2.3 percent
Estimated Population for 2003	31,765
Population Density	2537.88 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 Rajbiraj was 0.12 kg/person/day. This is less 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 Rajbiraj in 2003, which is estimated to be 31,753, the total amount of household waste generated in the municipality comes out to be 3.8 tons per day. If we assume that 75 percent of the total municipal waste is contributed by households, then the total amount of municipal waste generated in Rajbiraj comes out to be 5.1 tons per day.

The survey also indicated that more than 80 percent of the waste was organic in nature, while paper and plastics make up 3.8 and 3.2 percent of the waste stream.

**Figure 1 Waste Composition**



The loose density of household waste in Rajbiraj was calculated to be 92.072 kg per m<sup>3</sup>.

Information on Rajbiraj's waste generation and composition is based on waste samples collected from 34 households in wards 1, 2, and 6, that had waste from 150 people.

### **3 Waste Collection**

According to the estimation done by Rajbiraj Municipality the city collects approximately 1 ton of waste per day. Assuming that the total amount of waste generated in Rajbiraj is 5.1 tons per day, the city is collecting about 20 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.

Rajbiraj Municipality has 70 sweepers, 19 of who are permanent employees, who sweep approximately 3.5 km of city streets on a daily basis.

Sweeping is done using ordinary brooms with long handles and the waste is placed on handcarts and rickshaws. The municipality has two handcarts of capacity 0.13.5 m<sup>3</sup> and 11 rickshaws with capacity 0.25 m<sup>3</sup>. Once the handcarts and rickshaws are filled the waste is loaded on to a tractor-trailer. The municipality has 2 tractors with trailer (2 m<sup>3</sup>).

## **4 Final Disposal**

The collected waste is disposed in a crude dumping site on a piece of land located near Bhulwai Nala about 500 m from the town center. The site has been used for the past 10 years.

Rajbiraj Municipality does not have any plans to construct a landfill site.

## **5 Composting and Recycling**

Rajbiraj Municipality does not have any programs for promoting recycling and composting and the municipality does not have any information regarding the number of the households that are practicing household composting. However, the municipality intends to build a compost plant at Rampur tole in ward no. 2. The proposed site is approximately 2 km away from the city. The estimated output capacity of the plant is 2 ton per day. But some of the local people are against the establishment of the plant near their locality.

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

## **6 Special Waste Management**

Rajbiraj Municipality does not have any system for collecting and managing medical waste separately. Every generator of medical waste (1 hospital, 10 clinics and 10 drugstores) throw their waste at certain corners of the city.

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. The construction and demolition waste is occasionally used as a filler material.

## **7 Community Mobilization**

Rajbiraj Municipality has not taken any initiative for mobilizing local communities in waste management related activities and there are no community groups or NGOs active in this area.

## **8 Organizational and Financial Aspects**

The main responsibility for solid waste management lies with the Sanitation Section of Rajbiraj Municipality. The section has 2 supervisors and 70 sweepers. The number of sweepers seems quite high for a small municipality like Rajbiraj.

The municipality spends approximately Rs. 200,000 for waste management each year. This is about 3 per cent of the total expenditure of the municipality. However, this probably does not include the salary of the staff involved in waste management.

## **9 Major Problems and Issues**

The main problem associated with waste management in Rajbiraj is the lack of a sanitary landfill and compost plant. The local people, as well as the municipality, are dumping the waste in a haphazard manner. The municipality depends on a large number of sweepers to keep the city clean but it has not taken any initiative to make the collection and management of waste more effective and efficient. The

municipality also has not introduced programmes to mobilize community participation in waste management.

## **10 Conclusion & Recommendations**

As Rajbiraj is a relatively small municipality, waste management may not be a critical problem. But this city needs to take a more proactive role in developing an effective waste management system. At present, it depends on its large crew of sweepers to keep the city clean. But the waste management system is crude and the available resources can be utilized more efficiently.

### Recommendations:

1. Haphazard disposal of waste on the roadside should be stopped and a simple landfill site should be developed, where waste can be buried.
2. Along with construction of landfill site, municipality should also develop a compost plant and promote composting and recycling programs. SWMRMC should provide technical and financial support to develop the proposed compost plant at Rampur Tole.
3. 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.
4. For effective solid waste management municipality should involve local community as well as private organization.
5. Public awareness campaigns should be done in communities, schools and among municipality staffs.
6. Medical waste should be managed separately. They should be burned in a controlled manner or buried separately.

For more information please contact:

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**Annex 1: Photographs**



**Tractor Used for Waste Collection**



**Power Tiller Used for Waste Collection**



**Rickshaws Used for Waste Collection**



**Concrete Container on the Street**



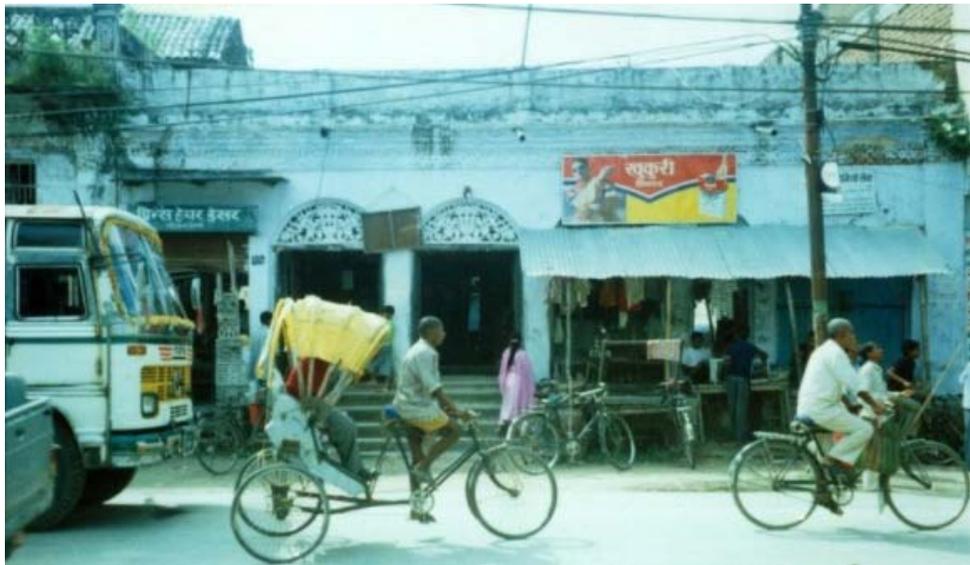
**Dumping Site at Bhuwai Nala**



**Haphazard Dumping of Waste Along a Road Near Dumping Site**



**Water Logging at Dumping Site**



**Street Scene**