

# Solid Waste Management in **Byas 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 Byas 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 Bhumika Vaidya based on field investigations conducted by Deepak Raj Subedi.

## 1 Introduction

Byas is a small municipality located in Tanahun District of Gandaki zone in Western Development Region. The main centre of Byas is also popularly known as Damauli. Out of 11 wards in the municipality, 3 (ward no. 2, 10 and 11) are in urban areas. The total population of these three wards is 10,743, which is about 38 percent of the total population in the municipality. Prithivi highway, which connects Pokhara with Kathmandu, runs through this municipality.

**Table 1: Background Information**

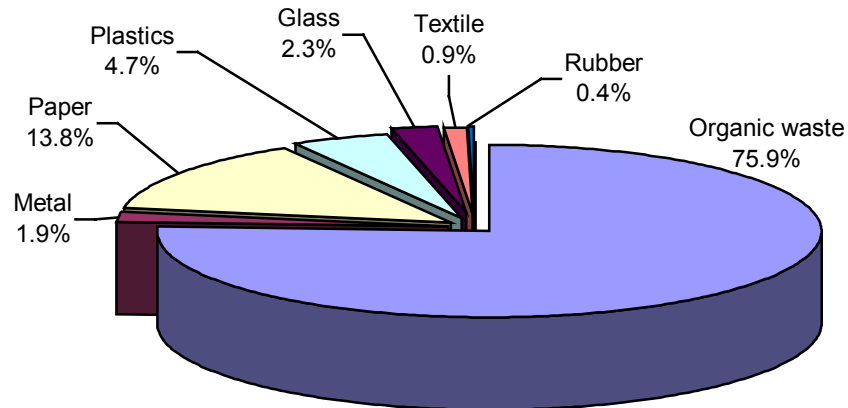
NAME	BYAS MUNICIPALITY
District	Tanahu
Year of Establishment	2048
No. of Wards	11
No. of Urban Wards	3
No. of Rural and semi urban Wards	8
Total Area	60.02 sq. km (CBS data)
Built-up Area	12.17 ha
Major Rivers and Ponds	Seti, Madi River
Total Road length	Black-topped: 7.5km Graveled: 12.48km Trail: 110 km Total: 130 km
Population (2001)	28245 (CBS data)
No. of Households (2001)	6511 (CBS data)
No. Shops	918
No. of Restaurants, hotels and shops	204
Annual Population Growth Rate (1991-2001)	3.4
Estimated Population for 2003	30,198
Population Density	470.59 per sq. km (CBS data)

## 2 Waste Generation and Composition

According to the field survey done in 2003, the average per capita household waste generation rate in Byas was 0.31 kg/person/day. This is slightly higher than the average waste generation rate in Nepalese municipalities, which is estimated to be 0.25 kg/person/day. Considering the estimated total population of Byas in 2003, which is 30,226, the total amount of household waste generated in the municipality comes out to be 9.4 tons per day. If we assume that 75 percent of the total municipal waste is generated by households, then the total amount of waste generated by the municipality becomes 12.5 tons per day. The actual amount of household waste generated is probably a bit lower because more than half of Byas population lives in relatively rural areas and their waste generation rate is probably a bit lower.

The survey also indicated that more than 75 percent of the waste consisted of organic matter, while paper and plastics made up 13.8 and 4.7 percent of the waste respectively.

**Figure 1 Waste Composition**



The loose density of household waste in Byas was calculated to be 65 kg per m<sup>3</sup>. This is a fairly low figure compared to most other municipalities in Nepal.

Information on Byas's waste generation and composition is based on waste collected from 67 households with 345 people in middle income neighbourhoods in ward no. 2, 10 and 11.

### **3 Waste Collection**

Byas Municipality estimates that it generates approximately 4 tons of waste per day, out of which approximately 3.5 tons is generated in urban areas while 0.5 tons is generated in rural areas. Out of this, the city estimates that it collects 3 tons of waste per day. Therefore, according to the estimates provided by the municipality, the city is collecting about 75 percent of the waste. However if we assume that the waste generation rate is 12.5 tons per day then the city is only collecting 24 percent of the total waste. Most of the waste that is not being collected is probably waste from rural areas in the municipality.

The municipality has two-tractor trailers, which have capacity of 2 tons.

Byas municipality has 7 temporary sweepers, who sweep approximately 6645 m of city streets on a daily basis. Also one supervisor is assigned for solid waste management.

The municipality has door-to-door waste collection system. The collected waste is placed in containers and waste bins.

### **4 Final Disposal**

The collected waste is disposed in a crude dumping site on the banks of the Madi River, about 1 km from the city. The site has been used for the past seven years. Previously, waste was dumped in the middle of Madi River. As the river washes the waste continuously, the area of the disposal site cannot be estimated.

The Municipality has plans to construct a permanent and suitable landfill site in the near future. For this, different sites have been visited for site selection. Since a suitable site has not yet been located, further plans have not been prepared.

## **5 Composting and Recycling**

The municipality does not have any programmes to promote composting and recycling. However some of the staff in solid waste management unit are composting their garbage. Municipality is planning to promote composting at household levels in near future. They are also planning to distribute 100 drums in core area of municipality for composting.

Municipality allows scavenging in collection as well as disposal site. There is also private center for recycling materials.

## **6 Special Waste Management**

The hospital wastes generated by one hospital and 30 clinics in the municipality are either incinerated or dumped. The main hospital in town, which has 10 beds is doing a good job of separating its waste into hazardous and non-hazardous waste and then incinerating the hazardous waste in an incinerator. The incinerator ash is buried.

Other types of special wastes of dead animals, construction and demolition wastes and industrial wastes are dumped.

## **7 Community Mobilization**

At present, there is not a single private organization or community-based organization working in the field of solid waste management in Byas. Two years earlier Jaycees had distributed waste collection bins. The positive aspects of this activity were that initially people's participation was enhanced and awareness was generated. However, this activity was discontinued and no follow up was undertaken.

## **8 Organizational and Financial Aspects**

Social Welfare Section in this Municipality has been involved in all activities related with solid waste management. The section has 12 members and three components namely Public Health, Sanitation and Environment. For solid waste management there are 7 temporary sweepers and 1 supervisor. The sanitation technician at the municipality has received a six-month training on waste management provided by UDLE.

The municipality spends approximately Rs. 619,647 in waste management each year. The average annual budget assigned for solid waste is Rs. 750,000. The municipality's total expenditure in fiscal year 2058/59 was Rs. 18,849,874. Therefore, the municipality is spending about 3 percent of its total budget on solid waste management.

## **9 Major Problems and Issues**

The main problem associated with waste management in Byas is the lack of appropriate landfill site and proper collection system. It also lacks involvement of community and private organizations in waste management, composting and reuse practices. Municipality also requires additional manpower, finance and vehicles.

## **10 Conclusion & Recommendations**

Byas Municipality is doing a fairly good job collecting the waste generated in the urban areas of the municipality but like most other municipalities, it lacks appropriate systems for treatment and disposal of waste. The municipality also has not been able to effectively mobilize the participation of private sector and local communities in waste management.

Recommendations:

1. Municipality is planning to construct a landfill site but they lack appropriate place, so SWMRC should provide assistance for site selection and development.
2. The municipality should promote composting and recycling. The municipality is planning to promote household composting, which is a good initiative. Central level composting should also be planned. Waste segregation should be promoted and provision for transporting reusable and recyclable waste to recycling plants should be done.
3. For effective solid waste management, municipality should involve local community as well as private organization.
4. Dumping of waste on the streets should not be allowed and the door-to-door collection service should be extended to all areas so that waste is transferred from the source directly on to collection vehicles.
5. Community and school-based programmes should be launched to increase awareness.

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**Annex 1: Photographs**



**Waste Collection Bins on the Street**



**Transfer of Waste from Bin to Tractor**



**Tractor Used for Waste Collection**



**Waste Dumping Site on the Banks of the Madi River**