

Solid Waste Management in **Butwal 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 Butwal 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 Poonam Sharma.

1 Introduction

Butwal is a mid-sized municipality located on the banks of Tinau River in the Rupendehi district, Lumbini Zone of the Western Development Region. The municipality is bordered by Devdaha VDC in the east, Parroha VDC in the west, Dovan VDC in the north and Motipur VDC and Shankarnagar VDC in the south. Butwal is an industrial and commercial City established in 2016 BS. Because it is situated at the crossing of two major highways namely Mahendra Highway and Siddhartha Highway in the foothills of Churia Range it has developed as a major transportation and trading town as well as an administration centre.

Table 1: Background Information

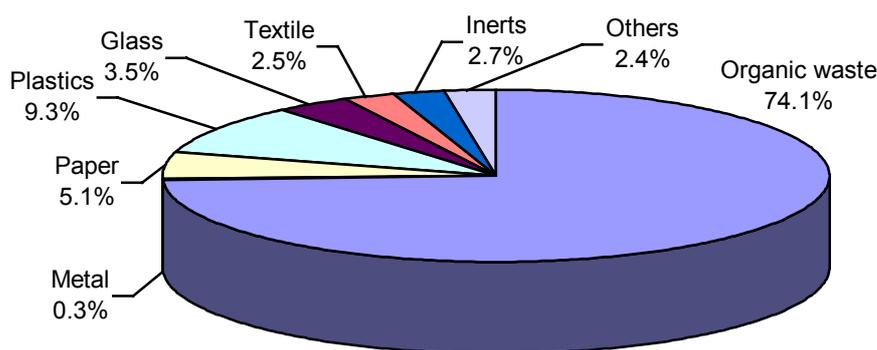
| NAME | BUTWAL MUNICIPALITY |
|---|---|
| District | Rupendehi |
| Year of Establishment | 2016 B.S. |
| No. of Wards | 15 |
| No. of Urban Wards | 12 |
| No. of Rural and semi urban Wards | 3 |
| Total Area | 69.28 sq. km |
| Built-up Area | 2.26 sq km |
| Major Rivers and Ponds | Tinau |
| Total Road length | Black-topped: 36km Graveled: 19 km Earthen: 34km Mule Track: 89 km |
| Population (2001) | 75,384 |
| No. of Households (2001) | 16,281 |
| No. Shops | 4,000 |
| No. of Restaurants, hotels and shops | 65 |
| Annual Population Growth Rate (1991-2001) | 5.5 |
| Estimated Population for 2003 | 83,904 |
| Population Density | 1088.11 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 Butwal was 0.21 kg/person/day. This is similar to the average waste generation rate in urban areas of Nepal, which is 0.25 kg/person/day. Considering the total population of Butwal in 2001, which is estimated to be 83,851, the total amount of household waste generated in the municipality comes out to be 17.6 tons per day. If we were to assume that the household waste makes up 75 percent of the total municipal waste, then the total amount of municipal waste generated in Butwal becomes 23.5 tons per day.

The composition of household waste in Butwal is similar to waste from other urban areas in Nepal, with organic waste constituting 74 percent of the waste stream.

Figure 1 Waste Composition



The loose density of household waste in Butwal was calculated to be 125.54 kg per m³.

Information on Butwal's waste generation and composition is based on waste collected from 90 households in ward no. 5, 6, 8, 9 and 10 that had waste from 484 people.

3 Waste Collection

According to the estimation done by Butwal Municipality, the city collects approximately 18.2 tons of waste per day. Assuming that the total amount of waste generated in Butwal is 23.5 tons per day, the city is collecting about 77 percent of the total waste generated.

The municipality is managing the cleansing service with its own manpower and it is also involving some NGOs/CBOs. The city has 100 sweepers, 49 of whom are on daily wage basis, who sweep approximately 38 kms of city streets every day.

Sweeping is done using ordinary brooms with long handles and the waste is collected in handcarts and wheelbarrows using shovels. The municipality has a total of 21 handcarts, with a capacity of 0.4m³ and two rickshaws with capacities of 0.9 m³. Once the carts are filled, the waste is loaded on to a tractor trailer or truck. The municipality has kept 18 tractor trailers (capacity 2.9 m³) in the major parts of the city. The sweepers and local residents use these trailers as containers or waste bin to collect waste.

The municipality has bulk containers and door-to-door collection system. In ward no.13, 14, and 15, the municipality has started the door to door waste collection system by charging some nominal fee. The municipality has distributed waste bins to the households. The local people keep their waste in these buckets and sweepers of the municipality collect the waste in rickshaws on a daily basis at noon. Thus collected waste is placed in tractor trailers kept in major chauwks of the city. Once the trailers are filled, the trailers are carried to dumping site and emptied trailers are kept in the same place. The transportation of the trailer is done two times a day.

The municipality has 3 tractors, one tipper (4.8 m³) and one truck (5.7 m³ capacity).

4 Final Disposal

The collected waste is disposed in a crude dumping site on the banks of the Tinau River, about 2 km from the city. The site, with an area of 0.2 ha, has been used for the past two years. It is estimated that the dumping site could be used for further 10-15 years. Previously, waste was also dumped in Maina Bazar Ward no. 4

The municipality plans to construct a landfill site at Ward 14 Tamnagar, but requires financial and technical assistance for this purpose. The proposed site is located at a distance of 8 km from the city and has an area of about 13 Bigha. The municipality wants to develop and operate the within one year. The municipality feels that this site, if developed, can be used for about 50 years. But the EIA of the proposed landfill site has been not approved.

5 Composting and Recycling

Butwal Municipality is actively promoting recycling and composting at the household as well as community level. The municipality is running a compost plant at ward no. 7 Hat bazaar, with the support of Urban Development Through Local Efforts (UDLE), a German funded project. The compost plant of capacity 100-200 kg per day is situated at the distance of 1.5 km from the main city. The municipality plans to set up another compost plant at ward no.14 Tamnagar, 8km away from the city, which is also the proposed landfill site. The municipality feels that, if necessary physical infrastructure developed, the compost plant can be developed within one year.

The city has distributed household composting bins to over 131 households and provides regular training. The compost bins are made locally from plastic containers.

Individual scavengers, scrap dealers and private entrepreneurs are involved in recycling of inorganic waste. The City has approximately 10 scavengers and scrap dealers involved in recycling.

A local women's group is involved in recycling paper to make different materials such as envelope, card, and gift items.

A private firm named Reshmi Plastic Udyog located at ward no.10 Sukkha Nagar, has been involved in plastic recycling since 2055.

6 Special Waste Management

Butwal Municipality has not developed a system for collecting and managing medical waste separately. Every generator of medical waste (hospital, clinic, and drugstores) is managing their waste by themselves. The city has 75 institutions providing health care services. These include 5 hospitals and 70 clinics. Lumbini zonal hospital has an incinerator, where infectious and hazardous waste is burned and the ash is buried. Remaining hospitals and clinics bury their waste. Sometimes such waste is mixed with municipal waste and disposed in the dumping site.

The city does not have any system to collect other types of special waste such as construction/demolition debris, industrial waste, and dead animals. This is collected along with the regular waste or dumped.

7 Community Mobilization

Butwal Municipality is actively working with local communities and NGOs in conducting activities to raise awareness on waste management and promote recycling and composting. It has published several brochures/pamphlets and organized several interaction and training programmes.

In order to coordinate the activities of various NGOs and community groups, the municipality has formed ward-level committees, which include representatives from mothers groups, ward chairmen, distinguished people and organizations within Butwal. Such committees have been established in wards 1-12. Each committee has 9 members and the secretary of the concerned ward serves as the member secretary of the committee. Initially the committee was formed on 2nd Shrawan 2055 in ward no. 6, 7, 8 and later on it was extended to other wards.

The committee is responsible for managing the door to door waste collection system, as well as overall solid waste management of the ward. It conducts various awareness activities and training programs to mobilize public participation.

A local NGOs named Narayan Youth Club has been helping the municipality in managing plastic waste for several years. The club initiated “Suiro” programme to collect plastic waste from households.

8 Organizational and Financial Aspects

The main responsibility for solid waste management lies with the Public Health and Environment Conservation Section under Social Welfare and Community Development Department of Butwal Municipality. Mr. Thagishwor Pokhrel, the head of the Section has received a six-month training and several other training programmes on waste management from UDLE. The section has 3 supervisors, 5 drivers, and 100 sweepers.

The municipality spends approximately Rs. 60,00,000 in waste management each year. This is approximately 8 percent of the total budget of the municipality, which is about Rs. 80 million. The municipality is collecting approximately Rs.400,000 per year as fee for waste collection service. This is about 6.7 percent of the total expenditure on solid waste and is a good start. The municipality also generates some revenue from fines on people who dump waste in a haphazard manner.

9 Major Problems and Issues

The main problem associated with waste management in Butwal is the lack of a sanitary landfill and a central composting facility. The municipality has selected a site for landfill but it does not have the necessary resources to develop the site.

The municipality is facing problems in managing all the waste generated within the city due to insufficient equipment and vehicles and poor condition of the present equipment and vehicles. So the municipality also requires additional vehicles and collection equipment. The lack of trained manpower is another hindering factor. The municipality is also facing difficulties in collecting waste management fee from the people.

10 Conclusion & Recommendations

Butwal Municipality has so far done a remarkable job on solid waste management by effectively mobilizing local communities and initiating innovative programmes such as door-to-door waste collection, use of tractor trailers as bulk containers and waste transfer points, plastic recycling, and composting at community and household level. The level of participation and willingness to pay for solid waste management practices has increased among the local people. So the city seems to be cleaner than the past. The local staff seems to be committed to improving the waste management system and willing to learn new things. But they need additional resources to follow up on their programmes and improve the waste collection system. Butwal also needs support to materialize their plans for composting and landfilling facility.

Recommendations:

1. The municipality should stop dumping waste on the riverbank of Tinau River as it is polluting the river. For this, the municipality needs a large-scale compost plant and landfill site. The municipality has already taken the initiative of finding a site, and conducting an EIA and it has also gathered some experience in operating a small-scale compost plant. Therefore, SWMRMC should assess the proposed landfill site at Tamnagar and provide technical and financial assistance in developing the site for composting and landfilling.

2. The door-to-door waste collection system that is in operation at ward no 1-12 is a good start. It should be extended to the remaining wards also. With an effective waste collection system, it will not be necessary to sweep the streets daily. This can save valuable resources.
3. The municipality should plan to introduce source-separated collection. For this local communities should be provided with two types of waste bins. This should be implemented in a phased manner. In order to make this effective, it should be supplemented by a public awareness campaign.
4. The municipality should continue and expand its programmes to encourage local communities to minimize waste through recycling and composting at household level. The municipality should provide training on household composting for more households. The subsidy on compost bin should be continued and the ward level committees should be encouraged to set up community-recycling centers. The municipality should also conduct school-based programmes to raise awareness on composting and waste management.
5. The waste collection equipment and vehicles that are currently being used seem to be in very poor condition. The municipality requires additional vehicles and equipment to improve waste collection system. The municipality should therefore invest in new equipment. The environment section also needs trained and skilled manpower.
6. The municipality should prepare and implement the management plan for hospital waste and other special waste.

For more information please contact:

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Annex 1: Photographs



Waste Collection Using a Tractor Trailer as a Container



Waste Transfer from Rickshaw to Truck



Composting Shed



Recyclable Materials Collected by a Scrap Dealer



Butwal's Dumping Site



Children and Pigs at the Dumping Site