

Solid Waste Management in **Siddharthanagar 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 Siddharthanagar 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 and Bhumika Vaidya based on field investigations conducted by Ajay Kumar Rajbhandari.

1 Introduction

The former name of Siddharthanagar Municipality was Bhairahawa Nagar Panchayat, which was established in 2024 B.S. After ten years, the name was changed as Siddharthanagar Municipality. This municipality is situated 22 km east from Lumbini, the birthplace of Lord Buddha. As the gateway of Lumbini and Tilaurakot, as well as an entry point to Nepal from India, Siddharthanagar is a major tourist destination and a commercial centre. In this municipality, 19.22 percent (707.5 ha) of the land is covered by housing settlements. The majority of the land is agricultural land (72.65%) and the market area covers about 6.66% of the total area.

Table 1: Background Information

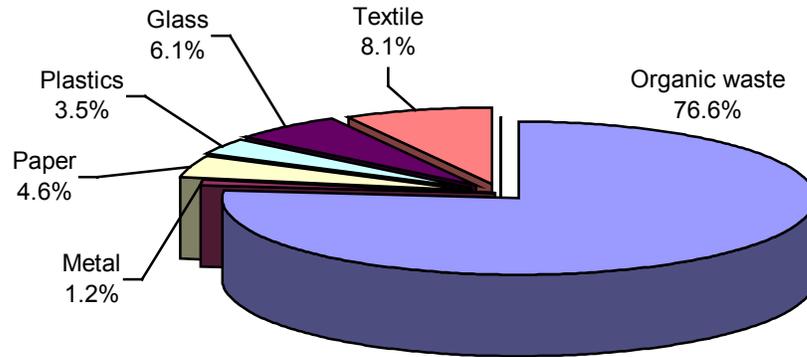
NAME	SIDDHARTHANAGAR MUNICIPALITY
District	Rupandehi
Year of Establishment	2024 B.S
No. of Wards	13
No. of Urban Wards	6
No. of Rural and semi urban Wards	7
Total Area	36.03 ha (CBS data)
Built-up Area	NA
Major Rivers and Ponds	Danda Khola
Total Road length	Black-topped: 31 km Graveled: 62 km Earthen: 57 km Total: 150 km
Population (2001)	52,569 (CBS data)
No. of Households (2001)	9419 (CBS data)
No. Shops	1567
No. of Restaurants, hotels and shops	75/ 37/ 7
Annual Population Growth Rate (1991-2001)	2.9 percent
Estimated Population for 2003	55,662
Population Density	1459.03 per sq.km (CBSdata)

2 Waste Generation and Composition

According to the field survey done in 2003, the average per capita household waste generation rate in Siddharthanagar was 0.13 kg/person/day. This is a little lower than average waste generation rate in urban areas of Nepal, which is 0.25 kg/person/day. Considering the estimated total population of Siddharthanagar in 2003, which is 55,669 the total amount of household waste generated in the Municipality comes out to be 7.2 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 in Siddharthanagar comes out be 9.6 tons per day.

The field survey also indicated that a little over 75 percent of the waste in Siddharthanagar is organic waste, which is only slightly higher than the national average of about 65 percent. The percentage of plastics and paper in the waste was found to be lower than the national average of 8 and 8.9 percent respectively.

Figure 1 Waste Composition



The loose density of household waste in Siddharthanagar was calculated to be 117.3 kg per m³.

Information on Siddharthanagar's waste generation and composition is based on waste samples collected from 68 households in Bank Colony, ward 8, that had waste from 350 people.

3 Waste Collection

According to the Municipality the daily total waste generation in the municipality is 30 m³ and the total amount of waste collected is 10 m³ per day. Assuming that the waste density is 300 kg/m³ as reported by the municipality, the total amount of waste generated is 9 tons per day and waste collected is 3 tons per day. If we assume that the total waste generated is Hence the city is collecting about 33 percent of the total waste generated.

For waste collection, the municipality has 3 tractor-trailer with capacity of 4.2 m³ each and a rickshaw. But the rickshaw is not in working condition.

Municipality has container service, roadside pick-up service as well as door-to-door waste collection service. Containers are located in various places around the city but most of them are not in working condition. Roadside pick-up service is provided twice a day through out the week. Door to door service is provided only in Ward No. 7, 8 and 9 (partially). The service is provided on average once a week. The Municipality has also set up some special containers to collect plastic waste.

Siddharthanagar Municipality has 1 supervisor, 1 Hawaldar, 8 permanent and 10 temporary sweepers. They sweep altogether 9 km of street twice a day but depending upon the events, festivals or function the frequency of street cleaning may be increased. The waste collected by individual wheelbarrows is placed as

temporary open pile, which is then collected by tractor and is transported directly into the dumping area.

4 Final Disposal

The collected waste is disposed crudely in the area near to Paklihawa Agricultural Campus, across from Danda Khola. The site, which is about 2.5 km from the core city, has been in operation since 15th Bhadra 2060. The site covers an area of around 3 bigaha. The life span of the site is not mentioned as waste dumped is washed away by monsoon rain. The Paklihawa Agricultural Campus and Universal College of Medical Science (Teaching Hospital) are very close. Every Wednesday "haat bazar" is held within 400m from the site. So the site can cause health hazards.

Before Bhadra 2060, the collected waste was dumped crudely near Danda Khola, which is located half the way to Sunauli. The site was used since the very beginning of the formation of Municipality, but due to the pressure from the local people, dumping on the site was stopped.

In near future, the municipality plans to construct a landfill site in Basantapur VDC on the side of Rohini river with area coverage of 7 Bigaha. The site is 5 km away from the center city and its estimated life span is 30 years. As it is government's land and there are no settlements nearby, no problems were seen during preliminary survey. The DDC has already given permission but due to lack of elected officials no further homework has been done.

5 Composting and Recycling

The Municipality is actively promoting household composting, as well as recycling and community composting. Household composting is being promoted through women's groups. Almost 55 percent of the total members of Mahila Samuha in Ward 7 and 8 are carrying out composting. All together there are about 200 members in Mahila Samuha. In ward 8, the municipality has established a shed for community composting, with support from Urban Development Through Local Efforts (UDLE), but it has not yet been used.

Municipality also allows scavenging in collection as well as disposal site. There are 11 kawadis dealing with scrap materials within the municipality.

6 Special Waste Management

The hospitals in the municipality manage their waste themselves as they have their own incinerators. The dead animals are buried and there is no special arrangement for construction and demolition waste.

As most of the industries within the municipality are food based, the amount of industrial waste is small and not a major problem. Sugar mill has the potential to generate huge amount of waste, but at present the sugar mill is not in operation.

7 Community Mobilization

Three groups of Mahila Samuha have been formulated in Ward 8. Similarly two groups of Mahila Samuha have been working in Ward No 9. These groups are responsible for solid waste management. There are about 200 members in Mahila Samuha.

Except street cleaning other solid waste management activities aren't privatized yet. One agency at Ward No 3 is responsible for street sweeping, collecting and transferring waste to the dumping site. It has signed contract from 1st Shrawan 2060 to 31st Ashad 2061. The private company collects the waste in wheelbarrow and then transports it to dumping site with the help of Municipality Tractor. About 2-tractor waste per day is dumped in Paklihawa area.

8 Organizational and Financial Aspects

Solid Waste Management Section is working under Social Welfare Department. It includes 1 section chief, 3 drivers, 1 supervisor and 17 sweepers. The head of solid waste management section has taken training on SWM organized by UDLE.

The municipality spends approximately Rs. 40,443,625 in total each year. The expenditure for solid waste management is NRs 3,626,077, so 8.97% of the total income of Siddharthanagar Municipality is spent in activities related to solid waste management.

9 Major Problems and Issues

Inadequate human, technical and financial resources for SWM, lack of a landfill, limited equipment and lack of coordination among various sections within the municipality have been mentioned by the municipality as the main problems regarding SWM. There is also a need for separate management of medical waste and strict enforcement of laws regarding littering.

10 Conclusion & Recommendations

Siddharthanagar Municipality has initiated community participation in SWM as well as household composting, which are good initiatives for improving waste management. The head of the Solid Waste Management Section is well trained, which is an advantage that many other municipalities do not have. Therefore his skills should be utilized and Section should be supported with adequate resources. The Municipality has plans to construct landfill site but needs technical and financial assistance.

Recommendations:

1. Separate budget should be allocated to SWM Section and the budget should be enough to cover regular expenses as well as initiatives to encourage public participation in waste management.
2. Door-to-door collection should be introduced throughout the municipality so as to stop the practice of dumping waste on the streets or other public places.
3. Municipality is planning to construct a landfill site but requires financial and technical support. SWMRMC should support the municipalities in their effort.
4. The municipality has started involving local communities and private sector in waste management. This is a good initiative and needs to be expanded.

5. There should be appropriate enforcement of law regarding SWM by regular monitoring practices and provision of rewards and penalties.
6. Along with the construction of landfill site municipality should also promote composting, recycling and reuse of the waste.
7. Medical waste should be managed separately.

For more information please contact:

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Annex 1: Photographs



Door-to-door Waste Collection



Hand Cart Used for Waste collection



Transfer of Waste from Hand Cart to Tractor



Mobilization of Women's Group for Waste Management



A Bin to Collect Plastics



Shed for Composting



Waste Dumping Site



Medical Waste Management Facility