

Solid Waste Management in **Siraha 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 Siraha 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 Sarita Banjade.

1 Introduction

Siraha is a small municipality located in Siraha district in eastern Terai region of the country. A feeder road connects the Municipality with the East-West Highway to the north and the Indian boarder to the south. As the district headquarters, it is an important trading and administrative center of the district. The topography of the Municipality is rather flat with a gentle slope from north to south. The Municipality was constituted in 1997.

Table 1: Background Information

NAME	SIRAHA MUNICIPALITY
District	Siraha
Year of Establishment	2053 B.S
No. of Wards	9
No. of Urban Wards	4
No. of Rural and semi urban Wards	5
Total Area	23.78 sq. km
Built-up Area	9.47 ha
Major Rivers and Ponds	Kamala, Mainabati, Bhamhar rivers
Total Road length	39 km
Population (2001)	23988
No. of Households (2001)	4314
No. Shops	396
No. of (Restaurants+ hotels) and shops	15 / 4
Annual Population Growth Rate (1991-2001)	0.9 percent
Estimated Population for 2003	24,422
Population Density	1008.75 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 Siraha was 0.11 kg/person/day. This is lower than average waste generation rate in urban areas of Nepal which is 0.25 kg/person/day. This may be because of the rural nature of the municipality. Considering the estimated total population of Siraha in 2003, which is 24,436, the total amount of household waste generated in the municipality comes out to be 2.7 tons per day. If we assume that 75 percent of the total municipal waste is generated by households, then the total amount of municipal waste generated in Siraha comes out to be 3.6 tons per day.

The survey also indicated that more than 70 percent of the waste is organic in nature, which is similar to the waste composition found in most other municipalities in Nepal. Paper and plastics made up 13.1 and 8.7 percent of the waste respectively, which seems to be quite high for a relatively rural municipality like Siraha.

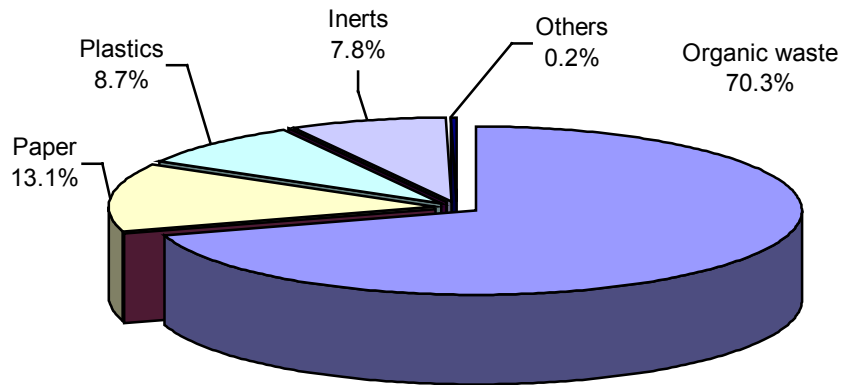


Figure 1 Waste Composition

The loose density of household waste in Siraha was calculated to be 557.62 kg per m³. This is a fairly high value, especially when considering that the sampled waste had a large amount of paper and plastics, which have relatively low densities.

Information on Siraha's waste generation and composition is based on waste samples collected from 40 households in Ishwar Nagar Tole, Campus Gate Tole, and Incili Chowk in wards 1 and 7 that had waste from 206 people.

3 Waste Collection

The Municipality claims that city generates about 0.5 tons of waste per day and it collects all the waste generated in the Municipality, which is very unlikely. If we assume that the total waste generation rate is 3.6 tons per day and the collection rate is 0.5 tons per day, then the collection efficiency is about 14 percent. Most of the waste that is not collected is probably waste from rural areas.

For waste collection, the Municipality has a tractor trailer with capacity of 2.25 m³, three wooden baskets and three handcarts. Municipality has roadside pickup service three times a week. One supervisor and 4 permanent sweepers are assigned for the solid waste management. The sweepers sweep 3 km of the street daily.

4 Final Disposal

The collected waste is disposed in a crude dumping site on the banks of Kamala River and Bhamhar River. No specific area is allocated for waste disposal on the river banks, and the waste is disposed wherever it is convenient. The Kamala River bank, which is 1.5 km from the city, has been in use since July 2003. Bank of Bhamhar River is in use since 6 years and it is about 1 km far from the city. Lifespan of both the sites can't be estimated as the river sweeps off the waste.

Before these sites, the municipality compound besides the municipality building was used for disposal of waste. The site is half a kilometer away from the city and it covers an area of 0.6 ropani.

The Municipality has no plans to construct a landfill site as they don't face problem with the present dumping site. Also they think that waste disposed is swept off and no problem is created on the land of the Municipality.

5 Composting and Recycling

The Municipality claims that 99 percent of the households are practicing indigenous composting. However, this is unlikely, and the field survey showed that the organic waste in the waste stream is quite high.

Municipality does not recycling programmes of its own but scrap dealers help minimization of waste by separation of reusable and recyclable material at the source.

6 Special Waste Management

Hospital waste is kept in a pit inside the hospital compound and burnt. The shoemakers take dead animals. They sell the leather while the bones are disposed outside the city area by themselves.

Construction and demolition waste is disposed beside road or sometimes buried. There are cottage and small industries in the municipality who sometimes burn their waste inside the compound itself.

7 Community Mobilization

Milan Samaj Sewa Centre at Taleshwor Marg is involved in street sweeping, waste collection, waste transportation and public education. It was established in 2058 B.S. and has started working with the Municipality since Asadh 2059. It has signed a year's contract with the municipality. The source of their income is service fee from household waste generators and municipality.

The CBO is responsible for sweeping 3 km of street daily. They claim to collect about 1 ton waste from 150 households and shops. The equipments, used for waste collection and transportation are shovels, picks and tractors. The collected waste is dumped in the public place wherever there is open place or easy. It also involves school for street clean up once a week.

9 Organizational and Financial Aspects

No section or unit in the municipal organizational structure is directly responsible for the solid waste management. Recently My Dularjan Yadav has been appointed as a supervisor for town cleansing services. Altogether there are 6 staffs and 4 sweepers appointed for waste management.

The municipality allocates approximately Rs. 100,000 annually for solid waste management. This is about three percent of the total annual expenditure of Siraha Municipality.

8 Major Problems and Issues

The main problem associated with waste management in Siraha is the lack of solid waste management section and proper dumping site. Municipality also lacks vehicles, collection equipment and trained manpower. Lack of awareness among the Municipality staffs and community about waste management is also a

problem. The Municipality is also having problem with water logging, as drainage facilities are inadequate.

10 Conclusion & Recommendations

Siraha Municipality does not have a waste management section nor a proper waste management system. Although this may not seem to be a major problem immediately, it will create problem in near future if the same condition remains. Therefore, Siraha Municipality needs to start developing appropriate structures and system for effective waste management. The municipality's work with Milan Samaj Sewa Centre is a good attempt to work with local groups.

Recommendations:

1. Solid waste management unit should be established with trained staffs to initiate SWM activities.
2. Proper waste collection system should be developed so that open piles on the streets are discouraged.
3. Municipality should construct a simple landfill site.
4. Along with the construction of landfill site municipality should also promote composting and recycling.
5. Solid waste management trainings should be held for municipality staffs as well as in community level.
6. Community and school-based programmes should be launched to increase awareness and the municipality should work closely with community based groups such as Milan Samaj Sewa Centre.

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Annex 1: Photographs



Street Sweeping



Tractor Used for Waste Collection



Littering along the Road



Haphazard Disposal of Waste in Front of District Postal Office



Dumping Site in front of Municipality Building



Dumping Site Besides the Bhamhar River



Waste Dumped Next to Municipality Compound



Waste Collection Point in front of Dairy



Reclamation of an Old Dumping Site



Water Logged Area