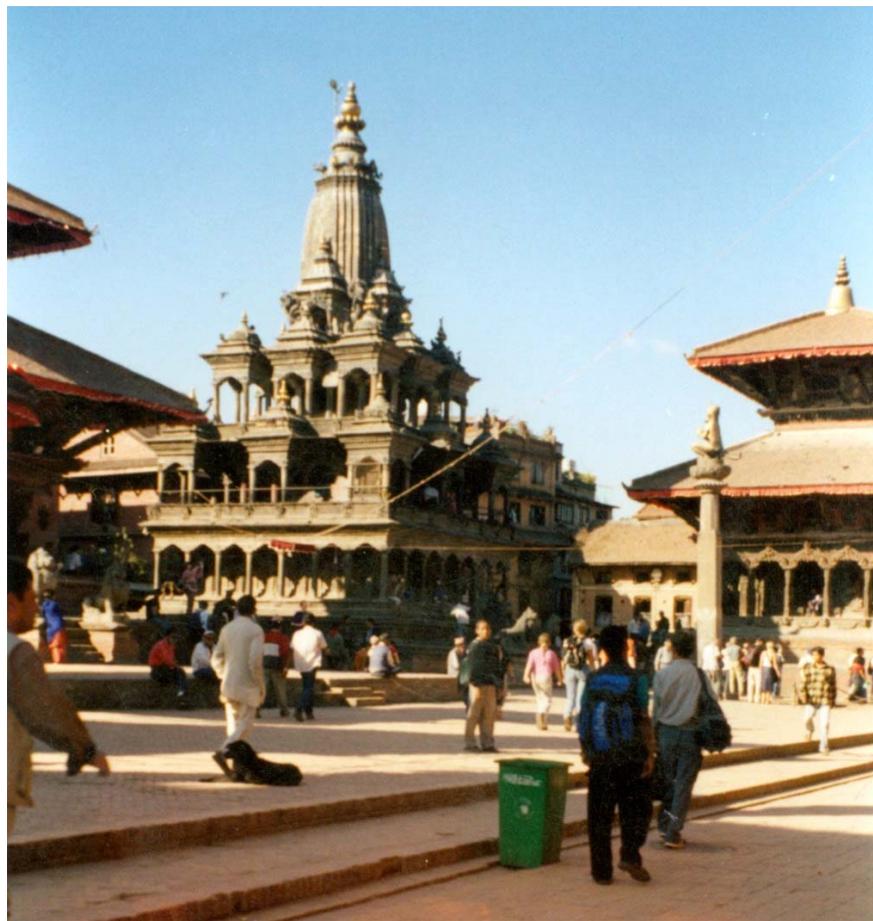


Solid Waste Management in **Lalitpur Sub-Metropolitan City**



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 Lalitpur Sub-Metropolitan City¹ 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 based on field investigations conducted by Merina Ranjit.

1 Introduction

Lalitpur Sub-Metropolitan City (LSMC), located immediately south of Kathmandu, across the Bagmati river, is the third largest city in Nepal. The city is bordered by Karmanas Khola to the east, Nakhu river to the south, Bagmati River and Kirtipur towards the west, Bagmati river and Kathmandu towards the north. The ancient city of Lalitpur was established as a municipality almost 85 years ago and in 2053 it became a sub-metropolitan city. The city is famous for its rich cultural heritage

Table 1: Background Information

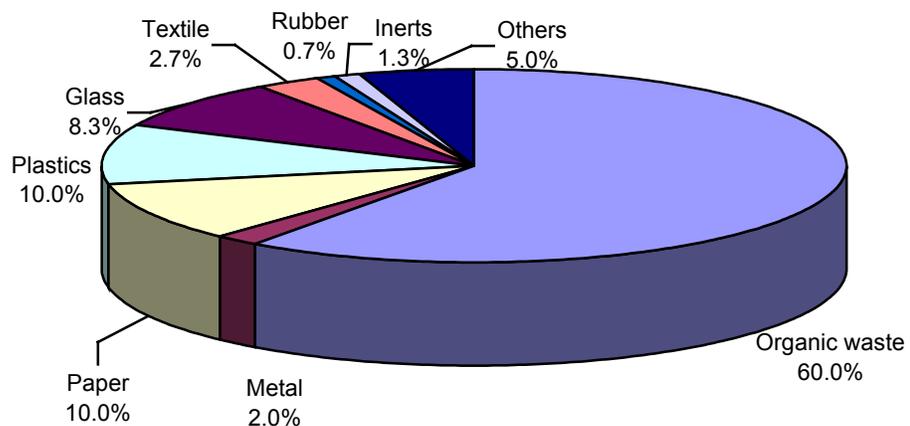
NAME	LALITPUR SUB-METROPOLITAN CITY
District	Lalitpur
Year of Establishment	2053 B.S. (as a sub-metropolitan city)
No. of Wards	22
No. of Urban Wards	14
No. of Rural and semi urban Wards	6
Total Area	15.47 sq. km
Built-up Area	5.18 sq. km
Major Rivers and Ponds	Bagmati River, Nakhu River, Pimbahal Pokhari, Prayag Pokhari, Maharani Pokhari
Total Road length	Black-topped: 35 km Earthen: 16.25 km Total; 51.25
Population (2001)	162,991
No. of Households (2001)	34,996
No. Shops	More than 1800
No. of Restaurants, hotels and shops	More than 100
Annual Population Growth Rate (1991-2001)	3.5 percent
Estimated Population for 2003	174,600
Population Density	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 Lalitpur was 0.37 kg/person/day. This is a bit higher than the average waste generation rate in Nepalese municipalities, which is 0.25 kg/person/day. Considering the total population of Lalitpur in 2003, which is estimated to be 174,504, the total amount of household waste generated in the municipality comes out to be approximately 64.6 tons per day. If we assume that non-household waste (commercial, institutional, and industrial) make up 25 percent of the waste stream, the total waste generated in Lalitpur becomes approximately 86 tons per day. A recent study by JICA estimated the total waste generation in Lalitpur to be approximately 75 tons per day.

The survey also indicated that about 60 percent of Lalitpur's waste is organic, while plastic and paper each make up 10 percent of the waste stream. This is similar to waste composition in other municipalities in Nepal. The amount of glass, however, seems a bit higher than normal municipal waste.

Figure 1 Waste Composition



Information on Lalitpur's waste generation and composition is based on waste collected from 69 households with 319 people in Jwagal and Sanepa areas.

3 Waste Collection

According to LSMC, the city collects approximately 80 percent of the total waste generated in the city or approximately 60 tons of waste per day. However, if we assume that the total amount of waste generated is 86 tons per day and the collection rate is about 60 tons per day, then the collection rate is 70 percent. A recent study by JICA estimates the total amount of waste collection in LSMC to be approximately 52 tons per day and generation to be approximately 75 tons per day, resulting in collection efficiency of 69 percent.

LSMC has 169 sweepers, who sweep the core areas of the city twice a day and most other areas once a day. Sweeping is done using ordinary brooms with long handles and the waste is collected in handcarts or waste collection vehicles using shovels. The municipality has the following vehicles for waste management:

- Tractors – 8
- Tipper Trucks– 21
- Dumper Placer – 5
- Compactor – 11
- Loader – 1
- Total - 46

Most of these vehicles were donated by the Indian government and are in fairly good condition.

Besides the municipality, several NGOs are also involved in waste collection in the city.

The collection system varies in different parts of the city. In some places, particularly, in areas where collection is done by NGOs, there is door-to-door

waste collection with people paying a monthly fee. In some areas, people put the garbage in the municipal vehicles as it goes by and in some areas, people place the waste on the streets from where the municipal staff collect it.

4 Final Disposal

Lalitpur does not have its own disposal site and all collected waste is taken to the disposal site operated by Kathmandu Metropolitan City along the Bagmati River. Currently the waste is being buried along the Bagmati River in the Sundarighat area.

Till the year 2000, LSMC was using the Gokarna Landfill site, along with Kathmandu Metropolitan City for disposing its garbage.

In the future, the municipality has plans to landfill its waste in Okharpauwa, which is now being constructed by SWMRMC. The site is approximately 28 km from Lalitpur.

5 Composting and Recycling

LSMC does not have any composting or recycling programmes of its own but a few NGOs involved in waste management are practicing composting and recycling. Among these NGOs, Women Environment Preservation Committee (WEPCO), has the most experience in waste composting and recycling. It is operating a compost plant and a paper recycling facility. It is also promoting home composting.

6 Special Waste Management

Patan Hospital and B&B Hospital, which are the two biggest hospitals in Lalitpur, have their own incinerators to manage hazardous medical waste. The rest of the medical waste generated in the city is dumped along with the municipal waste. The municipality does not have any systems for collecting and managing special waste such medical waste, industrial waste, construction and demolition debris and dead animals.

7 Community Mobilization

LSMC's Sanitation Section is not involved in community mobilization but the municipality has a Community Development Section, which is working with community groups on various social issues.

Several NGOs, such as WEPCO, Nepal Pollution Control and Environment Management Centre (NEPCEMAC), Women's Initiative for Environment and Development (WIED) and Women Environment Group (WEG), are involved in waste management in Lalitpur.

WEPCO has been involved in door-to-door waste collection and recycling since 1992 and it is one of the most active NGOs involved in waste management. It is currently collecting waste using tricycles from about 1000 households in wards 1, 2 and 10. Most of the collected waste is given to the municipality for disposal and some of it (about 1 ton per day) is composted in WEPCO's own composting facility. WEPCO also has a small paper recycling unit and it is involved in public education campaign and supporting school-based eco-clubs.

NEPCEMAC has been involved in door-to-door waste collection since 1997. Currently it collects waste from 2200 households in Kusunti area using tricycles as well as tractor and truck. Similarly, WIED is collecting waste from 350 households and WEG is collecting waste from about 500 households. WEG is also making compost from some of the waste it collects.

8 Organizational and Financial Aspects

The Sanitation Section within LSMC is responsible for waste management activities in Lalitpur. The section has a total of 211 staff, out of which 169 are sweepers and 17 are drivers. Mr. Mukunda Ranjit, the head of the Section has received a six-month training on waste management from Urban Development Through Local Efforts (UDLE), a project funded by the German Government.

The municipality spends approximately Rs. 21 million in waste management each year, which is approximately 15 percent of the total municipal budget.

9 Major Problems and Issues

The main problem associated with waste management in Lalitpur is the lack of a sanitary landfill and compost plant for the treatment and disposal of collected waste. The municipality has also mentioned lack of public concern and participation as a major problem. The municipality has therefore stressed the need for waste minimization and recycling programme at the household level.

10 Conclusion & Recommendations

Lalitpur has adequate equipment for waste collection and several NGOs are also active in the city. However, the lack of a central waste treatment and disposal facility is hampering the work of the municipality. The current practice of dumping waste along the Bagmati river must be stopped and waste should be recycled to the extent possible.

Recommendations:

1. SWMRMC should assist in constructing a landfill and a compost plant immediately.
2. LSMC will also require a transfer station if waste is to be taken to Okharpauwa for disposal in the future.
3. In many places in the city door-to-door collection system is practiced, but in some areas where this is not done, waste is still dumped on the street before it is collected. Door-to-door waste collection system should be extended throughout the city.
4. Some NGOs such as WEPCO are doing a remarkable job in waste collection, recycling and raising public awareness. Such organizations should be supported so that they can expand their activities. These organizations can play an important role in motivating people to minimize waste at source.
5. The city should start a separate service for medical waste collection and management.

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Street Side Waste Collection Bins



Waste Collection Rickshaw



Paper Recycling Plant Operated by WEPCO



Compost Plant Operated by WEPCO



Compost Produced by WEPCO



Waste Dumping Along the Bagmati River