STUDY ON SOLID WASTE MANAGEMENT IN TOURIST AREA OF NAGARKOT

NETIF

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OVERVIEW OF THE PRESENTATION

- **Introduction**
- **Objectives of the study**
- **Study area**
- **Frame work of the study**
- **Methodology**
- **Results and Discussion**
- **Limitation of the study**
- **Conclusion and Recommendation**

INTRODUCTION

- Solid waste management (SWM) is a common issue in most places of Nepal including tourist destinations

- For better tourist attraction better SWM is necessary

- NETIF sponsored this study to help better management of Solid waste in Nagarkot (tourist destination)

OBJECTIVE OF THE STUDY

➢ To quantify and characterize the solid waste being generated in hotels and shops

➢ To know the existing condition of solid waste management.

➢ To recommend appropriate solid waste management measures in the area

Study Area (Nagarkot)
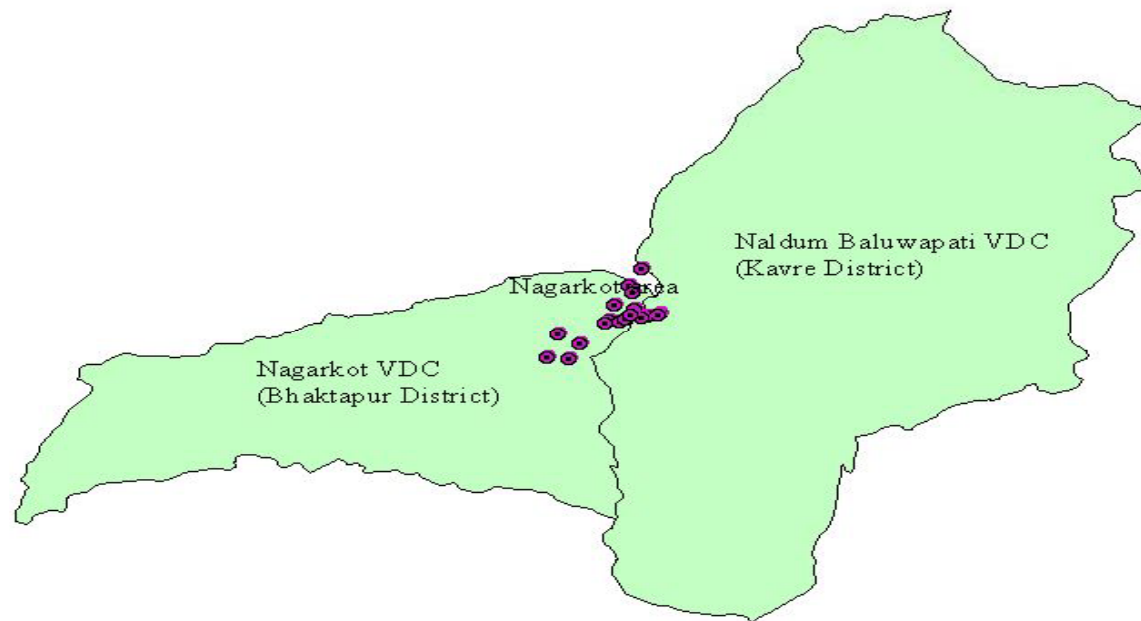
- It is connected to two major districts of Nepal- Bhaktapur and Kavre.

- It has got three village development committees– Nagarkot, Naldum and Bageswori.

- The study area includes ward no 2,5,6,7 and 8 of Nagarkot .

# Total number of hotels and shops in Nagarkot Tourist area

Total number of hotels/shops	
Large hotels	35
Small hotels/restaurants	50
shops	30

Source: Nagarkot tourist information center

Tourism in Nagarkot

- There is approximately about 100000 lakh tourist flow per year in Nagarkot.

- Tourist flow are more during September-March, it may reach 120-150 tourists per day in a single large hotel.

FRAMEWORK OF THE STUDY
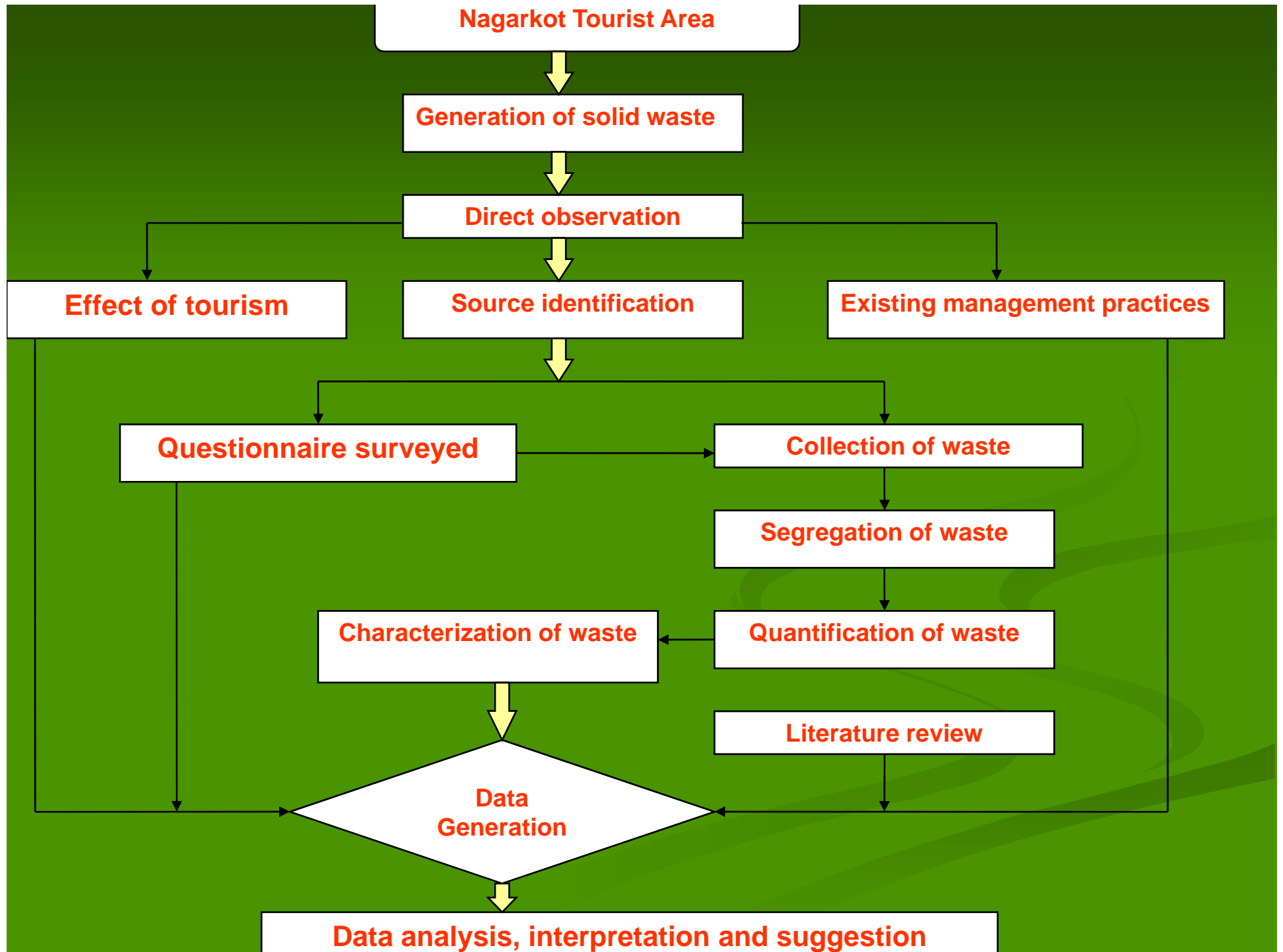
METHODOLOGY

STUDY DURATION

➢ The field work was carried out from 24th May to 31st May 2009 i.e. during the off-season

DIRECT FIELD OBSERVATION

➢ Current management practices,

➢ type ,rate and amount of waste generated

FORMAL & INFORMAL DISCUSIONS

➢ Interviews with the concerned authorities

QUESTIONNAIRE SURVEY

- **Baseline information on the status of the solid waste management system**

- **The questionnaire mainly included –**

  ✓ **solid waste management practices**

  ✓ **knowledge about recycling & reusing**

  ✓ **practice of segregation of waste and composting**

  ✓ **willingness to make compost**

  ✓ **understanding of environment and tourism**

QUANTIFICATION

- Two plastic bags each day was given to the shops and hotels for the collection of biodegradable and non-biodegradable waste

- Each day waste was sorted and weighed into biodegradable, glass (reused and not reused), plastic, paper, metal and dust

- It was done for 7 consecutive days

Sampled hotels and shops

Hotels/shops	Total numbers	Sampled number for Questionnaire Survey	Sampled number for sorting and weighing the waste
Large hotels	35	33	15
Small hotels	50	15	10
Shops	30	15	10
Total	115	63	**35**

DATA ANALYSIS

- Per capita Waste generation of hotel and shops

- Average daily waste generation from hotels and shops

- Percentage of biodegradable and non-biodegradable waste generated by different categories of hotels and shops
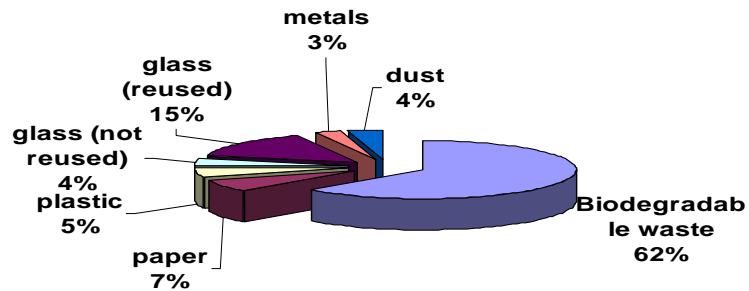
- Evaluation of existing waste management practice

RESULT AND DISCUSSION

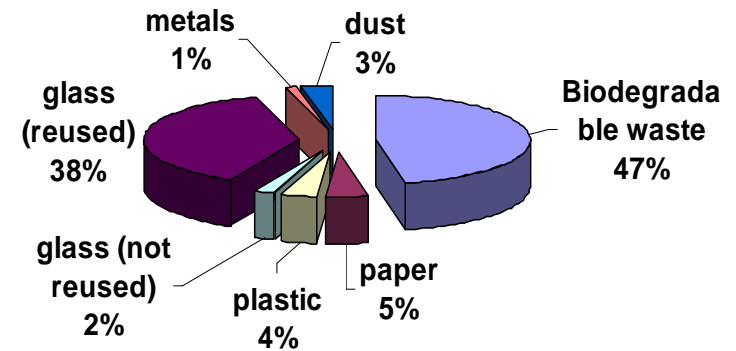# Amount and composition of waste in Nagarkot tourist area

- Total waste per day (from tourist establishments) = 1453.83 kg/day

- Total waste per day (large hotel) = 1008 kg/day
- Total waste per day (small hotel) = 388.5 kg/day
- Total waste per day (shops) = 57 kg/day

- Per capita waste in large hotels = 1.09 kg/day/person
- Per capita waste in small hotels = 0.41kg/day/person

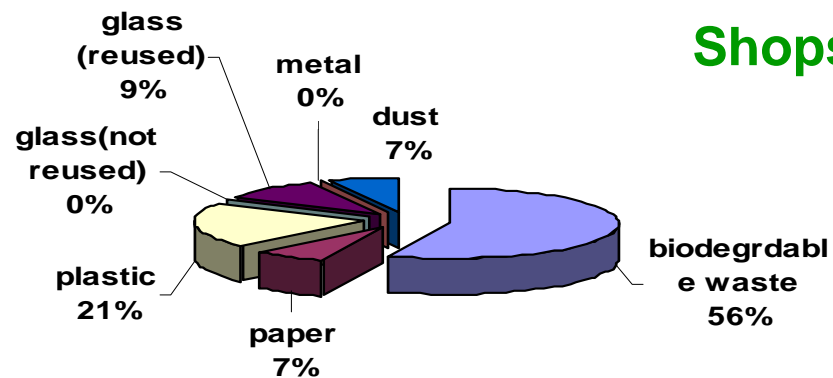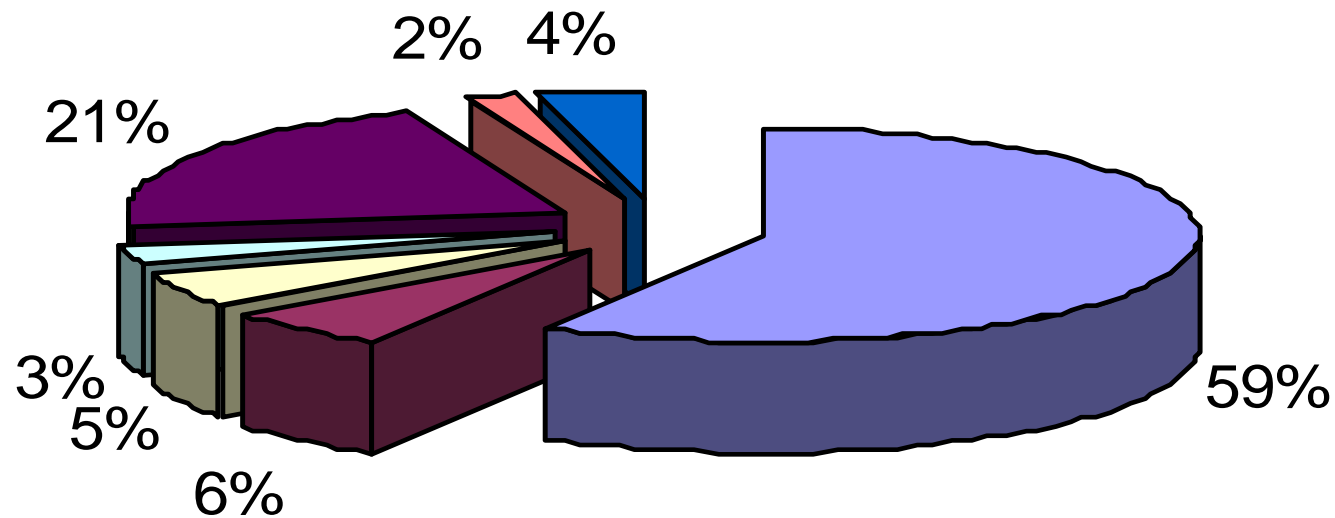# COMPOSITION OF WASTES IN LARGE, SMALL HOTELS AND SHOPS
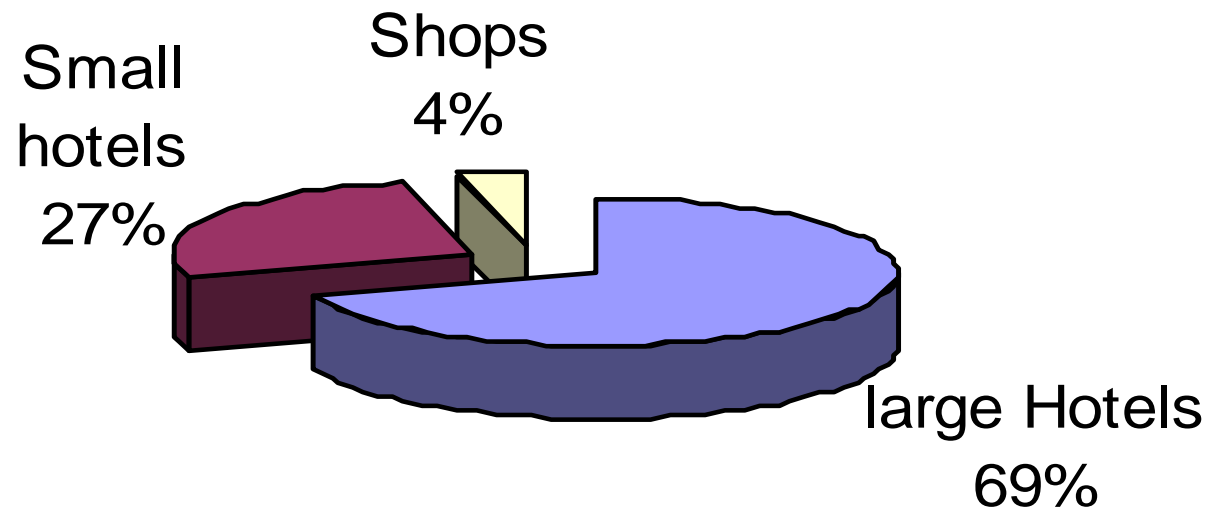

Large hotels

- metals 3%
- dust 4%
- glass (reused) 15%
- glass (not reused) 4%
- plastic 5%
- paper 7%
- Biodegradable waste 62%

Small hotels

- metals 1%
- dust 3%
- glass (reused) 38%
- Biodegradable waste 47%
- glass (not reused) 2%
- plastic 4%
- paper 5%

Shops

- glass (reused) 9%
- metal 0%
- dust 7%
- glass(not reused) 0%
- plastic 21%
- paper 7%
- biodegrdable waste 56%

Generation rate of different categories of waste from Hotels and Shops

2% 4%

21%

3%
5%

6%

59%

☐ biodegradable waste	☐ paper
☐ plastic	☐ glass(not reused)
☐ glass reused)	☐ metal
☐ dust	

Waste Generation From different sources

Biodegradable and non-biodegradable waste generation in large, small hotels and shops in tourist areas in Nagarkot
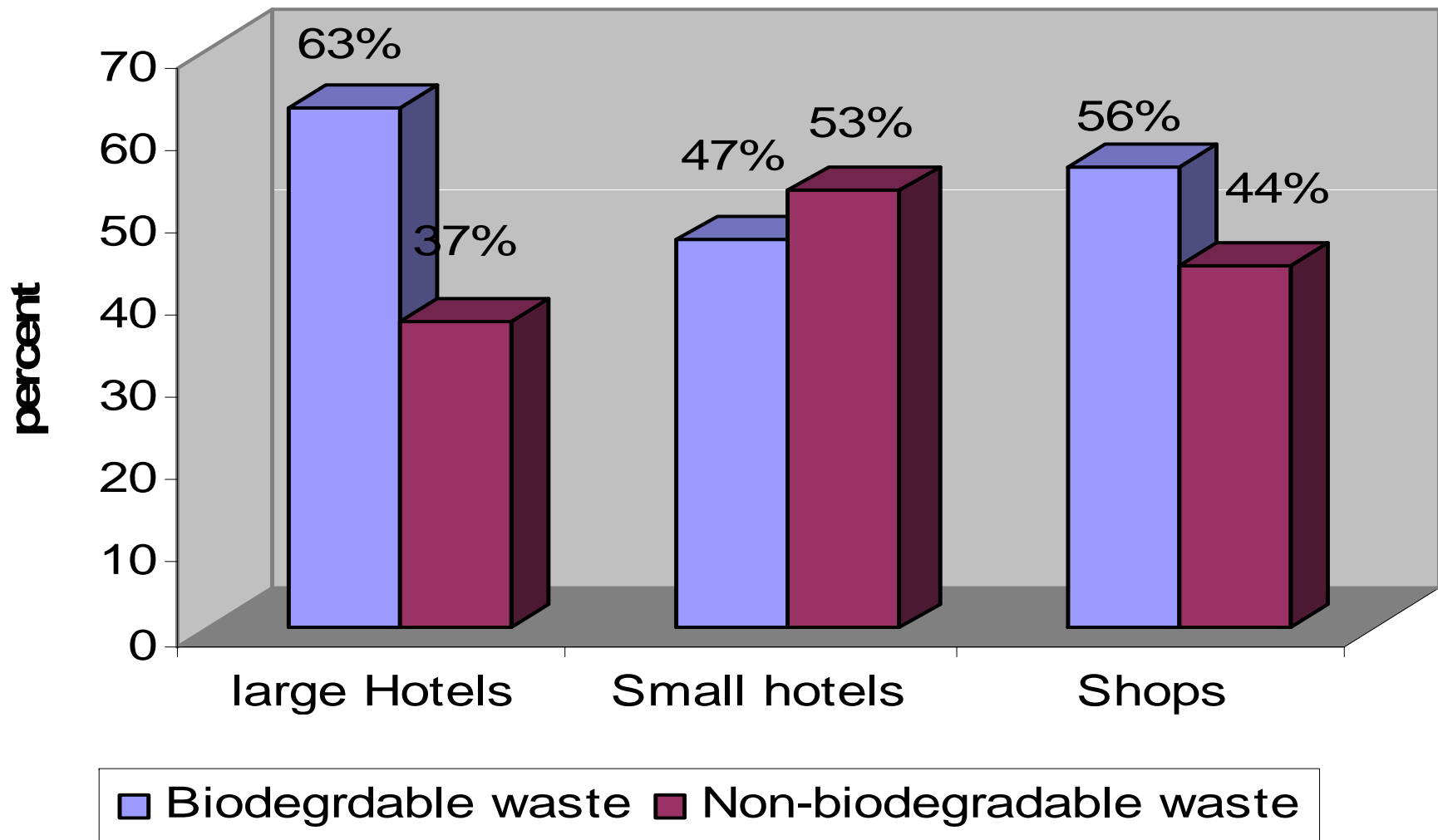
MANAGEMENT PRACTICES
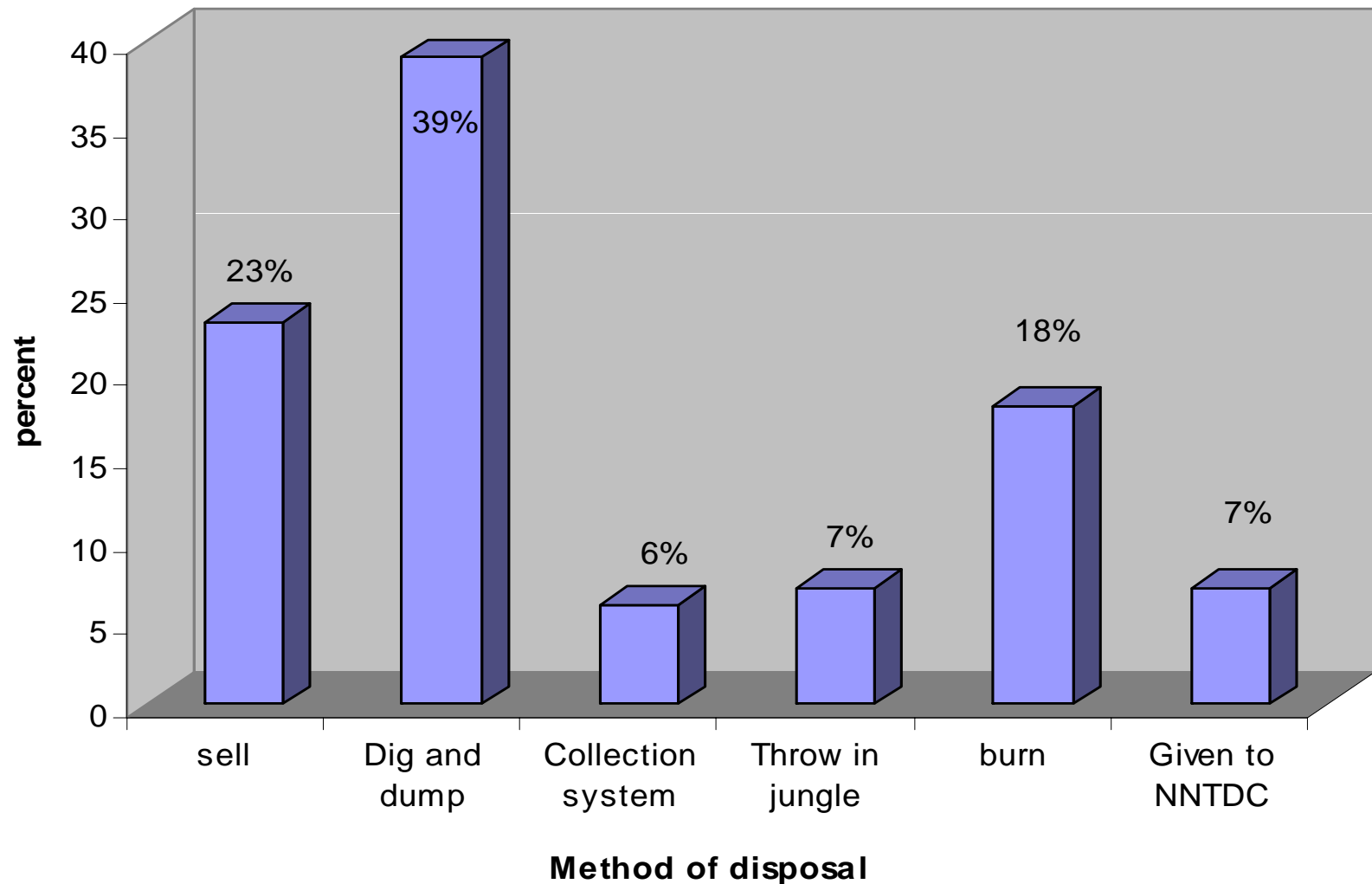
Collection system

- **The collection of wastes in the hotels and shops is mostly done in plastic buckets/bags, metal bin or paper boxes.**

- **There is no specific type of collection system prevailed, though there is high demand.**

- **Few hotels have hired private company to manage their waste**

- **There was a plan to manage the waste by NNTDC (Nagarkot-Naldum Tourism Development Committee) by introducing collection system but it has not been practiced yet**

- **Most of the hotels and shops are managing their wastes by themselves**

Method of disposal of biodegradable wastes in hotels
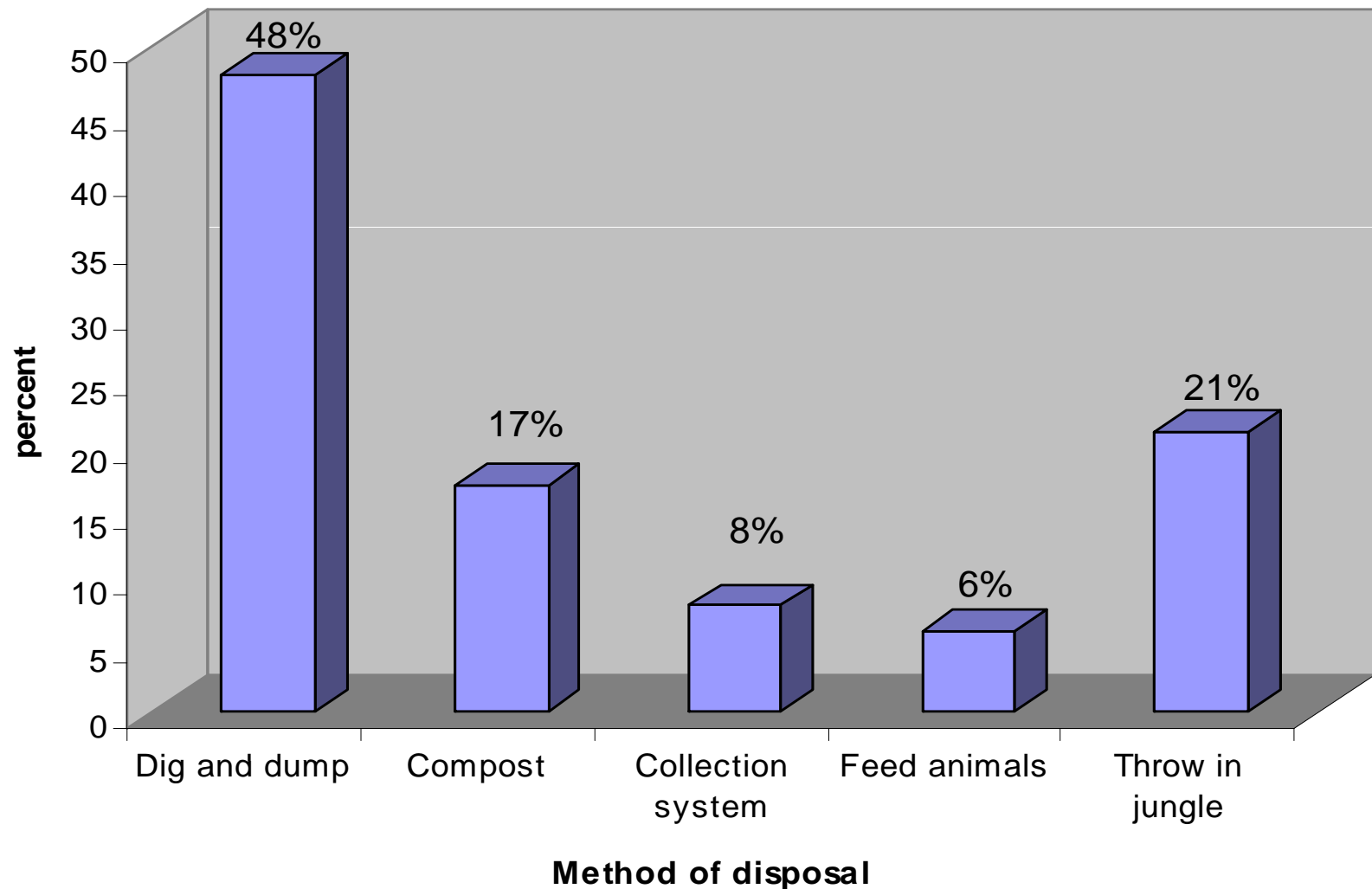
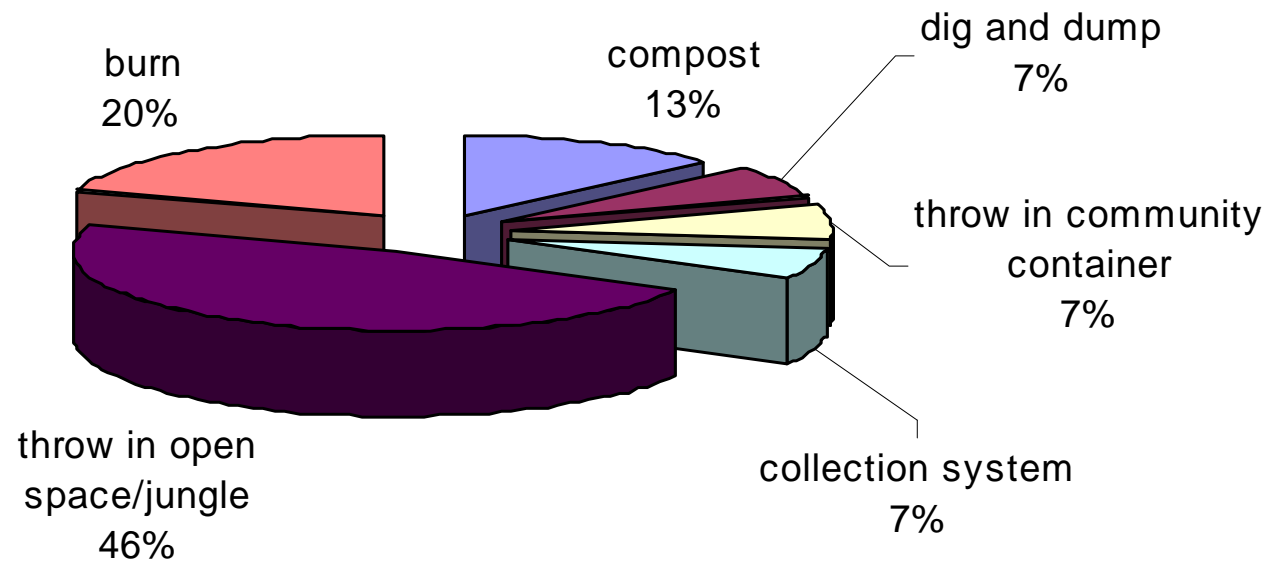# Method of disposal of non-biodegradable wastes in hotels

Management practices in shops

Management of Waste in shops

burn
20%

compost
13%

dig and dump
7%

throw in community
container
7%

collection system
7%

throw in open
space/jungle
46%

Reuse and Recycle

- Some hotels are utilizing the paper wastes for burning wood in staff kitchen, reusing the empty beer bottles for the decoration in the garden and some hotels are found to reuse the chicken parts discarded by chef by sending it to the food processing company for flavoring.

- Many bottles (including mineral bottles) which are not sold to the scrap dealers are creating problem in many hotels.
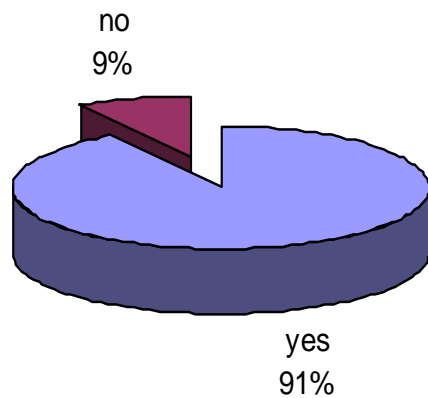
Practice of composting in hotels and shops
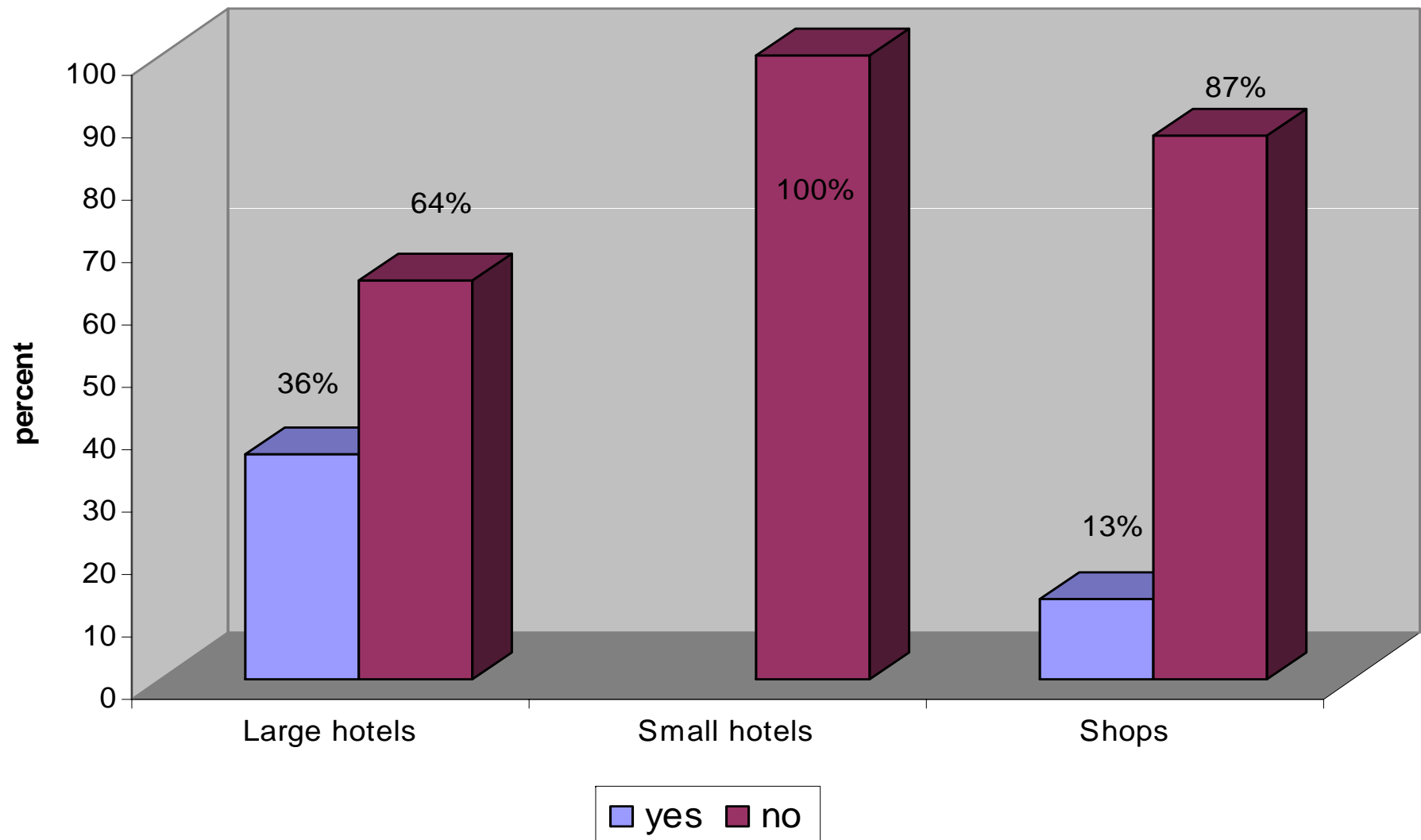
Composting contd…

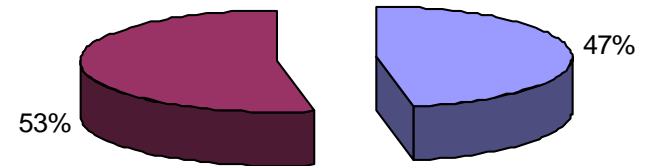- **Few hotels and shops refuse to make compost as they say they don't have land for making and utilizing the compost.**

- **Most of the hotels and shops are willing to make compost if they get training**

Willing to pay for the collection system

SMALL HOTEL

53% 47%

If whole community agrees to pay · Willing to pay

LARGE HOTEL

no 9%

yes 91%

yes · no

SHOPS

no 13%

yes 87%

yes · no
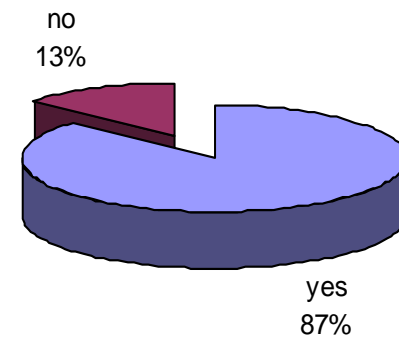
Waste Management Infrastructure

- In Nagarkot tourist area, there is no incinerator being used but NNTDC has constructed incinerator (not in use)

- 89% of the hotels have their own septic tank. But few hotels don't have septic tank for the management of sewerage, so is directly discharged.

LIMITATIONS OF THE STUDY

- Since the time of the study was not a tourist season, some variations on amount of the waste may change with other season.

- Non-point garbage was not measured by any means. No calculation was made for the rubbish thrown on the forest and the road side.

CONCLUSIONS

➢ The total average waste generated from the hotels and shops is 1454.18 kg/day.

➢ Per capita waste in large hotels is 1.09 kg/day/person and in small hotels is 0.41kg/day/person

➢ The large hotels account for highest amount of solid waste i.e. 69% followed by small hotel accounting 27% and then shops with 4%

➢ High amount of waste is generated when there is high number of tourist in hotels.

➢ The waste will be 3-4 times more in the tourist season.

➢ Most of hotels and shops are dumping their waste in the hotel backyard or nearby jungle. If the trend continues there will not be place to dump more waste in future.

➢ Mineral water bottles and many wine/ whisky bottles are creating problem in many large hotels.

RECOMMENDATIONS

➤ All the small and large Hotels, shops and tourism business holder in Nagarkot should contribute economically for the fund to manage the solid waste with their full capacity.

➤ Effort should be made to mobilize and involve the clubs and social organization for the implementation of SWM.

RECOMMENDATIONS contd…

For Biodegradable waste

- Composting of organic waste would be suitable in each hotel and compost bin should be made available for the hotels and shops where open land is not available.

- Biogas production would also be suitable

- Animal husbandry such as pig rearing can be beneficial to utilize food waste and to provide employment opportunity

For Non-biodegradable waste

- Collection system for the non-biodegradable waste and selection of a common landfill site is recommended.

- The plastic wastes and other mineral water bottles generated can be reused, recycled or reduced.

- An incinerator can be used for the burning of the non-biodegradable wastes that can be placed in suitable location.

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- ❖ **All the people and establishments at Nagarkot**

"Prevention is better than cure"

Thank you