

**A STUDY OF COMMUNITY PARTICIPATION IN
SOLID WASTE MANAGEMENT IN KATHMANDU
METROPOLITAN CITY**

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RECOMMENDATION

This is to certify that the Thesis

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has been prepared as approved by this program in the prescribed format of the faculty of Management. This thesis is forwarded for examination.

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VIVA-VOCE SHEET

We have conducted the viva-voce examination of the thesis

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and found the thesis to be the original work of the students and written according to the prescribed format. We recommended the thesis to be accepted as the partial fulfillment of the requirements for Master of Philosophy.

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DECLARATION

I hereby declare that this thesis entitled "Community Participation in Solid Waste Management in Kathmandu Metropolitan City" submitted to Central Department of Public Administration, Faculty of Management, Tribhuvan University has been completed as per the prescribed format of central department of public Administration, Tribhuvan University and this is my original work done for the partial fulfillment of the requirement of the degree of Master of Philosophy in Public Administration (M Phil.) under the guidance and supervision of Prof. Dr. Govinda Prasad Dhakal. I personally will have no objection if data and work of my thesis, in part or whole photocopied or used for other research purpose.

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The solid waste management Act has provided the required authority and functions to the local bodies for managing the waste but the problems being serious. So, the government of Nepal have been felt that the managing the waste should be done through the Community Participation model. The KMC is the only one of metropolitan city of the Nepal and it faces the challenges to effective management of the solid waste in their jurisdictions. Considering these facts, I attempted to conduct the research work titled "Community Participation in Solid Waste Management in Kathmandu Metropolitan City" for the partial fulfillment of the requirements for the Master's of Philosophy in Public Administration.

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ABSTRACT

Solid waste management in Nepal has been one of the important and seriously discussed topics. Kathmandu Metropolitan City is unable to handle the solid waste by itself. So, community participation is being encouraged to manage the waste. In this way, my study will focus on community participation in solid waste management in Kathmandu. There are varieties of study areas for my research, Old Newar settlement (Ashan and Jyatha), Thamel (Tourism area), and Samakhushi Town Planning (ward no:-29 out of 38 wards of Kathmandu Metropolitan City.) Waste management in those areas has been managed through Ngos and Private sectors, communities, and Metropolitan Authority. Household questionnaire and interviews will be used as the research tools and a total of 48 respondents and 11 key respondents (2/2 senior employees) from community organizations including 3 staffs from environment department of Kathmandu Metropolitan City respondents interviewed around the study areas. The study will use both qualitative and quantitative approach to analyze the information.

It is believed that about 75% of the total waste generated in Kathmandu is of organic type which can be composted. The main aim of Solid Waste Management Practice is seen in all these settlements to segregate waste at source. All the communities have different approaches which the people follow in segregating waste. In all the settlements bins are provided. At Ashan and Local Newar Settlement area has a central collection system but the community members are asked to segregate waste. In Thamel too, it is a similar case but a private company is involved (directly) in managing waste. In Samakhushi Town Planning area, people are encouraged to manage waste in individual level in their own household.

This Study will try to depict the status of solid waste management practices as well as the status of community participation community members in other activities such as recycling-reuse, disposal of waste, decision making within entire ward no 29 out of 38 wards of Kathmandu Metropolitan City.

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ABBREVIATIONS

ALM	:	Advanced Locality Management
B.S	:	BikramSambat (Nepali Calendar)
CBOs	:	Community Based Organizations
CBS	:	Central Bureau of Statistics
KMC	:	Kathmandu Metropolitan City
MCDs	:	Multipurpose Community Development Service Nepal
MCGM	:	Municipal Corporation of Greater Mumbai
MSW	:	Municipal Solid Waste
NEFEJ	:	Nepal Forum of Environmental Journalists
NEPCEMAC	:	Nepal Pollution Control and Environment Management Centre
NGO	:	Non-Governmental Organization
NWMC	:	National Waste Management Council
NWMC	:	National Waste Management Council
PPP	:	Public Private Partnerships
SWM	:	Solid Waste Management
SWRMC	:	Solid Waste Management and Resource Mobilization Centre

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Community participation is the sociological process by which residents organize themselves and become involved at the level of a living area or a neighborhood, to improve the conditions of daily life (water, sanitation, health, education, etc.). It comprises various degrees of individual or collective involvement (financial and/or physical contributions, social and/or political commitment) at different stages of a project.

Human existence is dependent on the use of material resources which eventually become waste. As developing countries achieve greater socio-economic well-being, the more waste per capita is realized and more critical is the need for effective and efficient SWM systems. Performance of such systems depends on the meaningful participation of individuals, Communities and institutions, producers, NGOs and governments. Every individual generates waste and in the municipal areas, the scope of SWM is country-wide. Consequently, public participation is national in scope and would involve everyone in the country. Such participation may be the population as a whole, or specific interest groups such as: waste generators; waste pickers; recycling industries; waste collection contractors; SWM facility operators and staff, residents in close proximity to SWM facilities, politicians, central government and public agencies; financial agencies; etc. Since SWM involves everyone in the country, there is a wide range of stakeholders who are required to operate and manage SWM systems.

On the other, The population of Nepal is growing at an annual rate of 2.25 percent between 1999 to 2001. According to Pokhrel and Viraraghavan (2005). Nepal has one of the highest urban growth rates in South of Asia (6.5%). However, a preliminary data has been released on September 12, 2011 about the population census conducted by Central Bureau of Statistics (CBS) Nepal, which states that the population of Nepal has reached 26,620,809 in 2011 with an increase rate of 1.4% (the population census 2011 was conducted from 17 June-27 June, 2011) (CBS,

2011). There has been a long trend of migration in Nepal. International migration started in Nepal since the first quarter of the 19th century. These were mostly the young males who went there as laborers or for the recruitment. Since then international migration has almost become a trend. Likewise, internal migration too is an important phenomenon of the country. It is a vital component of population redistribution. Kathmandu city alone received 78.6 per cent of the total rural migrants and 64.8 per cent of the urban migrants from other districts. Apart from Bhaktapur, other cities of the Kathmandu Valley such as Lalitpur (32%), Madhyapur (27.6) and Kirtipur (23.2%) have also been receiving increasing proportion of in-migrants during the last decade. Internal migration is basically the outcome of the natural disasters, search for better livelihood and educational and employment facilities. In last decades displacement due to insecurity has become one of the reasons for internal migration (KC, 2003). The urbanization process has to be managed. If it is haphazard it brings different environmental, social or economic problems. The demands for different basic services cannot be fulfilled. Thus, planned urbanization is a necessity (Basyal and Khanal, 2001). In a developing country like Nepal migration is the result of the pushed factors rather than the pulled factors.

There has not been a specific, systematic or comprehensive plan for urbanization till the Tenth (2002-2007) plan in Nepal. It gives the information about preparation of the town plan, establishment of infrastructures, urban services and others but there is no national policy regarding urbanization and managing of the migrants to the urban areas (Tiwari, 2008).

According to the 2001 census only 15 -16 % of the total population of Nepal lives in the urban areas. Most of the facilities like education, employment are concentrated in the urban areas so people prefer to live in the urban areas. Thus, the urbanization rate is higher because people prefer to live in urban areas than the rural ones (www.wateraid.org). The urbanization rate is less compared to other developing countries is very less but as the area and the available resources of Nepal is less this small urban population has become an enormous burden for the government in terms of environmental health, sanitation and environmental management. The urbanization in Nepal is rapid and the provision of facilities to the population is lagging behind (Pokhrel and Viraraghavan, 2005).

The increase in the population has a negative outcome on the environment. Air pollution is one of them. Outdoor air pollution is a problem for Kathmandu valley. Though air pollution is the gift of industrialization the main source of air pollution in Kathmandu is the poorly maintained vehicles. Industries like different cement factories have been closed for different reasons but the vehicles in the streets of Kathmandu have increased in threefold from 1993 to 2003. Other minor sources are domestic cooking fuels, refuse burning and re-suspended dust particles (Joshi, 2003).

Along with rapid population and urban growth rates, problems connected to municipal solid waste are increasing. Burning piles of waste can be seen along roads and river side. Furthermore, inaccurate depositing of waste occurs along the river banks and even in the rivers, causing hazardous health and environmental problems in-situ as well as downstream (Pokhrel and Viraraghavan, 2005). Managing solid waste is one of the problems which are the result of unorganized urbanization. According to Central Bureau of Statistics (CBS, 1997) only 17 % of the urban households get their waste collected. Besides that, very little community participation is seen to managing the solid waste.

Due to rapid urbanization in Kathmandu Valley, Government is unable to cope with the increasing demand for solid waste management which resulted garbage and sanitation situation in a chaotic state (Waste,1996). Waste is a by-product of human activity. Physically, it contains the same materials as are found in the useful materials; it only differs from useful production by its lack of value. Waste can be categorized in various ways, by physical state as solid liquid and gaseous, by material as glass, paper etc. as safety level or its origin and so on (White, et al. 1999). Uncollected waste in Nepal can be found scattered inside communities, footpaths and along the streets. Management of solid waste is extremely poor and the treatment of sewage and industrial wastes is practically non-existent. Inadequate disposal of solid wastes poses a risk to public health (Ibid).

According to a survey by Dhakal, people's eating habits have changed to packaged fast food. Urbanization has changed the consumption pattern of people. Though, most urban residents consider solid waste management as the most important environmental problem in urban areas solid waste management has

become a major challenge to the urban centers of Nepal. Insufficient solid waste disposal is one of the most serious problems of the cities of Kathmandu.

Though waste is a general issue in Nepal these days, waste in Nepal is more an urban problem than the rural one because the waste generated in the rural areas are more of biodegradable and mostly the waste is used as compost for the farms (Gautam and Herat, 2000). According to the Local Self-Governance Act, 1999, municipalities are responsible for managing solid waste. But the municipalities do not have the proper and skilled resources to manage the solid waste. Budget is allocated for this purpose but it is not used in the efficient way (Water aid, Ibid). Despite this, Anschutz (1996) put forward the idea that sometimes a municipality plays a highly positive role in stimulating community-based solid waste management. In cases where other groups are involved in the management municipalities can assist community-based solid waste systems in different ways like providing with the facilities (equipment, composting sites, etc.), establishment of legislation, financial assistance, promotion of waste management. However, there are cases where the attitude of the municipality remains till the elections and some policies get discontinued. There are examples where there is mutual distrust between elected officials and informal community leaders in managing the solid waste. Community organizations that have proved their capacity to achieve improvements, are however, often able to convince the municipality of the need to help them. But this depends also on political circumstances. Community participation has become important in today's context because the circumstances have also developed in the same way for example the inability of the government body to handle the problems and especially in my case solid waste management. Community participation is considered important because it is believed that the involvement of the community in an activity like waste management helps them decide about their life and the issues that affect their daily life. It is also believed that community participation gives efficiency and effectiveness to the work. It helps them decide their priorities.

1.2 Statement of Problem

Though there is a lot of information in the community participation in the solid waste management, there is a limited information in the case of Kathmandu Metropolitan is

generally a lack in the use of procedures and guidelines for the public participation and consultation (Manandhar, 2009).

“Solid waste management is an activity, where public participation holds the key to its success. The local body can never be successful in solid waste management without active community participation. Solid waste management not only needs the City. The problem is that the KMC there involvement of technical staff with knowledge of solid waste management system, but also needs the involvement of the whole civil society. Households, commercial establishments and industries are major producers of waste and the mismanagement of this waste directly impact their health, environment and quality of life”(ADB, 2012).

So, much of the literature fails to address the core issues. There are only a few studies in this sector. Keeping in the mind the above problems, the research problem in this study is,” Is the community participation in Solid Waste Management in Kathmandu Metropolitan City better option to improve this problem? The following research questions are asked in order to answer this problem.

- What efforts are being done by KMC to manage solid waste ?
- Is community participation process followed by KMC and how?

1.3 Objectives

The general objective is to discuss whether the community participation is better option to solve municipal solid waste problem of Nepal. For the purpose of research following objectives are set as specific objectives:

- To exhibit the existing contribution made by KMC to manage waste through community participation in KMC.
- To state current practices of community participation in Solid waste management in KMC.
- To determine to what degree does community participation contribute to effective waste management.

1.4 Significance of the Study

This study will be a significant document for the practitioners, academicians and those who have the keen interest in solid waste management. It also contributes SWM to different individual, groups and institutions. It offers insights to policy makers, public managers, local service delivery agents as well as general public. On the other, this study is also beneficial for the KMC and other municipalities and their concerned departments and units. Similarly this study is useful for government and private sector institutions that are involving into the waste management activities, policies, and plan formulation process regarding the solid waste. In addition with it is beneficial to those agencies that are providing the funds for the waste management to KMC.

Study is concerned with the area of community participation in solid waste management. So, it contributes for making people involvement in SWM. It also makes the significant contribution to its all stakeholders like NGOs, community organizations, local government, central government and private sectors.

1.5 Limitations

As every research, my research has also some limitations. My research did not focus on the management of liquid waste (sewage) and other kinds of waste and only focused on the solid waste. In addition, my research concentrated on only three communities where people themselves were involved in managing their waste through different organizations or projects. The ethnic diversity and social diversity is big and this study cannot be generalized to the entire society.

Further, gender is also the matter in solid waste management. Men and women may have different roles to play in collecting, reusing, recycling and disposing the waste. Especially in our country as I have seen and experienced myself most of the women have the domain in household works many are generally confined to the household. Women are charge of the responsibility of taking care of the home and the health of the family members that can be taken as waste managers (Bernstein, 2004). So, women may have a different role to play in waste management. But my paper does not focus on the gender issues and solid waste management. Gender issues can give many insights to community participation in waste management.

There are different stakeholders involved in solid waste management, National level (different ministries- Environment, Public Health, Local Government), trade associations, Local level, user groups, workers, NGOs, CBOs. I did not approach the concerned national level stakeholders and also the local politicians for the paper. Along with these limitations, my research paper will focus only on household and organizational waste but not medical, agriculture, transportation, and construction etc.

1.6 Structure of the Thesis

Chapter 1- first chapter includes general introduction to my research topic, why the research is being conducted, and the research problems, the objects of the study and the limitations of my study.

Chapter 2-second chapter deals with literature reviews theoretical frameworks. The literatures are concerned with the history of waste management in Nepal, community participation in solid waste management as a whole, community participation in waste management in Nepal etc.

Chapter 3- Third chapter gives an introduction to the methodological part of my research. This includes the research strategies I used during my field work my data collection methods and techniques I used to obtain the information.

Chapter 4- The fourth chapter of my study includes presentation and interpretation of data, information, and facts related to community participation in SWM.

Chapter 5- The sixth chapter of my study includes the discussion and analysis of the findings from my study, and the comparisons between solid waste management practices in three settlements.

Chapter 6- This is the last chapter of my thesis. This chapter includes the summary and conclusion.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Conceptual Background

For the effective management of solid waste the involvement of community and private sector participation is inevitable. Currently, the functions of solid waste management are the jurisdiction of Local Government (LG) or Local Bodies (LB). Similarly, the LG/LB are not able to enhance the task of waste management alone. In Nepalese perspective, the newly enacted law Solid Waste Management Act (SWMA), 2011, Local Self Governance Act (LSGA), 1999, Solid Waste National Policy, 1996 and Solid Waste Management Technical Guidelines make the different provision for creating the atmosphere of Community Participation and PPP in solid waste management. Therefore, the ultimate authority of solid waste management is vested on the local bodies.

Solid waste management has traditionally been a distinctly municipal responsibility in Nepal. The ineffective governance of the authorities responsible for solid waste management has led to the presence of significant amounts of unmanaged waste in cities around the country. Rapid and unplanned urban growth has exerted tremendous pressure on the urban environment and solid waste is visibly the worst environmental problem in many urban areas in the country (World Bank, 2007). In the process of solid waste management, the community Participation program is popularized in developed and developing countries. Public Private Partnership is cooperative institutional arrangements between public' and private sector actors (Grave & Hodge, 007). Similarly, The neo-liberal and free market proponents influence the role of the state that can be changed and some responsibilities need to be given to private sector, which resulted in transformation of state's role and prioritization of free market rules and policies (Saei, 2012). Therefore, the study discussed community participation in solid waste management.

2.2 Community Participation in Solid Waste Management

Waste (1996) defines community and community participation as – “A community consists of people living together in some form of social organization and

cohesion. Its member share in varying degrees of political, economic, social and cultural characteristic as well as interest. Community Participation - is the process by which individuals and families assume responsibility for their own health and welfare and for those of community and develop the capacity to contribute to theirs and the community development. They come to know their own situation better and are motivated to solve their common problems. This enables them to become agents of their own development instead of positive beneficiaries of development aid.”

According to Anschutz (1996) community participation is taken as a crucial aspect of solid waste management. Community participation in solid waste management is always required because solid waste management is a continuous maintenance system, for example to store the garbage in a specific bag or bin, to bring it to an agreed point, to separate it in dry and wet waste etc. community participation maybe even more important than in any other urban service. Only recently the management of solid waste services by communities themselves has received attention. But real community management means that community members, or their representatives, decide on what to do and how do it. Community-based solid waste management projects are activities carried out by members of the community. However, these communities are concerned with the collection and transport of solid waste from the neighborhood to a dumping site outside it. Secondary collection, i.e. transport of the waste to the final disposal site and operation of this site, is usually carried out by the municipality. Bulle (1999) in his study states that all municipalities in the South find themselves confronted with management and organizational problems in the fields of sanitation and waste management:

- Inability to comply with growing demands concerning waste dumps and waste collection,
- Technocratic aspects in decision-making systems,
- Lack of equipment, financial resources, municipal policies or legal frameworks

Craig and Mayo (1995) argue that community participation and empowerment are the widely advocated topic both in North and South when there is poverty, polarization and social exclusion. World Bank sees community participation as a

means for ensuring that third world development projects reach the poorest in the most efficient and cost effective way sharing costs as well as the benefits through the promotion of self- help (Paul 1987, cited in Craig and Mayo, 1995). Brundtland Commission also concludes that participation has an important role to play in sustainable development. Empowering the poor through participation has almost become a slogan (Thomas 1992, cited in Craig and Mayo, 1995). NGOs (Non-governmental Organizations) are historically identified with community participation and empowerment. It is believed that NGOs are committed to support the communities and empower them towards development. The community as a whole can exercise power through participation and empowerment but without any negative effects upon the powerful. They can help themselves in the development and gain tools for self reliance (Thomas 1992, cited in Craig and Mayo, 1995). But if power is conceptualized in zero terms empowerment has a negative impact. Increase in power of a certain group may lead to the decrease in power of the other group. Empowerment may have different meaning depending upon different ideologies. But long term empowerment through participation has to be dealt within the framework of economic, social and political perspectives.

But Cooke and Kothari (2001) raise the point that participation has become an issue which has harmed those who were supposed to be empowered. They present participation as 'tyranny'. Tyranny is the unjust exercise of power. The participatory approach developed out of the shortcomings of the top down approach. The aim of this approach was to make people central to Development and encouraging the socially and economically backward marginalized people in decision making over their own lives. The participatory approaches to development are justified in terms of sustainability, relevance and empowerment. Cornwall states that a community consists of both men and women. They hold different power relations in the society. She is curious about what it means to be a man or woman in a given context in a community (Cornwall 1998 cited in Cooke and Kothari 2001). Participatory approach fails to recognize the changing and the multiple identities of individuals, impact upon their choices about how to participate and overlook the potentials links between inclusion in participatory processes and subordination. Unless participatory processes take into account the relative bargaining power of so called

stake holders they are in danger of merely providing opportunities to the more powerful.

2.3 Waste Management, Sustainable Development and Millennium Development Goals

University of West of England states that ‘waste management is broader than just the disposal of waste. It includes the generation, collection, processing, transport, minimization of the production, the reconceptualizing of waste as an economic resource, mobilizing the communities in the process, and protection of human health and environment (Nyachhyon, 2006).Solid waste management practices in developed countries progressed from ‘no-system’ to an increasingly centralized ‘municipal system’. The classical approach to solid waste management, considers solid waste management as an ‘urban planning’ problem or a public health issue. According to this approach, the municipal authorities are the main actors in the field (Baud et al. 2001 cited in Ahmed and Ali 2004). The same model was followed by the developing countries and it is deemed that the responsibility for managing solid waste primarily rests with the municipal authorities. However, a number of private sector operators with varying capacity are adding valuable contributions to the SWM sector. The question then arises whether a synergy in the form of partnership between the two sectors may be achieved or not to deliver better SWM services? (Ahmed and Ali, 2004).Basically the residential households prefer to get the waste services that are effective and dependable. They are not much concerned with the dumping the waste as their environment is not much affected by the distant dump sites.In low income residential area people normally give priority other basic services like food, watersupply, electricity and others but waste management does not come under the priority. It is because they can dump their waste nearby in the open areas or the rivers (Schubeler and countries, 1996).

Other writers too put light on this issue. Most of the solid waste management works come under the public services, for example sweeping of the parks, streets and public goods are those which benefit the public as a whole and not the individual. Thus, the responsibility (cost recovery) of waste management is also taken by the government. In developing countries the local government/authority may not have sufficient or may lack necessary budgets for the solid waste management in that

case the people are charged with some amount. World Bank's World Development Report 1991 states that "private sector participation is not to be undertaken as end in itself but as a means to an end: to use resources more usefully" (Cointreau-Levine and Program 1994).

There are calls in both academic and donor level aiming for the policy to integrate the informal actors (people who are involved in the SWM indirectly like the rag pickers) in solid waste management. This is based on the idea that there cannot be an efficient management in SWM only with the municipality's involvement and that it is needed to have private informal, formal participants and the community based organizations as well. However, there are cases where the informal workers in SWM are viewed with a negative attitude. They are ignored on the basis of caste/ethnicity. The work in scavenging is treated as low work and the workers suffer a lot, some are even murdered. Government has a low priority of these works and sometimes there are collusion in SWM i.e., the political parties use the scavengers as muscleman in elections. The informal works in SWM in Addis Ababa and their contribution to recycle and reuse of materials are either ignored or unrecognized. On the other hand, even the workers kept distance with the government officials and worked secretly so that no one knew about their work and they did not have to face the legal matters and the heavy tax as well (Baudouin and Zelalem, 2010).

Sustainable development refers to development that meets the need of the present without compromising the ability of future generations to meet their own needs (Brundtland Commission, 1987). In order to achieve sustainable development, having an appropriate approach and strategy for solid waste management is essential. OECD environmental outlook 2020 listed municipal waste generation among the "red light" pressures on the environment and one of the problems that need to be addressed urgently. A waste management policy towards waste minimization and changing patterns of consumption was recognized among the solution to the environmental problems by OECD (OECD, 2001).

As mentioned earlier in the first chapter, rapid and uncontrolled urbanization and population growth has significantly increased the amount of solid waste produced daily in the cities of developing countries. When improperly managed, waste has very serious impacts on people's well-being and implicitly on the achievement of the

MDGs (Millennium development goals) (Coad and Gozenbach, 2007). Proper solid waste management can contribute to achieve the following Millennium Development Goals.

Goal 1: Eradicate Extreme Poverty and Hunger

Although indirect, the impact of improper waste management on poverty is even more insidious and long lasting. It has been proven that healthier people are more likely to escape poverty. Thus well management of municipal solid waste and removing the effects of waste on health would have positive implications on poverty reduction, which is the first of the eight MDGs. Furthermore, waste management provides employment opportunities for cities' poor in activities such as sweeping, collection and recycling (Coad and Gonzenbach 2007). By improving their working conditions, waste management can contribute to reducing poverty and improving the quality of life of the people.

Goal 2: Reduce Child Mortality

One of the initial reasons for better management of solid waste is to protect people's health. Improperly managed solid waste makes a good breeding place for houseflies and other insects, which are a major vector for different diseases such as diarrhea and outbreaks of plague, which are deadly infectious disease and particularly affect children, so proper waste management can reduce child mortality (Coad and Gonzenbach, 2007). Furthermore, drains blocked by dumped waste cause flooding and are favourable breeding places for mosquitoes spreading Malaria, dengue, and other diseases and burnt waste causes respiratory illnesses, especially affecting waste workers and those living in vicinity of dumps (Coad and Gonzenbach, 2007).

Goal 3: Ensure Environmental Sustainability

Proper and sound solid waste management can also contribute to the achievement of the environmental sustainability, for instance, recycling reduces the demand for raw materials and saves energy. Forests can be protected by using recycled pulp and use of biogas produced by anaerobic digestion process of biodegradable waste instead of using wood for cooking. Proper disposal and treatment avoids surface and ground waters pollution, created through dumping waste into rivers and lakes, and leachate

from landfills (also a source of methane emissions) (Awomeso 2010, Narayana 2008). Uncollected waste which is carried away to rivers, lakes and sea affects the ecosystems. Composting is also one of possible options which reduces the need for chemical fertilizers, has positive spill-over effects on health, as the use of good quality compost in agriculture and food production process improves nutrition.

2.4 Waste Generation and Composition

According to a previous MSW generation and composition study conducted in KMC, MSW generated in households were only about 0.38 kg per day and capita. Furthermore, 306 tons of MSW is collected daily. But according to KMC, approximately 90% of the MSW generated is actually collected, subsequently resulting in an actual amount of close to 340 tons of MSW generated daily in KMC and LSMC (SWM&RMC, 2007). In regards to the composition of the MSW, the previous study shows that 68% was organic, 13% plastics, 10% paper and cartons, 4% glass, 2% textile, 1 % metals, 1 % rubber and leather, 1 % others and 0% construction and demolition waste.

2.5 Waste Collection

There are approximately 1300 staff working with MSW management in KMC. The staffs have 65 collection vehicles (tractors, tippers) at their use. Moreover, a great unknown number of cycle hawks (bicycling collectors) operate in KMC. According to KMC 90% of all MSW generated is collected, out of which 60% is collected from designated areas on the roadside, 35% through door-to-door collection and the remainder is collected in specific containers located in different areas of the city. There are eight containers, operated by NGOs, which when full are directly transported to Okharpauwa. LFS, whereas the rest of the collected MSW first is transported to Teku transfer station. At Teku transfer station, some separation of valuable MSW is conducted after which the MSW is transported to Sisdole LFS to be deposited. Straightforwardly, residents

of KMC and LSMC can deposit their MSW at designated areas in the city; either directly on the roadside, in a container or in one of the collection vehicles in operation (SWM&RMC, 2007).

2.6 Waste Sorting

The Community Mobilization Unit (CMU), a sub-department of the Environmental Department in KMC, promotes recycling and reuse. CMU together with Nepal Recyclable Entrepreneurs Association (NREA) has established centers where recyclable waste can be sold. They also provide information about MSW management to all stakeholders interested (SWM&RMC, 2007). However, merely sporadic sorting of waste where personal economic benefits are evident, is currently conducted. The sorted waste is then sold to Kawadi shops for further distribution.

Kathmandu is the only municipality with a landfill site. Its Sisdoile landfill site, is located on Nuwakot district in Nepal, however, this site is not environmentally safe because it does not have liners and a treatment system. Currently house hold waste is produced 330 ton per day, commercial waste, street waste and waste from VDCs are produced 50 ton per day (Department of Environment Management, 2068). Similarly, the Department of Solid Waste Management, KMC's waste collection systems are: roadside collection is 358 ton/day, door to door collection system is 43 ton/day and container collection is 60 ton/day (ibid). These facts clearly say that the jurisdiction area of KMC is producing more and more wastes. If the KMC has failed to proper management these different kinds of solid waste, there is the possibility to raise the serious problems which are affect human health as well as environment.

Recently KMC signed an agreement with a private party to construct a plant with the capacity of 300 tons per day to make fertilizer from all of the Kathmandu's organic waste. The operation of this plant would go a long way to solving Kathmandu's waste problems. KMC's solid waste management section has a record of 18 different private sectors are involved in waste management (Department of Environment & Management, KMC, 2468). The Department of Solid Waste Management, IC KMC has provided the authority to collect and dispatched these waste in particular landfill site. According to the survey by Thapa and Devkota (99), 15.4% of the people in Kathmandu have made own their arrangements for waste removal. Some NGOS are also involved in raising public awareness and providing training on waste management. In the past few years, many children's groups have also been involved in waste management in Kathmandu. A significant number of non-government organizations (NGOs), community-based organisations (CBOs), and the private sector

are involved in solid waste management activities are engaged in management of solid waste. Following diagrams clearly shows that the institutions and their roles in Solid Waste Management (SWM) in Kathmandu Valley.

The private sector is mostly involved in recycling waste. Scavengers and scrap dealers buy or collect scrap materials and sell them to factories in Nepal and India. It is estimated that approximately five percent of Kathmandu's waste materials are recycled in this manner. The amount of recyclable materials that remain in Kathmandu's indicates that recycling by the private sector can be increased. This would require separation of waste at source and favorable government policies that encourage recycling (Tuladhar et al., 99):

The municipal association of Nepal (MUAN) and the urban development through local efforts (UDLE) project of GTZ are currently introducing a few programs for training municipal staff on waste management and raising awareness on waste management issues. The town development Fund occasionally provides grants and loans for municipalities that want to invest in equipment of facilities related to waste management.

A survey done in 1996 indicated that most urban residents dumped their waste in public places or on fixed sites along the streets. In general, this 'fixed sites' are not delineated or marked in any special way; they have simply developed through use. The survey also indicated that only 16.76 % of the urban population has their waste picked up by a garbage collector. The number was less in poor communities, the indication for which was households without toilets, of which scarcely 2.36% has their garbage collected. An earlier study also indicates that only 18 % of the urban population was served by the municipal solid waste management unit (Sharma, 1992). In the absence of adequate waste management service, people have begun to take action in a few communities where the problem is the most severe and where people are aware of implications of improper waste management.

The cities of Kathmandu, Bharatpur and Biratnagar have begun to involve the private sector in waste management. The private sector, together with KMC, is now collecting waste from about 4000 households in the western part of Kathmandu. KMC

has plans to increase the involvement of the private sector in waste management in the future (Tuladhar, 99).

Kathmandu's waste is mainly organic in nature. Although the organic content may vary depending on the location of waste generation and the season, in general two thirds of the waste is organic. The rest of the waste consists of paper, plastic, glass, inert materials (dirt, bricks, stones etc.) and various other components (Rajesh Manandhar, 2006).

2.7 Non-government Organization

The term, "non-governmental organization" or NGO, came into currency in 1945 because of the need for the UN to differentiate in its Charter between participation rights for intergovernmental specialized agencies and those for international private organizations. NGO does not have a specific meaning. It may have various definitions and meanings depending upon the context and the circumstances. But there are basically three characteristics of an NGO. NGO must be independent from the direct control of any government. An NGO will not be constituted as a political party; it will be non-profit making and it will not be a criminal group, in particular it will be non-violent. NGOs may have global hierarchy and with a central authority or may be based in a single country (Willets, 2002). NGOs have helped in decreasing role of the state actors promoting the private sectors or the civil societies. It has also helped in promoting the common interest in international arenas.

2.7.1 NGO and Waste Management

According to (Schübeler and Countries, 1996) Non-governmental organizations (NGOs) operate between the private and governmental realms. NGOs may provide important support to informal sector waste workers and enterprises, assisting them to organize themselves, to improve their working conditions and facilities, increase their earnings and extend their access to essential social services such as health care and schooling for children. NGOs may help to increase the community's capacity to manage waste collection

- People's awareness of waste management problems,

- Organizational capacity and the formation of community-based organizations (CBO),
- Channels of communication between CBO and government authorities,
- CBOs voice in municipal planning and implementation processes,
- Technical know-how of locally active CBO, and
- Access to credit facilities.

According to Klundert and Lardinois (1995) NGO have worked in waste management but these organizations have promoted either environmental health (e.g. the need for clean cities), social goals (such as the involvement of street children or working conditions of women and children in particular, generally considered as the most vulnerable group), or a combination of these two. He gives some examples one of NGOs involvement in solid waste management (see Klundert and Lardinois (1995).

Advanced Locality Management in India serves as a good example of NGOs and community based organizations working together. According to Rathi (2006) ‘Community participation in waste management has been initiated in Mumbai India. Community participation in waste management has been initiated in Mumbai as a result of a good urban governance campaign, which started as a joint project between the Government of India and Municipal Corporation

of Greater Mumbai (MCGM), in collaboration with United Nations Center for Human Settlements. This model of is called ‘Advanced Locality Management (ALM)’. ALM is a community based approach for effective management of civic services at the grass root level. The concept of ALM was introduced in 1997 and was implemented in 1998. Main target of this goal is to segregate the waste- compost it and sell the inorganic waste. The ALM model works as follows: The locality participating under this scheme forms a committee, which is responsible for planning, implementing and inspecting various aspects of locality development. It also coordinates between MCGM and local residents for smooth functioning of civic services. MCGM carries out various educational programs to create awareness among citizens. Moreover, MCGM gives priority in solving the civic problems of the communities involved in waste management programs. MCGM appoints an officer at the ward level to look into citizens’ complaints and to coordinate with

the local committee. All residents who fall under the ALM scheme have to segregate their waste into wet and dry fractions, corresponding to biodegradable and recyclable materials. Rag pickers organized and trained by NGOs, collect these wastes and process the biodegradable waste and sell the recyclable material. MCGM helps to establish composting pits in these areas and also gives priority attention to such areas for other civic services. In this scheme, NGOs also play a very important role by organizing the rag pickers and giving them necessary training for collecting and composting waste. There are 360 ALM groups and 283 composting centers are working under this scheme. The responsibilities of managing waste are also divided to the concerned groups.

2.7.2. NGOs in Nepal

The number of NGOs has increased in size, scope and number in the last few decades. With the increment it has also become important in the social, political and economical ground. According to the Year Book of International Associations, the total number of internationally recognized NGOs is well over 16,000. The Human Development Report, 1994 estimates about 50,000 local NGOs operating in the South (Fernando and Heston, 1997).

Dhakal (2006 acited in Dhakal,2007) explains that establishment of NGOs in Nepal was not easy before 1950. People had to ask permission from the prime minister. But when the democracy was announced in 1951 there were favorable conditions to establish NGOs. However, there storation of Panchayat system (aparty-less political system) again created problem in establishing NGOs. It was basically because the ruler was afraid that the people would be aware of things and situations and go for agitations. Thus, the establishments of these entities were very slow during 1961 to 1990s (Dhakal, 2007). The number of registered NGOs in Nepal has reached from 220 in 1990 to somewhere between 10,000 and 15,000 today (Montgomery, 2002). Nepal is ranked among the poorest countries so roles of NGOs are considered as important and compulsory for the grass root level development. The government of Nepal too has maintained favorable conditions for the NGO sector so the numbers of NGOs in Nepal have increased. Most of NGOs in Nepal are foreign aided while some have been established and supported by the local community. NGOs have contributed a lot in the development of the socioeconomic structure of the country (www.visit

nepal.com). Panchayat was the political system of Nepal in effect from 1962 until 1990. It was based on the Panchayat system of self-governance historically prevalent in South Asia. It was formulated by King Mahendra after overthrowing the democratically elected government and dissolving the parliament in 1960. The Panchayat system was first institutionalized by the 1962 Constitution of Nepal. The political system was a party-less "guided" democracy in which the people could elect their representatives, while real power remained in the hands of the monarch.

2.8 Some Best Practices for Successful Public Involvement

UNEP proposed a list of best practices as follows:

1. Develop a public involvement framework as early as possible to establish the scope, timing and resource requirements necessary to support the process;
2. Identify the participants and stakeholders and establish their legitimacy and "representativeness" (using social analysis). It should be noted that not all social actors can or should be consulted on every detail of the proposed project;
3. Identify appropriate techniques of public participation/communication and provide relevant information in a form which can be easily understood (e.g. using a combination of seminars, simple written materials, visual aids and scale models can help to make the technical material accessible to the non-specialist);
4. Plan and execute event sometime and venue that will encourage the maximum attendance and free exchange of views by all interested groups. Money may be specifically allocated to help facilitate community involvement (e.g. to pay for travelling expenses or costs involved in hosting meetings and inquiries);
5. Allow stakeholders sufficient time to assimilate the information provided, consider the implications and present their views;
6. Identify mechanisms which ensure decision makers consider views and suggestions made by stakeholders - integrate findings and recommendations into the environmental assessment report, financing proposal and agreement; and
7. Ensure that responses and feedback are given on issues or concern.

(UNEP, 2000)

2.9 Organizational Structure and Their Responsibilities of KMC

The Metropolis Council (MC) is a supreme and important organ of the KMC. According to Local Self Governance Act, 2056, the members of MC include the Mayor, deputy Mayor, elected body of ward committee and minimum 6 or a maximum of 20 nominated members from within the KMC territory representation including from women, disadvantage and backward communities. Metropolis Boards, Advisory Board, Office of the Mayor and deputy Mayor and the office of Chief Executive Officer are the main bodies. However, absence of the periodic election of Local Bodies (LB) the Chief Executive (Officer is playing the sole of Mayor and deputy Mayor_ In addition, there are other offices from supporting the Council, Board, Mayor and Chief Executive Officer. Six departments, 15 divisions and 33 sections having a total 2475 staff members (including ward level) constitute the organization of KMC (www.kmc.gov.np).

The departments and the sections within the KMC have their exclusive roles towards making KMC as operationally effective and the efficient their respective locality. The responsibilities of each department can be summarized.

Administrative and Organizational Development Department

The administrative department of KMC has the four related sections namely General Administration, Personnel and Human Resource Development, Ward Coordination and Vital Registration. The department of administration and its sections have assigned for maintaining the day to day administration, file maintenance for human resource development in the KMC.

Law and litigation section is another important organ of administrative department for contributing to settlement of petty disputes and effective justice delivery. It is responsible mainly for litigation activities, maintaining legal documents and the legal counseling. Similarly, the enforcement division is also falls under the department of administration and organization development. This section is mainly responsible for supervise, control, monitor and regulate market areas and ensure the security of the citizens. Another crucial section of this department is information and communication is including responsibilities of this department is collection and dissemination of information of Metropolis.

Economic Department

The economic department of KMC is mainly responsible for maintaining and managing the economic resources: Under this department the revenue division and accounting and budgeting division are major organs. These divisions play a significant role for day to day financial activities Of ICMC and division is responsible for revenue planning and collection.

Public Health and Social Development Department

Public health and social development- two distinct but interrelated division combined into the separate public health and social development department. The main responsibilities of these departments are to increase public health awareness, provide health care services and manage health care services at ward level. Similarly, community social welfare through disaster management, community development, job promotion, education and sport are the major responsibilities of this department.

Physical Development and Construction Department

First it is responsible for water supply services, management of water supply and sewerage, construction and maintenance of municipal roads, electrical services and design and construction of civil works of the wards. Second, it has the responsibilities for construction and maintenance the building. Third, it is responsible for preserving and maintaining the heritage sites within KMC.

Urban Development Department

This is the most important department to prepare short term as well as long term urban plan for KMC. It gives the permission and approval for construction the building. It is also engaged in making policy and plan in the area of urban development administration and disaster management. It has also maintained the geographical information system in effective and efficient way.

Environment Management Department

It is largest and biggest department of KMC among the other department: Environment division and environment administration division are the two division of

this department. This department has the responsibilities for solid waste management, landfill management, and park and greenery promotion activities. Ultimately it is responsible for solid waste management, promotion and protection of urban environment.

2.10 Experience of KMC in Community Participation and PPPs

At present, KMC is facing a challenge to meet growing need for the duality urban services due to lack of basic infrastructures and limited financial resources. There is a growing acceptance in KMC to involve private sector in delivering public services- that are in its domain -and to generate off - budget funds for KMC to bridge the gap in the service delivery (Pant, 2003). Therefore, KMC is eager to motivate private sector participation by adopting an appropriate policy that is socially and commercially justifiable.

The institutional arrangements that were made by ICMC to facilitate the PSP include (Panta, 2003):

High Level Committee It consists of the representatives of political parties among the board members of KMC and other professional bodies. The main function of this body is to formulate plan and policies regarding PSP and to approve the projects for implementation.

PSP Task Force It includes concerned departmental heads, experts and member of respective committee to examine the proposal against the set standards and recommended to high level committee for consideration and approval.

PSP Secretariat It aims to establish the secretariat under chief executive officer to coordinate and facilitate decisions within the departments, high level committee, task force and private parties.

Similarly, the KMC has encouraged private sector to different fields and activities. It also has experienced to lunch to Community Participation and PSP program into the different fields. Following are the major projects for Community Participation in KMC (KMC, 2010):

Experience of PPPs of KMC

1. Solid Waste Management	2. Slaughterhouse	3. Public Toilets	4. Maintenance of Traffic Islands
5. Maintenance of Public Park	6. Children Park	7. Overhead Bridge	8. Bus Park Management
9. Evening Market	10. Pay Parking	11. Construction of tower	

Source: KMC, 2010.

This table clearly shows that the Kathmandu Metropolitan City has been carrying and distributing their goods and services from the Community and private sector. In present, the KMC has been adopted the Community Participation model in different areas of functions.

2.11 History of Solid Waste Management in KMC

Kathmandu metropolitan city (KMC), the capital city of Nepal, is allocated in the center of the Kathmandu Valley in the hilly eastern regions of the country. Other than KMC, the valley consists of Lalitpur sub-metropolitan city (LSMC), Bhaktapur sub-metropolitan city (BSMC), MadhyapurThimi Municipality and Kirtipur Municipality. Kathmandu Metropolitan City had been recognized as the SphaiAdda (Sanitation Office) since 1901 by the Prime Minister Chandra Samser JB Rana. During that period it had changed their real form in different name and fame. However, the KMC has performed the role as a "Metropolitan City" on the December 15, 1995. During that time the KMC has expanded its role and functions in qualitative and quantitative terms. Basically, its involvement is found in the area of urban infrastructure development, service delivery, environment protection, promotion and protection of public health, and mobilization of urban resources in their respective jurisdiction. On the basis of analyzing of existing laws of solid waste management the KMC has got the obligatory responsibilities for effective management of solid waste in its own territory. Local Self Governance Act (LSGA), 1996 and Solid Waste Management Act (SWMA), 2011 has made the mandatory provision for the waste management of waste in effective and efficient way.

Uncontrolled urbanization process, increasing trend of urban centered migration and rapidly increasing trend of population are the major cause for creating the high density of population within the KMC. In this reason, there are more pressure in about the providing the basic urban facilities and urban infrastructure development as well as management of solid waste in KMC. The KMC has produced average waste generation per capita that is 350 gm. per day. Due to increased population and floating population the population of KMC has been affected the increased trend of waste production day by day. Similarly, the development of infrastructure and the industry, expansion of trade and business activities, establishment of hotel and restaurant and other activities and change in consumption culture are the factors which contribute to make the more and more waste in Kathmandu city (Draft Report, 2013).

The current severe problems concerning MSW generation and depositing in Nepal in general and in KMC in specific, started when the composition of the MSW altered from mostly organic to higher fractions of plastic; glass and metal. Earlier, the inhabitants of KMC could compost most of their waste and used it in the agricultural sector as fertilizers. But the change in waste composition made it difficult for such an approach and people-instead started to throw their solid waste in the rivers running through the city (Anderzen&Blees, 2003).

In 1981, the German Technical Co-operation Agency (GTZ) funded a project which included Nepalese participation of the MSW management in Kathmandu Valley. The Solid Waste Management and Resource Mobilization Center (SWM&RMC) was established and received the responsibility of the MSW management within the valley. The project consisted of a trial phase of two years and an acting phase of seven years, in which the first LFS, Gokarna LFS, were constructed (1984-1986). Within the acting phase, an organic- waste processing plant at Teku in KMC was also introduced in 1986. In the final phase of the project (1990), the entire responsibility, except for some financial aid, was delegated to the SWM&RMC (Anderzen&Blees, 2003). Teku compost plant was closed 1992 due to insufficient maintenance and massive public objections. Furthermore, the LFS of Gokarnawas closed between 1994 and 1995, and subsequently more MSW ended up in the rivers. In 1995 when Gokarna LFS re-opened KMC was given the responsibility of the LFS (Anderzen&Blees, 2003). In 1999 the Japan International Cooperation Agency (JIGA) started their involvement in

the MSW management of KMC (Anderzen&Blees, 2003). In the meantime Sisdole LFS, a temporary solution, has been in operation since 2005. Sisdole LFS was when finished, projected only to last for 2-3 years (Khanal et al., 2009). Since the projected operation time was due to last year (2008), Sisdole US is operating with too much MSW deposited every day. The people living in the area of, and on the road which leads to Sisdole LFS, are frequently protesting against proceeding operation of the LFS. Road-blocks and demonstration, so called bandhas, are common interruptions in the ordinary day (CKV, 2005). Therefore, in the present days the Sisdole LFS had closed and now Okharpauwa LFS in Nuwakot is practicing.

2.12 Review of the Related Literature

A large number of studies, articles, and reports produced over the last two decades highlighted different aspects of solid wastes in Nepal, particularly in the Kathmandu Valley. But only a very few of the reports and documents are about community based solid waste management. As to a researcher's knowledge there is very limited number of available documented case study on community based solid waste management in Kathmandu Metropolitan City of Nepal.

Some survey reports completed in the past by Solid waste Management & Resource Mobilization Centre (SWMRMC) look at the total solid waste generation of small shops and household in Kathmandu and Patan . A survey on "Recycling and Recyclable Materials Generation in Households in Residential locations in Kathmandu" 1990, conducted by SWMRMC generated data on recyclable materials and characterize household understanding and knowledge of various aspects of recycling.

Paper presented by Mr. L. C. Rayamajhi, Deputy General Manager, SWMRMC, at fourth Regional Workshop SWMRMC , October 31st and Nov.1st 1990, states that proper waste handling costs a lot of money which developing countries cannot afford and at the same time the people don't get direct output from it. Therefore, he further emphasized that SWMRMC should think about the cost involved in waste handling and a treatment system as a resource recovery process. At the same symposium, participants have come to a conclusion that "Community Participation being an

integral part of SWMRMC's service approach should be fostered not only in regard to waste handling and waste disposal but also in reduction at source.

Study on the physical composition of municipal solid waste in Kathmandu, conducted by Neoak Environment and Scientific Service Pvt. Ltd in 1990 revealed that the municipal solid waste composition has undergone drastic change in the last decade. Over the years, proportion of compostable biodegradable waste has declined significantly, while uncomfortable organic waste fraction has increased. These features point to the fact that the municipal waste of Kathmandu can be best reused by transformation into solid waste fuel briquettes than by composting. By transformation into solid waste fuel briquettes about 85 percent waste by volume and 78 percentage of waste by weight can be reused. In other words the same fraction of waste is reduced in the landfill site for final disposal. This option can not only extend the life of landfill but also provide an alternative source of energy by utilizing unused waste product.

Above study has also identified that solid waste fuel briquettes, made out of the organic fraction of the Kathmandu, are of high compressive strength, easily ignitable and has an estimated caloric value of 4,600 kcal/kg.

2.13 Principles of Effective Solid Waste Management

Some of the basic principles for effective solid waste management are as follows (SWMTechnical Guidelines, 2010):

- Integrated and sustainable waste management system should be adopted.
- The 3-R principle (reduce, reuse and recycle) should be promoted at all levels.
- Waste should be segregated at source to maximize recycling.
- The practice of dumping waste on streets or open areas for collection should be stopped and more effective forms of waste collection that minimizes waste handling and exposure to waste should be promoted.
- Open waste dumps should be replaced by controlled dumps or sanitary land filling.

- Recycling should be maximized and only non-recyclable waste should be land filled.
- Environmental impacts of waste should be minimized.
- Polluters pay principle should be applied to 'minimize waste production, recover cost and make the SWM system as a whole sustainable.
- Participation of local communities and private sector to SWM should be encouraged.

These principles need to be adopted by all municipalities in planning and implementing their waste management systems.

2.14 Environmental Ethics

Environmental ethics refers to the moral relationship between human beings and nature (Lundmark 2003). Environmental ethic discourse mainly focuses on two systems of belief, anthropocentrism and egocentrism. The anthropocentrism belief considers human beings separate from the nature and more important and worth than the other organisms. In this belief the nature is seen as a source of providing the resources which can be used for human purposes. Anthropocentrism judges our acts towards nature on the basis of how they affect us, not on how our acts affect other beings (Lundmark, 2003). But in contrast, an egocentrism belief sees the environment consisting of "complex system of ecological interdependence" (Lundmark, 2003). In this belief each organism and environment are given intrinsic value and it says that pollution and other forms of human interventions can have multiple ecological effects, therefore egocentrism is disagree with the anthropocentrism belief which puts an absolute dividing line between nature and human beings (Lundmark, 2003). This thesis is based on eco-centrism idea, because I strongly believe that all living beings have the same right to live in this planet. In my opinion, it is our moral duty to help those in need, especially those who are weaker than us.

2.15 Nepalese Laws and Policies on SWM and Community Participation

Management of increasing amounts of solid waste has become a major challenge in many cities in developing countries like Nepal. If solid waste is properly used, it can be a valuable resource but if it is not effectively managed, it can result in serious adverse impacts on environment and public health. Solid waste management is therefore a critical component within urban sanitation and it is also one of the most important and resource intensive services provided by the municipalities. With the pace of development managing municipal solid waste has been one of the major problems of the state. The country lacks appropriate disposing tools and methods and adequate disposal place as well. This often raises conflict between people and the government and concerned authorities. To solve these problems and to manage the generated waste in proper way, there are several legislations which directly or indirectly address about solid waste management. In addition different plans and policies has also been initiated so far to address the issue which shows that safe disposal of solid waste too lies in the priority issue of the government (Pokhrel, 2011).

Laws and policies related with the solid waste management and the public private partnership are another considered variable on this study. Policy is, a purposive course of action followed by an actor or set of actors in dealing with a problem or matter of concern (Anderson, 1980). Similarly, law may be defined as a body rules, created by state, binding within its jurisdiction and enforced with the authority of the state through the use of sanctions (Adams, 1996). It ordinarily used in connections with a statue enacted by a state legislation (Anderson et al., 1980). Therefore, laws and policies are necessary and important tools for enhancing activities in legitimate way. It also provides the required power and authority to all stakeholders. For obtaining the desired result of this study it is necessary for analyzed the different laws and policies which provides formal power, authority and guidelines for the public private partnership in solid waste management. So, this study aspires for analyzed of laws and polices related with the solid waste management and public private partnership. For the analysis of these laws and policies, study has concentrated on analysis of its provision regarding the solid waste management and the public private partnership. In this context, following laws and policies has been analyzed.

2.15.1 National Policy on Solid. Wastes Management, 2053

Nepal Government has made the SWM National Policy, 2053. It recognized waste and its problem as its principle. Policy focused on the problem of the waste has been found in most of municipal cooperation, municipalities and town oriented village in Nepal. The policy also has accepted on its preamble the waste and its problem should provided the responsibilities to the local government through the cooperation of private sector, NGOs, Community organizations and other local people for the minimization of its adverse effects. Hence in this context, a national policy is formulated relating to the management of solid wastes. This policy has made tile five different objectives regarding the SWM such as to make SWM more effective and simple, to minimize environmental pollution caused by the solid wastes and adverse effect thereof to the public health, to mobilize the solid wastes as resources, to privatize the management work of the solid wastes and to obtain public support by increasing public awareness in the sanitation works.

On the basis of these objective the major policy were made on this national policy as local bodies should be made more competitive for the management of SWM, to make the arrangement for mobilization of nongovernmental organization for sustainable and effective management of solid waste, to develop sanitation concept on the basis of the appropriate technology which would be suitable to the local, social and economic environment, to manage final disposal of solid wastes in accordance with their volume and nature, to mobilized the solid wastes as a source by its recycling and processing, to make the management works of the solid wastes economically self-reliant, to privatize the management works of the solid wastes in the various phases.

The National Policy has also made the strategy for effective management of waste in all over the Nepal. This policy basically focuses on the strategy of Public participation, Technology, Mobilization Sources and Privatization.

Policy also focused on the institutional arrangement for effective waste management at the national as well as local level with proper authority for manages the waste management activities in effective and efficient way.

On the basis of adopted policies by the National Policies on Solid Waste management the Solid Waste Management Act has been enacted. Similarly, the local bodies have

been enhanced the activities on SWM through the involvement of the private sector, NGOs and CBOs. However, the LBs have not been successful to arrange the formal procedure of Public Private Partnership in SWM activities. Most of the private cooperation and NGOs are enhanced their functions regarding the solid waste management in informal way.

2.15.2 Solid Waste Management Act, 2011

Solid waste management Act has enacted by the GoN for the management of waste in consolidate way in 2011. It fulfills the demand of the umbrella act for governed the problem and management of waste for entire country. This act has provided sole authority of waste management into the Local Bodies (LB). Similarly, it also clearly states that the other LBs should be enhanced their duties and responsibilities through the participation of the private sector, NGOs, Community Organizations and Club. According to its preamble, the act feels that necessary for consolidate laws relating to the most urgently needed service like solid waste management to make arrangement for the systematic and effective management of solid waste by minimizing the solid waste at source, re-using, processing or disposing of the solid waste, and to maintain the clean and healthy environment by minimizing the adverse effects of the solid waste in the public health and environment. This act has also made definition about the waste such as this act defined the solid waste means the domestic waste, industrial waste, chemical-waste, medical waste or hazardous waste. This term shall also include substances including solid, liquid, gas, semisolid, smoke, dust, and materials used by the electronic and information technology, which are not in a position to be used forthwith, thrown or rotten, or disposed causing degradation of the environment; or other similar types of objects or posters or pamphlets posted in public places in an unauthorized manner. Similarly, this act also defined the organizations or institutions for managing the waste such as the community organizations and local bodies.

Similarly, the SWMA, 2011 has made the whole responsibility for the Solid Waste management rest on the LBs in their different sections of this act (Section 4). However, the waste of health institutions, chemical and industrial waste management is the responsibility of concerned institutions that generated the waste. Similarly, this act has focused on the waste reduction and recycling concept (section 5). On the section b also said that the local body shall have to prescribe for segregation of solid

waste at source by dividing the solid waste into different categories including at least organic and inorganic. Furthermore section 7, 8, 9, 10 and 11 of this act has also made the different provision of waste management and its procedure. It clearly focused on the responsibility to construct and operate the infrastructure or structure required for the collection, final disposal and processing of solid waste, including construction of any transfer station, landfill site, processing plant, compost plant, and bio gas plant for the management of solid waste. Likewise, the act gave the more concern about the reduction in production of waste, segregation of the solid waste, discharge of solid waste designation of solid waste collection center, transportation of solid waste and reduction, reuse and recycling of solid waste.

On the other hand SWMA, 2011 has made the significant provision in about the involvement of the private sector and community (in section 13, 14, 15, 16, 17 and IS). According to this act nobody shall do or cause to do the work relating to the solid waste management without obtaining license from the local body pursuant to this act. An act made clear provision for the SWM can be done through the private Sector who has obtained license. According to this act any private and non-governmental institutions may carry out the different functions like raise awareness for minimization of solid waste, collection of solid waste, transportation of solid waste, use, reuse, recycling or processing of solid waste, disposal of solid waste, and post closure management (of a sanitary landfill site).

In addition with this act also mentioned that make competition among the private sector and other community organizations while carrying out the solid waste management activities through the private and community institutions. Similarly, an act also focused on methods on PPP in solid waste management by the local bodies. The Local Body may impose and collect service fee from the concerned person, institution or body for the management of solid waste and private sector may impose and service charges from the service users by the consent of concern authority.

However, this act had not success to make any particular definition about the private sector institutions. Similarly, it cannot be succeed to provide the effective model for PPP in solid waste management. In addition with, it did not envisage any provision about the motivation for private sector for management the waste.

2.15.3 Act on Private Financing in Build and Operate of Infrastructure (PFBOIA), 2006

The act on private financing in build and operate of infrastructure act has enacted in 2006 for attracting the private investment in different project. Similarly, it has made different mode and methods of private financing in build and operate of infrastructure.

First of all PFBOIA has principally agreed to make necessary provisions on making the services and facilities available to the general public in a reliable, cost-effective and easily available manner by getting the private sector involved in the build, operation and transfer of the infrastructures in consistent with the liberal economic policy pursued by the country.

Similarly, the act made the definition about the "infrastructure", sewage disposal, solid waste processing and management Plant, Energy production and distribution, Stadium, Public conference hall, Multi residential building falls under the definition of infrastructure.

It has mentioned different provisions regarding the private financing in build and operates of infrastructure. In the section 3 of this made the condition about the project may be implemented on private investment by any of the following modes:

- Build and transfer,
- Build, operate and transfer,
- Build, own, operate and transfer,
- Build, transfer and operate,
- Lease, operate and transfer,
- Lease, build, operate and transfer,
- Develop, operate and transfer,
- By other methods of similar kind.

Similarly, section 4 also makes another stipulation about expression of interest which may be invited from the private sector to implement the any project with a cost more than twenty million rupees. Likewise, section 6 is concerned with the proposal may be invited from the private investor and section 7 said that after receipt of proposals

GoN shall select a proposal on the following grounds within sixty days of receipt of the proposal:

- Financial status of the proponent;
- Technical capacity of the proponent;
- Environmental study report of the project;
- Proposed amount of royalty to be paid to Government of Nepal;
- Proposed fees to be collected from the users while
- implementing the project,
- Such other details as prescribed.

Conducting the detailed feasibility study by negotiations, implementing a project by negotiations, memorandum of understanding is made between private sector investor making provisions in section 8, 9 and 10 respectively. In addition with, the license may be issued to the private financing institutions to implement the project in section 16. Likewise, section 22 made another provision relating to the license; the licensee shall transfer the project to Government of Nepal as mentioned in the agreement and project may be implemented in joint financing of GoN and the private sector (GoN, 2006).

The act raised the issues of investment of the private sector in the infrastructure project but this act does not cover the waste management issues of the country. Waste management is the special issue in-terms of private sector involvement but it is not successfully connected to manage the common forms of PPP model.

2.15.4 Local Self Governance Act (LSGA), 1999

The LSGA, 1999 enacted for the purpose of enhancing the local governance system in effective and efficient way in Nepal. In the preamble of the act it has been mentioned to make provisions conducive to the enjoyment of the fruits of democracy through the utmost participation of the sovereign people in the process of governance via decentralization. Similarly, it focused on the institutionalization process of development by enhancing the participation of all the people including the ethnic communities, indigenous people and down-trodden. Similarly, it includes the socially and economically backward groups for social equality in mobilizing and allocating means for the development of their own region. It employs the balanced and equal

distribution of the fruits of development, have institutional development of local bodies capable of bearing responsibility. It also provides such responsibility and power at the local level as it is necessary to formulate and carry out plans, and constitute local bodies for the development of the local self-governance system. Thus, they are able to make decisions on the matters affecting the day-to-date needs and lives of the people, by developing local leadership. On the other hand this act also makes six separate principles and policies for the local self-governance system more effective. The major policies and principles of the LSGA are:

- Devolution of powers, responsibilities, and means and resources as are required to make the Local Bodies capable and efficient in local self-governance.
- Building and development of institutional mechanism and functional structure in Local Bodies.
- Devolution of powers to collect and mobilize such means and resources as are required to discharge the functions, duties, responsibility and accountability of Local Bodies.
- To make the Local Bodies oriented towards establishing the civil society based on democratic process, transparent practice, public accountability, and people's participation.
- For the purpose of developing local leadership, arrangement of effective mechanism to make the Local Body accountable to the people in its own areas.
- Encouraging the private sector to participate in local self-governance in the task of providing basic services for sustainable development.

Highlighting the last principle of LSGA it is positive that the act has successfully mentioned the provisions of waste management are the key responsibility of the LBs and their organs. Similarly, it also makes the principles for private sector participation in every activity of LBs. However, this act does not focus on the waste problems and its management in effective and efficient way. Lack of the separate provisions and modality of PPP on solid waste management is another issue of this act.

2.15.5 The Town Development Act, 1988

This Act is enacted for the development of Nepalese and town and city in effective and efficient way. It imagined the one of major institutional arrangement as a Town Development Committee for regulate, control or prohibits any act or active an adverse effect on public health or the aesthetics of the town, or in any way pollutes the environment. It has also provision of punishment for the violation of the prescribed provision of this act.

The act lacks the proper provision of waste management in urban and cities of Nepal. Likewise, it does not have any framework or modality of the waste management from the private or public sectors. Thus, there is no such provision of management of waste and PPP model of managing the waste for an entire country. It leads the clear conclusion that towns and cities couldn't be clean and beautiful when the waste or municipal wastes are not effectively managed by the LBs.

2.15.6 Environment Protection Act, 1997

Environment Protection Act (EPA) is recognized as the integrated laws for the area of environment sector. It contains the most of the widespread aspects of the environment. It made the general principal about the environment and its protection. Hence, it does not have clear and separate requirement to manage solid waste. It focused on the regulatory mechanism that is necessary. for all kinds of waste which have adverse impacts on environment and human health.

The EPA, 2053 has provided for the general understanding for the concept of environment and its protection. It also explains the environmental sensitivity and the environment that must be protected and preserved. Main intention of this act is to make the city more clean and healthy by minimizing the adverse impacts to be caused from environmental degradation.

As such, the act has in its first part defined several terms regarding the environment and its relation like waste, disposal, environment and pollution. It defined the term waste as the liquid, gas, slurry, smoke materials. Similarly, definition disposal as given by this act as the act of omission, storage or disposal of sound, heat or wastes. Similarly, it has made the environmental interaction and its interrelationship among

the different components of natural, cultural and social systems, economic and human activities and their components and pollution that significantly degrade, damage the environment and national heritage.

This act is important for the area of environment and waste management because of the fact that it made clear the standpoint of waste management which is significantly related with the concept of environment and the protection of process of environment. EPA has made the provision of prevention and control of pollution. It stated that no one shall succeed to create pollution; made to significant adverse impacts on the environment, negatively affected to public life and health, or dispose or cause to be disposed sound, heat radioactive rays and wastes from any mechanical devices, industrial enterprises, or other places contrary to the prescribed standards. In the topics of Protection of National Heritage it said that it is the responsibility of the concerned agency to protect National Heritage. For getting this purpose, it made the provision as the concerned agency or authority must be prepared and maintain an inventory and such an inventory may also include the objects or places listed in the World Heritage list available within Nepal.

EPA felt the need for the institution of Environment Protection Council (EPC) for providing policy guidance and suggestion to Government of Nepal in the area of environment and environment protection. This institution is also required for making coordination among different agencies, constitute an Environment Protection Council comprising of environment experts and representation of the persons from recognized political parties at national level as well. According to this provision the Environment Ministry may be formed the committee in order to achieve the objectives of this act. The Ministry may form different committees consisting also of experts in the relevant subject. It generated the concept for compensation may be given.

The person and organizations have had any loss or damage in case of any consequence of the creation or disposal of pollution, sound, heat or wastes by anybody contrary to this Act or Rules or guidelines have the authority to claim the compensation. Similarly the Environment protection rules are also made for supplementary legal mechanism for the EPA. It makes the procedural provision for the implementation of EPA. It makes different provision for getting prescribed legal rights and made the guidelines for concern authority or the agencies for

accomplishment of given legal objectives like promotion and protection of the environment. It has ensured that no activities could be allowed to operate which generates excessive amount of solid waste and has encouraged emitting less amount of solid waste to the possible extent (Pokhrel, 2011).

The environment protection act has described the different provisions about waste through the eye of environment protection. It cannot directly deal the problems of the waste and its management. Similarly, the act has not been pointing out the private participation in environment protection and the solid waste management activities. In addition with, it did not focus on role of the LBs in managing the waste and environment.

2.15.7 Solid Waste (Management and Resource Mobilization) Act, 1987

The Solid Waste Management and Resource Mobilization Act had been promulgated since 1987 but it had not been practiced or it dismissed. More specifically, this act came for the effective management of waste and the waste should be mobilized as a resources. It enacted for regulating and controlling of human health problems caused by waste and pollution. It defined various terms related with solid waste management such as solid waste, hazardous waste, dumping site, pollution, and container, recycle, and transfer station, waste management equipment, production area.

Solid Waste Management Resource Mobilization Center (SWMRMC) is one of the important institutional arrangements of this act and authorizes it to take action to control haphazard waste disposal and to collect service fees. The act has given authority for taking various punitive actions against activities detrimental to the intentions of the Act. However, this SWMRC already discontinued and The Solid Waste Management Act, 2011 has also renamed this center as Solid Waste Technical Support Center.

2.15.8 Solid waste (Management and Resource Mobilization) Regulation, 2046

The rule has expected that the center could produce compost fertilizer and sell it, operate public toilet, bath room and slaughter house. The center may provide sanitation service to any commercial, industrial, religious or social institution or any foreign or diplomatic mission or any individuals.

It has also the provision of collection and management of solid wastes. This regulation also provides the necessary criteria to get permission to manage and collect any reusable or other kinds of solid wastes. It had also made various provisions about the procedure regarding the collection and management of solid waste. About removal of harmful solid waste this regulation provisioned that any case any industrial or commercial enterprise or agency or institutions or individual request the center to remove harmful or polluted solid wastes or those that are likely to spread communicable diseases, emitted in the course of routine business, the center should do so by collecting service charges.

2.15.9 Tenth Five Year Plan (2002-007)

In the context of the protection of environment of Nepal, there have been policy level efforts since the Sixth Plan. It was realized that for implementing the programs by the sectoral institutions and environment protection activities also be advanced side by side. In this process there have been some laws and policies came into the effect namely the Environmental Protection Policy in 1987, the National Environment Protection Action Plan were prepared and implemented. In 1993, the Nepal Environment Policy and Action Plan (NEPAP) came into effect. GoN Nepal have been conducted different activities and formulate the programs in the context ratifying the international convention on Environment and Development held on Rio De Generio of Brazil and other treaties approved in various international forums. In the process the Environmental Protection Act, 1996 and Regulations 1997 are in enacted. For the achievement of this objective, it is necessary to take the concept of environmental management from central to the local level development activities through decentralized programs. Similarly, it is also necessary to promote the involvement of governmental, non-governmental, local level authorities and the private sectors. Therefore, the Tenth Plan has been directed towards the proper management and utilization of natural resources and the achievement of sustainability in its use by involving all concerned stakeholders in the management of environment and the natural resources (NPC, 2002: 421).

Involvement of the private sector in the development activities have been recognized by the tenth plan. It clearly states that the role of role of Government of Nepal as

policy-maker, monitor and facilitator through development of private sector as the center point of overall economic activity.

Therefore, private sector will be a partner in the overall economic and development activity. It has imagined the effective, responsible, and private sector. So, it has taken necessary strategy to manage policy and laws for creating capable and effective private sector and to develop systematized corporate culture in private sector (NPC, 2002: 129).

Similarly, this plan made the different objectives regarding the involvement of the private sector. The private sector plays a vital role in the movement of poverty alleviation by maintaining wide, stable and high economic growth through best mobilization of available resources and means making the economic sector of the country strong, healthy, accelerated, competitive and more tied up with external economy, the objective of the Tenth Plan would be to develop private sector friendly financial structure (ibid).

On the other hand, the tenth plan has developed the some policy programs and strategies regarding the urban development. According to the plan intense housing pressure in urban areas has entailed the construction of safe, comfortable and cost-effective housing, and it has become necessary to develop necessary infrastructure to put the already settled unmanaged dwellings in order. Equally necessary is to protect and promote various historical, cultural and tour¹stic heritages found in the urban areas. It is necessary that resources, means and capabilities of local elected bodies along with that of private sector be optimally utilized for the construction, operation and management of urban infrastructures (NPC, 2002: 396).

The environment management should make more effective on the basis of the concept of environmental governance and controlling pollution, and to attain sustainable development through wise/judicious utilization of the natural resources helps to make the clean and healthy environment.

The plan has been developed with two fold objectives. They are: protection of natural environment, restoration, and sensible use of resources because of the fact that there is correlation between the environment protection and the economic development, control the pollution in the urban areas and to keep the rural areas clean, healthy and

beautiful, voluntary participation of people will be encouraged and the sustainable development will be promoted (NPC, 2002: 423).

2.15.10 The 11th Interim Plan 2007

The interim plan is regarded as the eleventh three years plan.' It also agreed the principle of environment protection and environment protection should be done the involvement of private, NGOs and community organizations. Implementation' of international agreements to minimize the environmental problem and to manage economic development provision which government has made and implemented was the main objectives of it.

It emphasizes on the environment protection and the economic development that can lead to sustainable development, protection and sustainable use of natural resources, environmental awareness, the non- governmental and private sector participation. It has taken the policy for institutionalization the environmental monitoring and auditing system, public awareness, participation of local agencies, communities and NGOs in the environment, treaties and conventions ratified by GoN must be recognized and implemented, Carbon trade will be promoted to achieve benefit from clean development mechanism under the Kyoto Protocol, existing by laws on water and air quality will be implemented effectively. Additional bylaws will be formulated and implemented to measure, the expected standard of water, soil and noise and takes the policy and principles of "Polluters Pay" and "Pollution Prevention Pays" (NPC, 2007).

2.15.11 The 12th Three Years Plan (2010-2013)

The 12th Interim Plan (2010/11- 2012/13) has come into the scenario. It did not directly explain that the waste problem and its management. It also indirectly made their attention towards the waste management from the eye of environment protection. However, it made the circuitous policy and strategy for managing of waste. In this way, it focused on the PPP approach especially in the physical infrastructure development and social sector. It also focused on private and community sector will be involved and given ownership in the waste management and cleanliness of the rural and urban area (NPC, 2010: 104). This plans concerned with the partnership and joint efforts with the representative associations/ organizations of local bodies. Such

collaboration will be strengthened in the activities like decentralization, self-governance, and local development.

2.15.12 Three Years Interim Plan (2013-2017)

The 13th Interim Plan (2013 - 2017) has newly come into practice. It is unable to give the detail, specific and effective objective of solid waste management and the involvement of the private sector into the field of solid waste management. However, it makes the scattered provision for waste and the waste and its management. This plan (2013: 86) has made objectives towards the urban city more secure, healthy and economically sound with the more and adequate infrastructure. Through its tactical policy the program of public private partnership should be made on the development and expansion of basic urban services (NPC, 2013:87). It states that the human activity and process of development is interrelated. Therefore, the human activity and the development process should be in environmental friendly with the concept of green development (NPC, 2013:96). It focused on the climate change and its effects. This plan makes their concern about the waste management towards the environment protection. It clearly said that management of environment should be internalized into the development efforts. Similarly, it has to take the action plan, policies and laws for the management of environment in sustainable way. So, it takes the action plan for making aware regarding issues of environment. It recognizes the waste as the serious and complex problem and it creates challenge for the concerned authority for effective management of waste. Thus the plan also keeps the principle of "Polluters Pay" and "Pollution Prevention Pays" already mentioned in 11th Interim Plan (2007 - 2010). It further focuses on partnership that should be strengthened among` private sectors, LB, NGOs, community organizations for the climate change and environmental activities.

The tenth five year plan, eleventh three years interim plan, twelve interim plan and thirteen interim plans only can make their concentration about the environment problem rather than focusing on the waste management. During the analysis of different provisions of these plans documents have not successfully identify the consolidate stipulation especially in solid waste management through the participation of the private sector.

2.16 Summary

Waste management in Nepal has a long history. This chapter reflects some parts of the research about why it is being carried out. It includes other literatures related to community participation and NGOs which play an important role in managing waste. In addition, it explained about the general setting about Kathmandu. Kathmandu is the capital city of Nepal and the study areas of my research are part of Kathmandu municipality. Besides that, this chapter also gives a brief detail about the laws concerned with waste management. It is seen that there are several laws and policies for the management of waste. There have been amendment in the laws but it does not seem that the later policies have replaced the former once. But it is also a fact that the laws are not properly implemented when it comes to strikes while managing the waste). The chapter is followed by the literatures related to waste management and other concerned issues as well.

CHAPTER THREE

METHODOLOGY

3.1 Research Methodology

At general level method means Epistemology, the study of how we know things, it's about strategic choices i.e., how to get information and at the specific level method is about technique (the sample size, whether to use face to face interview or others and etc.) (De Vaus, 2002). In this chapter I will present the methods that I decided to use. I will also describe the research process, the ethical issues and the reliability and validity of my research etc.

3.2 Qualitative/Quantitative Approach

Both the quantitative and qualitative approaches have strengths and weaknesses but there always have been debates on the basis that which one is better (www.experiment-resources.com). Golafshani (2002) state that quantitative study helps the researcher to be familiar with the problems and generate a hypothesis and test it. Quantification in research has a long trend. Phenomena were calculated and measured, yet it can be observed that there are so many things that cannot be counted or measured for instance feelings, attitudes or more. Qualitative research is a particular tradition in social science that depends on watching people in their own territory and interacting with them in their own language on their own terms (Kirk and Miller, 1986). Qualitative research means different things to different people. In qualitative research one feels free to use the ideas and analyze unlike the quantitative technique where we use pure statistics (Tesch, 1990). My research attempts to use both the methods. My research does not use complex quantitative techniques to analyze the information. But as I will used household surveys as the research technique there are certain information that I can use in quantitative form using the tables.

Similarly, I will have also used interview as the other research strategy for my research. The information derived through interviews cannot be analyzed statistically. So, the information derived from interviews is analyzed in words. So, my research uses both qualitative and quantitative approach.

3.3 Source of data

The source of data or information is either primary or the secondary source. My research will have used both the sources of data as available and as relevant.

I. Primary sources are those items that are original to the problem under study' and the effectiveness of these data depends on how appropriate the researcher designs his/her research questions and how he or she interacts with them' (Mugagga, 2006). The primary data for my research have been collected in three settlements of ward no:-29 in Kathmandu who are involved in solid waste management through ways. The research tools like the observation, house hold survey, interviews will be used to obtain the information.

II.Secondary data consists of information that has already been collected for another purpose but which is available for other's to use. Secondary source of data is an important source of data when there is limitation of resource, time money and which limits data collection for extensive areas. Secondary source of data can be used in comparison and they can provide the basis for analyses as well (Clifford and Valentine, 2010). Here, the secondary information will be collected through library sources, articles, magazines, published and unpublished research reports, databases, internet etc.

3.4 Data Collection Method

3.4.1 Household (HH) Survey

Use of questionnaire in research is one of the oldest forms of research. Simon (2006:164) defines questionnaire as 'questionnaire is a device or tool for collecting information to describe, compare, understand and/or explain knowledge, attitudes, behavior and/or socio-demographic characteristics of a particular population (target group)'.A questionnaire survey represents an important and flexible tool in diverse development context. However, care is very necessary to avoid some pitfalls caused due to language, norms, education while conducting research through questionnaire surveys. .

I have three study areas and I tried to conduct house hold questionnaire. To know the different aspects of community participation the household questionnaire will be used. The questionnaire includes semi-structured questions. The questionnaire will be used in all the settlements under the areas mentioned below. The questionnaire will be used to know the different aspects of their family background and their relation to waste management. I have prepared the questionnaire, printed, and kept separately now.

- Local Newari settlement (Ashan Area)
- Thamel
- Samakhushi Town Planning

3.4.2 Interviews

Interview is a verbal interchange where, one person, the interviewer, attempts to elicit information from another person by asking questions.' In qualitative research interview relies on rapport building and dissuading the issues in details. The interviewer develops an interview guide for the purpose but they do not use it much as every individual is unique and their conclusion as well. However, the quality of the data collected depends on both in the interviewer and the interviewee. Sometimes the interviewee may act poorly and sometimes the interviewer. In both the cases the conclusion is affected (Kathleen and Lapan, 2003, and Mathers, Nick and Amanda, 1998 cited in Mugagga, 2006).

In research interview is the one where two people talk or converse about the mutual and common in interest. According to Kvale (1996) the researcher either takes the role of a miner (digging metal from the earth) or the traveler who wanders and collects the information and opens it as a story later. Conversation is the basis of all interviews. Conversation may have different forms ranging from a small talk to a research interview. Research interview is a professional interview. However, obtaining information through conversation in social science is hardly counted as method till date. Sociologist and anthropologist have long been using interview to obtain the necessary information. A qualitative interview in recent decades is the new phenomena in research. Developing the interview as the research method involves a challenge to renew, broaden and enrich the

conceptions of knowledge and research in social science. In my thesis I will have the opportunity to talk with people who are involved in solid waste management and somehow concern in making the people participate in the solid waste management. This includes both formal and informal conversations. I consider them as my key informants. The list of my key informants is as follows:

- Project Manager of Environment Protection Manch, Northern Cluster, Ranibari, Kathmandu.
- Staff from Kathmandu Metropolitan City (community mobilization unit, environment department) and staff from ward no:- 29 KMC.
- A staff from NewaKhala at Ashan area
- Staff from Nepal Pollution Control and Environment Management Centre (NEPCEMAC)
- A staff from Community recycling centre (CRC).

3.4.3 Observation

A checklist has been prepared to take information. That list is kept in appendix.

3.5 Sample Size Determination

Sampling is the process of selecting units (e.g., people, organizations) from a population of interest so that by studying the sample we may fairly generalize our results back to the population from which they were chosen' (www.socialresearchmethods.net). Sampling in qualitative research is not rigidly defined as in quantitative research (Coyne, 1997). According to Gobo (2004) sampling in qualitative methods is neglected by the qualitative researchers and the survey researchers put it as the positivistic worry and the way it uses the non-probability methods. Trying to prove him wrong I have tried to take samples but as my research is more qualitative samples has been taken from non probability method. The samples used in my research are of purposive sample. According to Patton (1990), the 'logic and power of purposeful sampling lies in selecting information-rich cases for study in depth. Information-rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful stratified sampling' (p. 169: cited in Coyne, 1997).

Schwartzman & Strauss (1973) state that after visits to sites and locations the researcher starts to think about the sample and how to take them. Categories such as age, gender, status, role or function in Organization, stated philosophy or ideology may serve as starting points to decide the sample size (Cited in Coyne, 1997).

There are 2,81,576 households In KMC (according census 2011) and 5582 households in 2001 (http://www.kathmandu.gov.np/Page_Ward+No.+29_44) in ward no:-29 KMC. In this study purposive sampling method were adopted under the non-sampling method. Following table no:-1 clearly showed that information about the sampled area, their population, sample households, and sampled organization.

Sample Area & Demography

Ward No. 26 [old 29] and of 35 wards of KMC

S.N.	Sampled Area of the study	HH No.	HH Sampled Size	Sampled Organization
1.	South Area (Ason)		16	2
2.	Middle Area (Thamel)		16	2
3.	North Area (Samakhusi Town Planning)		16	2
	Total	5582	48	6

Source: KMC Ward Profile

Besides that waste management or the work of cleaning in Nepal is conducted by a certain caste group. I wanted to know if any specific caste groups in the community had special influence in waste management or not.

3.6 Reliability and Validity

Reliability and validity are important in evaluating data in research process. The concepts however, were normally used only in quantitative research under positivist epistemology. Creswell (2007) argues that in qualitative research, ‘reliability often refers to the stability of responses to multiple coders of data sets’. Kirk and Miller (1986:21) define validity as, validity is the question of —whether the researcher sees what he/she thinks he/she sees whereas, and reliability is concerned about the replicability of the research. Reliability refers to whether or not

you get the same answer by using an instrument to measure something more than once. Reliability is a necessary but insufficient condition for validity. Kvale and Brinkmann (2008) explain about three different criteria of validity in qualitative research: validity as craftsmanship, communicative validity and pragmatic validity. These three types of validity explain how researcher shows whether research work is valid or not. Validity however, is never proven absolutely but it is a goal towards which we strive (De Vaus, 2002).

However, in the analysis I will use direct quotations from the interviews, to let the reader know what I base my analysis on. Although the reliability can, to some extent, always be questioned in qualitative research I will try to increase my reliability through the quotations.

3.7 Validity

The respondents know that I will be there for my study purpose and it will not benefit them in anyway. So the information they have provided to me may not be so true or depending in their mood they might have given me different information. In the case of interviews as well the staff of different organizations may have taken me for granted and may not have given me the right information. But I am not sure if they do or don't do that.

3.8 Ethical Issues

Each decision made in research involves a potential compromise of one value for another. Researchers must be very aware of what they do to minimize the risk in receiving the information from people concerned. Research ethics are codes or guidelines that help reconcile value conflicts. It considers the potential risk for the participants.

There are three areas of risks in social research. First, participants may be harmed as a result of their involvement. The potential harms include death or injury, stress, guilt, reduction in self-respect or self-esteem, unfair treatment, withheld benefits, and minor discomfort. Second, professional relationships and the knowledge base may be damaged. These risks include falsification of data, plagiarism, abuse of confidentiality, and deliberate violation of regulations. Third,

problems for the community or society may result. Societal risks involve the effect of cultural values and beliefs on the knowledge produced and the impact of that knowledge on society (Gillespie, 1995).

I am always aware about the ethical issues. I am aware that I have to make clear about my purpose of the study and the inquiry I am making.

3.9 Study Approach

The study is focused on the mixed methods of research design used both qualitative and quantitative data. The data collected from primary as well as secondary sources. The qualitative types of data are collected from the primary sources and quantitative data are obtained from the secondary sources.

3.10 Research Strategy

The research strategy for this study is concentrated on the mixed methods as both quantitative and qualitative are collected from the primary and secondary sources. Present research strategy of this study primary method that helps to enhance the study project and secondary information guides the supporting role in the procedures thereby playing complimentary role with each other.

CHAPTERFOUR

PRESENTATION AND INTERPRETATION OF DATA/FACTS

In this chapter, I have put the necessary information I received during my study work into tables and in words wherever practical and appropriate.

4.1 Description of Study Area

Kathmandu – a metropolitan city is highly venerable for the waste management. Kathmandu Metropolitan City (KMC) is the capital and commercial hub of the country. It is connected with other countries with only International Airport and two major highways connect with India and china. Since it is the capital of the country, all the embassies are concentrated in the Valley, and industries have moved to the secondary cities.

Introduction to Kathmandu Metropolitan City

Kathmandu is the capital and largest metropolitan city of Nepal. The city is the urban core of the Kathmandu Valley in the Himalayas, which also contains two sister cities namely Patan or Lalitpur, 5 kilometres (3.1 mi) to its southeast and Bhaktapur, 14 kilometres (8.7 mi) to its east. It is also acronymed as 'KTM'.

The city stands at an elevation of approximately 1,400 metres (4,600 ft) in the bowl-shaped valley in central Nepal surrounded by four major mountains, namely: Shivapuri, Phulchowki, Nagarjun and Chandragiri. It is inhabited by 671,846 (2001) people. The Kathmandu valley with its three districts including Kathmandu District accounts for a population density of only 97 per square kilometres whereas Kathmandu metropolitan city has a density of 13,225 per square kilometres. It is by far the largest urban agglomerate in Nepal, accounting for 20% of the urban population in an area of 5,067 hectares (12,520 acres) (50.67 square kilometres (19.56 sq mi)).

Kathmandu is not only the capital of the Federal Democratic Republic of Nepal but also the headquarters of the Central Region (Madhyamanchal) among the five development regions constituted by the 14 administrative zones of Nepal located at

the central part of the country. The Central region has three zones namely, Bagmati, Narayani and Janakpur. Kathmandu is located in the Bagmati Zone.

Kathmandu, as the gateway to Nepal Tourism, is the nerve centre of the country's economy. With the most advanced infrastructure among urban areas in Nepal, Kathmandu's economy is tourism centric accounting for 3.8% of the GDP in 1995-96 (had declined since then due to political unrest but has picked up again).

The city's rich history is nearly 2000 years old, as inferred from an inscription in the valley. Its religious affiliations are dominantly Hindu followed by Buddhism. People of other religious beliefs also live in Kathmandu giving it a cosmopolitan culture. Nepali is the common language of the city, though many speak the Nepal Bhasa Newari as it is the center of the Newar people and culture. English is understood by all of the educated population of the city. The literacy rate is 98% in the city.

Kathmandu is now the premier cultural and economic hub of Nepal and is considered to have the most advanced infrastructure among urban areas in Nepal. From the point of view of tourism, economy and cultural heritage, the sister cities of Patan (Lalitpur) and Bhaktapur are integral to Kathmandu.

Introduction to ward no. 29 (Currently-26)

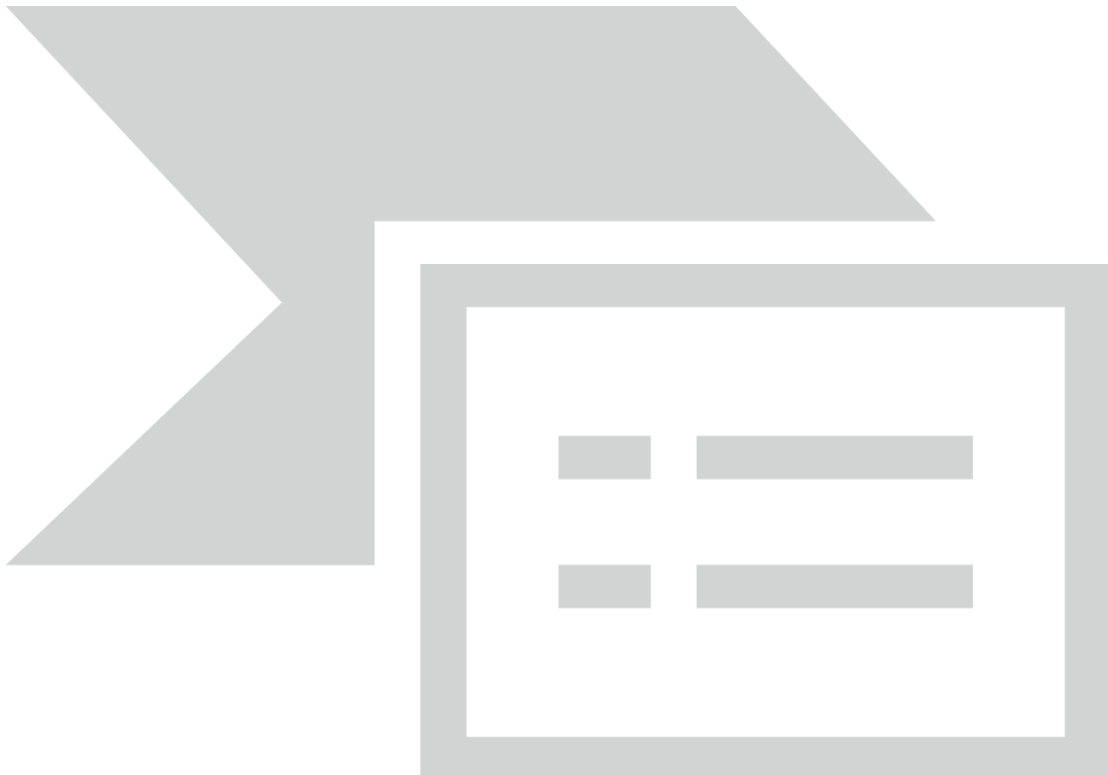
This ward has a mix of ancient neighborhoods like Bhagawan Baha, Thamel, Galko Pakha and Lainchaur; and new settlements like Mitra Nagar, Pabitra Nagar and others. It has Nepal's only modern bus terminal, Gongabun Bus Park. It also has the Gongabun Housing Project, initiated by the then Housing and Urban Development Department and equipped with all basic amenities, which represents a big forward progress in the ward's development.

Ward No. 29 is hemmed in by the Royal Palace, Lazimpat and Ranibari in the east; the Bishnumati river, Mhaypi and Saraswati Campus in the west; Gongabun and the Ring Road in the north; and Thanhiti, Chhetrapati and Jyatha in the south. There are sprawling complexes like the Indian Embassy, British Embassy, Malla Hotel, Keshar Mahal, Department of Mines and the bus park located here. The Thamel-Gongabun road can be taken as the ward's axis. There are compact settlements and

there are loose settlements. There are also vast stretches of farmland watered and made fertile by the Bishnumati and Samakhusi rivers.

The ward's population in 2001 was 24,543 and it contained 5,582 households. It has an area of 218.6 hectares. Parts of the ward suffer inundation during the monsoon season each year.

Figure 1: GIS Map of Ward No :- 29 (Currently-26)



Source: <http://www.kathmandu.gov.np/ne/node/125>

4.2. Introduction to Concerned Organizations included in SWM in Study Area

I . Environment Conservation Initiative Nepal

Environment Conservation Initiative (ECI/Nepal) is an authorized NGO (Non-government Organization) which works with the underdeveloped communities in the areas of Waste Management such as door to door waste collection, awareness promotion, compost plant operation, and waste management related technology exhibition etc. According to the manager of ECI/Nepal is not funded by any organizations. ECI/Nepal was registered before 13 years (Registration no is 183/o61/62). This organization has initiated the waste management activated with the

Community participation in various areas of KMC including my study area since last 3 years and now there are 240 employees working. It established its many branches office in Kathmandu. It has also established its sub branches. Because of its active involvement in the preservation of environment it was awarded with the first prize (20015 June, World Environment Day) provided by the then Ministry of Science and Technology of Nepal. The program motivates people to participate in waste management and to reduce and recycle the waste. Community participation in ward no 29 of KMC is done by Clean Society Service Center (a local organization). In addition, its registration no is 314/069/70, have one composting plant in Samakshushi, and 14 staffs are working now.

II. Thamel Mobile Cleaning (TMC)

TMC Is registered 28th April 2011 in Kathmandu office. The main focus of TMC was to minimize or control the environmental pollution caused by solid waste. It has been involved in different works including door to door waste collection, cleaning of public places, tree plantation. TMC is conducting the different activities like environment conservation, increment in environmental awareness, and development of technique/methodology and so on. It has taken an initiation in managing the waste through the community participation with the help of Kathmandu Metropolitan City and it has 65 working staffs . It has also been about one year now since (2016, March/April). It has started the community to participate in waste management. TMC has also performed waste management activated networking with KP Cleaning.

III. Community Recycling Center (CRC)

Community recycling centre is a small organization which was established in Lagan (Kathmandu) in 2061 B.S (2004 A.D) with a motive to manage the inorganic waste as well. A club named KMC Youth Corner Club in KMC had distributed about 100 black compost bins before 2061 to manage the organic waste. The community people use the waste to make the compost. However, the inorganic waste was still there unmanaged. So, the members of the youth club decided to manage the inorganic waste and started the Community recycling centre in Lagan with the financial help of Kathmandu municipality. CRC collects the inorganic waste

from the community (Lagan ward 21). But the staff said that they could also collect the waste from other communities or in individual. But as CRC was not a big organization it did not have the facility to go to different communities and collect the waste. People/community who were interested had to take the waste there. CRC collects the plastic bags, milk pouch, used oil plastic pouch, bottles for different prices and sells it to scrap waste collectors or to other factories to reuse it. According to the staff of CRC the community people have also started to reuse the plastic bags to buy the vegetables or collect them and give it back to the vegetable sellers and get the vegetables in discount. CRC also buys the compost from the community members if they wish to sell it. The CRC staff said that she could feel the difference between other manure and the organic compost. She shared that she felt the quality of soil was better when she used the organic compost in her flower pots. She said that the organic compost has a very high demand in the market for organic farming so it is not difficult to sell it.

According to her in the initial days one of the staff from municipality also visited the office and helped in collecting the inorganic waste but after some time it was stopped. Now besides the financial help only CRC members are running the organization.

4.3. Caste/ethnic Group

Though, I did not have any caste and ethnic criteria to choose the respondent so far but I wanted to know if the specified caste (Kuchikars were the members in the community and if there were if they had any special influence or behaviors in managing waste) though I did not find any. Thamel Mobile Cleaning Center employed some staff in cleaning the roads in these settlements that were from the specified caste.

4.4 Qualification of the Household Members

Waste management is related to the whole member of the family. So, qualification issue became so difficult and there is lack of time, however, some respondents managed to give enough time and I managed to get all the details.

The respondents were mostly the head of the households having varieties education level. I was surprised to know that the children from highly educated family who have supported their role in managing waste and encourage them to do that properly. Along with these facts, awareness about environment was also an issue. I walked with the waste collectors to different settlements around my study area. Some people in spite of being educated felt it bothering to segregate the waste; some people put the plastic bags in the organic waste if they did not see the waste collectors around though they knew that it was not allowed. The waste collectors took out the plastic bags from the rickshaw later. (Source: Field visit January-February 2017)

Table 4.1: Household members in the family

HH members	No.
02-05	25
05-10	14
05-15	09
Total	48

Source: Field visit January –February 2017

I found the relationship between increase in the number of household members having children and an increase in the inorganic waste clearly because of packaging foods and wrappers. The household members said that increase in family members in a household to some extent contributes to an increase in the waste. It is especially the case where there are children. Demand for packaged food for the children added more inorganic waste. One of the respondents said that they have their parents and children in their home. Parents do not prefer the packaged food at all and the children cannot live without it. It is very difficult sometimes to manage both of them. Another respondent gave a similar example. She said that their children were not allowed to take packaged food to their school. But they could not stop their children taking those things when they were at home.

In addition migration is another cause to increase the member in households so that waste increase. I received such response from inhabitants of Samakhushi Town Planning.

4.5 Types of Waste

Urban wastes can be subdivided into two major components-organic and non-organic. In general, the organic components of urban solid waste can be classified into three broad categories: putrescible, fermentable and non-fermentable. Putrescible wastes tend to decompose rapidly and unless carefully controlled, decompose with the production of objectionable odors and visual unpleasantness. Fermentable wastes tend to decompose rapidly, but without the unpleasant accompaniments of putrefaction. Non-fermentable wastes tend to resist decomposition and, therefore, break down very slowly. A major source of putrescible waste is food preparation and consumption. As such, its nature varies with lifestyle, standard of living and seasonality of foods. Fermentable wastes are typified by crop and market debris (UNEP, 2005). According to the SWM & RMC (2007) the 68 percent was organic, 13 percent plastics, 10 percent paper and cartons, 4 percent glass, 2 percent textile, 1 percent metals, 1percent rubber and leather, 1 percent others, and 0 percent construction and demolition waste (SWM&RMC, 2007). Similarly, according to Waste Composition survey conducted on March, 2009, the composition of waste of KMC: textiles 2.3%, others 3.12%, Metals 0.42%, Rubber and Leather 1.2%, Plastic 10.8%, Paper 9.02%, Organic 63.22% (Rai, 2010).

This information states that the waste generally is generated organic and non-organic nature. However, the organic nature of waste leads significantly high percent in comparison with the non-organic nature of waste. Generally the organic and non-organic types of waste are produced in each and every household and business. On other hand, in this study 80.4 percent respondents said that they produced both organic and non-organic nature of waste. Only 19.6 percent respondents were made just organic nature of waste. This information contributes to make the conclusion the average populations have produced organic and non-organic nature of waste in their internal sources.

4.6. Effectiveness of SWM Practice

The generation and composition of the Municipal Solid Waste (MSW) tends to differ in relation with socio-economic factors connected to urban areas, e.g. prosperity level (Biegl et al., 2004 quoted by Larsson and Sahlen, 2009). Therefore, Progressive and

feasible MSW management is essential when MSW is generated even faster and with a dissimilar composition than before (Larsson and Sahlen, 2009). The municipal solid waste can be re-use, re-cycling for energy recovery; domestically, industrially, commercially and institutionally, is only conducted when economical incentives are clearly recognized. That is if the waste in particular has a value for selling and can be re-used, re-cycled or recovered for energy. Objects of value are e.g. paper, metals, glass bottles and plastic bottles as well as other plastic and glass objects (Prasad Luitel, 2008a; Prasad Luitel, 2008b quoted by ibid). For that reason, when people feel the existing SWM practices is ineffective, the overall efforts in about the SWM is going to be loss. So, it is necessary to understand the perception of the people in the prevailing services about the SWM.

Table 4.2: Effectiveness of SWM

Response	Frequency	Percent
More Effective	18	38
Less Effective	24	50
Not Effective	06	12
Total	48	100

Source: Field Study Survey, 2017.

For the purpose of analyzing the perceptions and the feelings of respondents regarding the solid waste management, the aforementioned clearly tells that the majority of the respondents (50.%) states that the existing services on SWM is less effective, on the other hand, 38 percent makes their opinion the services regarding the SWM is more effective. Similarly, 12 percent people have concluded that the practice of solid waste management is not effective. On the basis of given information, it can be said that the existing waste management service is somehow maintained by concerned authority. Customers are not satisfied about providing service; therefore it must be reformed and properly managed.

4.7 Waste Separation Behavior of Respondents

If the people are aware or have better understanding about the sensitiveness of waste, they have made their efforts to manage the waste in their home. If they manage their

waste effectively the problem and issue about the waste in minimized. Therefore, the data shows that consumer can manage their waste in their home.

Table 4.3: Waste Separation Behavior

Separation Behavior	Frequency	Percent
Yes	29	60
No	11	24
Sometimes	07	16
Total	48	100

Source: Field Study Survey, 2017

In this regard 60 percent respondents have given their views as they managed their waste and 24 percent respondents have made the argument, they never manage their waste i.e. sometimes they throw waste in open space, street etc. Similarly, 16 percent people made their opinion that they manage their waste sometimes. On the basis of these given information it is positive that the more than half of the populations have been practiced for managing waste in their home. However, it is also be challenged 24 percent people cannot manage their waste. It means they have not knowledge about the waste or they are not sensitive about the effects of waste in their health and environment.

Solid waste management (SWM) is the process of managing waste materials so as to minimize their adverse impact on environment and maximize their potential for reuse. More specifically, SWM is associated with the generation, storage, collection, transfer and transport, processing and disposal of solid waste that is in accord with the best principles of public health, economics, engineering, conversation, aesthetics and other environmental conservation (Tchobanoglous et al., 1993). Therefore, the waste is properly separated from its sources. If it separated from its sources it is easy to manage, i.e. it can be reused, can be making compost, can be recycling, some other non-organic waste can earn money by selling it. If the households can separate their waste properly, they all have made ideas for making these wastes for other uses. If so, most of the waste of household will be managed properly. So the waste should be separated on its sources by the households.

Table 4.4: Willing to Cooperate

Willing to cooperate	Frequency	Percent
Very much willing to cooperate	28	59
Somewhat willing to cooperate	07	14
Less willing to cooperate	4	8
Not willing to cooperate	3	6
We have been already doing	06	13
Total	48	100

Source: Field Study Survey, 2017.

In this sense, the study is concerned whether the respondents cooperate when they are asked to separate waste produced in their home. For obtaining this aim the following table depicts information where, 59 percent shows their interest that they are very much willing to cooperate. Similarly 14 percent show their view for somewhat willing to cooperate on the other hand 13 percent also make their opinion they have been already doing cooperation. Likewise, 8 percent and 6 percent viewed they are less willing to cooperate and not willing to cooperate accordingly.

4.8. Service Provider and Use of Services for Disposing the Waste

The SWMA 2011 has given the formal authority to local bodies for managing their waste in effective and efficient way. Similarly, this act also has focused on the solid waste management should be done through the collaborative effort with private sector and NGOs/community and club and municipalities/VDCs. For these provision of Solid Waste Management Act (SWMA, 2011) also gives the right and duties for managing the waste for KMC in their respective area.

The KMC also have the duties for participation of other institutions such as private, NGOs, community and club etc. in effective management of waste. According to the official record of KMC 128 private organizations and NGO's are effectively involved in managing the solid waste. Generally, private companies, NGOs, community and clubs and municipality itself involved in waste management activities. This study raises the issue whether people can use the services SWM provided by the different

institutions? And if people support this questions, another issue is lift which institutions are much more involved in effective management of waste?

Table 4.5: Service Provider of SW

Service Provider	Frequency	Percent
Private Sector	30	62
NGO & Club	14	30
Municipality	04	08
Total	48	100

Source: Field Study Survey, 2017

Therefore, following figure clearly shows that 100 percent respondents have claimed that they used the services for disposing the waste provided by different institutions. It means more or less all people who lived under the territorial jurisdiction of KMC are using the disposing the waste services frequently. On the other hand, 62 percent people have used the waste management services by the private sector, 8 percent respondents have said that the municipality and their organs have been involved in managing the waste management and 30 percent people said that the NGOs and community club significantly involved in managing the waste. On the basis of these fact, the private institutions have rapidly involved in waste management activity, likewise, the municipality or KMC and their ward also have a little bit engaged in managing the waste. The NGOs has an increasing their role in SWM activities significantly.

4.9. Waste Management and Age

Does age really matter in managing the waste? According to Bernstein (2004) Aging is also emerging as a critical problem in MSWM. Managing of waste in a household is not concerned with only one member in the household. However, there always exists a question about the age Old people do not have access to waste bins and they are exposed to health risks and often have difficulties for paying the waste collection charges (see Bernstein 2004: 17). When asked if age really mattered one of the middle aged respondents said his parents live with him. There are three generations living in the same home, his parents, him and his teen aged children. He said that his parents especially his father doesn't view things like the

unused wires, old telephone sets, tires as waste. He separates and takes them out of the home either to throw it or sell it to the scrap waste collectors but he brings the things back again. He even brings things that he finds in the roads. He said it's a bit annoying. At the same time he said that his children do not use the old mobile phones. They change the mobile sets if the battery does not work. He said he would replace the mobile battery instead of the mobile itself. They see it as a waste. Waste for him is not the waste for his parents and waste for his children is not waste for him. He doesn't know if it is age or something else. But he thinks that he may think like his parents when he gets to their age and may be his children will do the same when they will get to his age. Or may be with time everything may be waste or nothing may be the waste. Another respondent said may be age matters in waste management. He was up to the view that people in old age slowly become dependent. He said, "I don't like and want to throw the things I bought when I was young and capable. I have affection with those things. I am getting older now and I am getting dependent. We are old people and we like old things."

4.10. Collection of Waste

Segregation of waste is taken as an important aspect in community participation or any other kind of waste management because it is believed that 70% of the total waste generated in Kathmandu is considered to be of organic type. The study of Pokhrel and Vhararagavan (2005) also reveals the same fact in the year 70% of the waste was organic, about 9% plastic and rest included metal, glasses, papers etc. Organic waste can be managed through compost making. In all the three settlements people are encouraged to segregate waste at the source though in different ways such as organic farming and composting but due to the space and bad smell, it became unsuitable all around the study area.

4.11. Minimization of Waste

The frequent strikes and the closing of the landfill site by the local residents create problem for the disposal of the waste. Thus, minimization of waste can be a good option for all the people in Kathmandu. Poverty, gender, culture traditions are important social consideration in minimization of waste. According to Bernstein (2004) poor people generate low volume of waste and they recycle it. Besides that,

they also generate income from recycling. The concept of reuse has started with the reuse of plastic bags. In all study area plastic bags are used to make the handicrafts and the paper is also recycled. They are trying to minimize the waste. They are also trying to make money from recycling and reuse. But more community member from Samakhushi said that there are so many problems to do so. For example, there are no markets for the plastic handicrafts and it is more expensive than other regular materials so, people do not prefer to buy those things. It is not possible to recycle the papers in the rainy season. There is no enough space to make compost so the family focuses on composting rather than recycling. One of the Newar respondents from Ason said that Newars do not even through the food as waste. He gave an example that if they have surplus steamed rice they rather dry it in the sun and use it again as food. If it is not possible they give the surplus food to the birds or animals.

4.12. Managing the Waste Before

People use different ways to manage and reduce the waste though they may be environment friendly or not. One of the respondents expressed her feelings that she and her husband don't feel like staying in Kathmandu. They have to pay for everything, even for managing the waste. They feel like going back to the village immediately but they cannot do anything because their children are not with them here. They are working abroad. They used to have pits in their field and yards (the traditional way of managing organic waste in Nepal). The waste would decompose there. In Kathmandu there is no space for digging a pit. Their children do not allow them to go the village because they say that the lifestyle is difficult there. But they find it difficult to live here (Kathmandu) and not in village. Their children do not understand them.

Some people in Samakhushi, Ranibari area said that they burnt the waste before ECI approached them. They said that grasses, twigs took a lot of time to get decomposed so they found it easier to burn it and use the ash in the farm yards or the flower pots. Some also burnt the plastic bags. Some were aware and some respondents were not aware about the environmental problems which were caused by burning the inorganic waste (plastic bags). One of the respondents said that their family knew the adverse effect of burning of the waste. They hear

about it in radio and television but burning the waste is the easiest way to reduce the waste.

Waste in Thamel and Ason area was taken by the office before people did not segregate the waste. They mixed it. Thamel Mobile Cleaners collected the waste as other private companies do. But it has been about almost one year that TMC has convinced people to segregate the waste.

4.13. Economic Context

The effective demand for waste management services .the willingness and ability to pay for a particular level of service is also influenced by the economic context of a particular city or area (Schübeler and Countries, 1996). So, the level of economic development is a determinant of waste generation and the demand for SWM services.

In all area Ason, Thamel, and Samakhushi Town Planning areas, the service holders paid different prices for the waste management. It depended upon the family numbers or the number of kitchen. Normally they paid RS. 150-250 for the individual family with a kitchen. If there were people renting the house and there were more than one kitchen they had to pay up to Rs 300. The office staff collected the fare going house to house. The waste collector said that sometimes the community members gave them the money to pay to the office. He also shared what his friend did when he was given the money by the community members. His friend took the money and did not give it to the office. When later it was revealed he was not paid his salary by the office for which accounted more money than he took from the community member. He also shared that if they could make the community members subscribe to pick the waste they would get extra money/family as commission.

4.14. Affects of Transport Strikes

Transport strikes in Nepal have become frequent phenomena in Nepal). There have been frequent transport strikes in many years as well. The people living in the central part of the country are luckier in other aspects like job opportunities, education and many other aspects (Koirala, 2009. When asked about the effect of strikes in managing waste, the people had almost same reaction to it. It was true in some sense. They only use the municipality van to throw the glasses In Chakrapath area

people actually were not concerned about the strikes with respect to waste. According to them the waste was collected by a certain office and they paid for the service. The office was compelled to do that. In fact, these were people that were directly being affected by the strikes. Besides, the transport strike, Sisdol the landfill site was closed for various reasons and this was time and again. The people did not even know why their waste was not being collected.

In Thamel and Asonsettlement the strikes gave a serious problem. According to the community members the open space was less there. The Kathmandu Post (published on 2016 June 16), one of the nation's daily newspaper wrote that garbage collection in Kathmandu Valley had been halted for the past three days after a landslide that occurred at four different places near the Sisdol-Aletar dumping site in Nuwakot district affected garbage disposal. Though it was a natural phenomena there have been many occasions that waste disposal in the landfill site has been affected. In the past five years, the Valley saw such piles of garbage on at least 62 occasions when locals at the landfill went up in arms with their various demands, forcing the Solid Waste Management and Resource Mobilization Centre, a government body, to offer them a package of solutions. It seems that all organizations are to be most affected by strikes although KMC is not involved in door to door collection, closing of a day/ strike means accumulation of piles of waste in the corners of the street. Besides, the political strikes, there are so many obstructions in the landfill site that do not allow municipality to dump the waste there. This has happened so many times, this result in the accumulation of waste in the streets. Sometimes the waste does not get collected for a long time causing people difficult to walk in the streets.

4.15. Problems in waste Management

The following table shows some problems for both the community groups and the project managers based on the questionnaire survey and the interviews.

I.Problems InAson.

ThamelMoble Cleaning Staff

- I. The community members are not united. Many people do not feel important to attend meetings and discuss about the problems and find solution.
- II. People think that the project is there to earn so there was little cooperation from the leaders in the community.

Community People

- I. People have started mixing the waste again.
- II. People's behavior has not changed.
- III. They are not united and the Community People community people who think themselves as the leaders do things only if it is beneficial to them.

ii. Problems in Thamel

ThamelMoble Cleaning and KP Cleaning Staff

- I. It becomes difficult to convince community members who support other political views or are neutral.
- II. People who are tenants too are participating in waste management. They have bought the bins but as they are not the permanent residents it is a problem. When they shift their homes they carry the bins with them.

Community people

- I. People are satisfied with the works and facilities of both service providers to the community people but wish to dispose the inorganic waste twice a week.
- II. Community people wish the municipality van to make more regular visits in their community.
- III. Expectations more from the municipality.

ii.Problems In Samakhushi Town Planning.

ThamelMoble Cleaning and KP Cleaning Staff

- I. Many community members do not understand the problem of strikes.
- II. Some people still mix the waste.

Community people

- I. Difficult to segregate the waste always.
- II. There is no regular collection of waste.
- III. It would be easier if both types of waste would be collected at the same time.
- IV. Waste collectors do not come on time.

4.16. Status of Community Participation

I.TMC and CRC in ASON

TMC and CRC have worked in Ason, however there was slight difference in the way waste was managed because the settlement is different where local Newars are there. The consequences of people participation during and after the initiation can be compared here. People in Ason were and are not so united how we think. The staffs of TMC shared that when they called for the meeting for some purpose many of the community members (especially the leaders of the community) were not present. The family taking care of the waste management and the community members having the responsibility in Ason agree to this fact. In fact, there are some people in the community who pretend to be the leaders of the community but work for the community only when they think they will be benefited .Usually, people have to pay for the services but people here did not have to pay for any waste management work.

The paper collected from the community was recycled. Plastic bags were re-used to prepare some handicrafts. But the community member who was trained to make the handicrafts said that the handicrafts made from these reused plastic bags were expensive as it needed a lot of time to make it. She also said that there are people who won't buy it if they know that it is made from reused plastic bags. People's perception

towards reused plastic bags or the waste in other sense has not changed yet. Most of the households segregated the waste when the initiation was taken. But when the work was handed over to the community itself there was a slight difference. According to the community members (having the responsibility to manage the waste) most of the people do not segregate the waste now.

A waste collector held the view that working with the waste was not good when it was not segregated. She shared that sometimes people also kept the night excreta and sanitary pads in the waste and it was very difficult for them to work with waste in such conditions. She said that it was very insensitiveness of the people to do that. It does not mean that you are allowed to or you can do anything if you are not doing that work.

Figure 2: Ason and its concerned organization

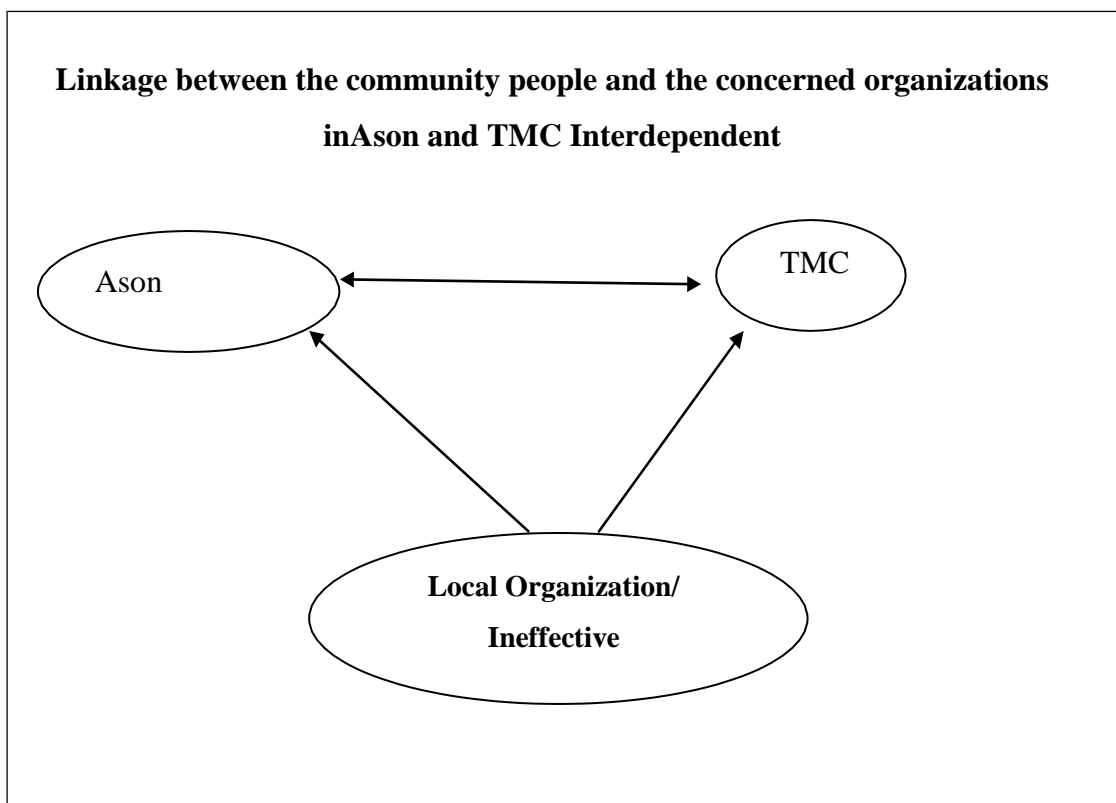


Table 4.6: Difference in waste management in Ason with and without extra Initiation

Description	During Initiation	After Initiation
Segregation	People segregated the waste	Not active as they were when TMC was working with them.
Compost bin	Three bins weredistributedfordiffe	Only few people use the same binsnow.
Unity	People not united/not so serious about the work.	People not united
Payment	Initiallynopaymentwasdone. Everything was forfree	Now people have to pay 100 rupees per month for the waste to becollected.
Difficulty level	Working with waste was easier as there was someone to take care and guide.	Now there is no one to control the community people so managing waste is a bit problem.

II.TMC in Thamel

It has not been so long that TMC started its work in Thamel. It has been almost a year now and only about six months when I visited the area. But the way it has managed the waste is different from Ason. According the a TMC staff JagatUpretti people are united, cooperative, and supportive in waste management. The following table shows in further information about this area.

Table 4.7: Community Participation in solid waste management in Thamel in brief

Description	During current period.
Segregation of waste	People segregated the waste. They did it in their own though there is need ofcollection
Compost bin	The bin is provided
Unity	People united and are cooperative and supportive.
Payment	They paid Rs 100 for the bin and small payments for other things like spray bottles (to spray pesticides if their vegetables are attacked by insects), fish box.
Difficulty level	Handling the waste has become easier.
Dependency	People still have to depend upon the waste collectors to take their waste.

Table 4.8: Comparison between waste management in Ason, Thamel, Smakshushi Town Planning Area in brief

Description	Ason	Thamel	Samakshushi
organization involved	CRC, TMC	TMC,Kp cleaning	ECI-Nepal, CSIC
Segregation of waste	People segregated the waste when the initiation was taken but now people are not soactive.	People segregated the waste	Community members are expected to segregate the waste.
Compost bin	Three bins were distributedfor different purpose. Only few people use those binsnow.	The bin is provided by with the help of TMC and KMC	Two bins/buckets (green for organic and red for inorganic waste) are provided.
Unity	People were not united before and they still are not.	People are united	The most people favor waste segregation
Payment	Initially no payment was done. Everything was for free. Now people have to pay 100 Rs per month. But they are reluctant to doso.	Paid Rs 1000 for the bin and small payments for other things like spray bottles, fishbox.	They pay the monthly amount depending upon their household members/kitchen.
Dependency	Some people hesitate to pay though they are fully depend on the collector.	Still some people depend on collector	People totally depend upon the office for the waste to be managed.
Reuse, recycle	Reuse plastic bags but since there is no market it is very less done. Segregated papers would be recycled but now even the papers are no collected as it has to.	Reuse of plastic bags. Collection of plastic bags and other plastic pouch to take it to TMC for reuse. Paper recycling machine is functioning	Very few reuse of plastic bags to buy vegetables.
Scrap waste	People sell the scrap waste personally.	Sold to scrap waste collectors	All the waste is collected by the office except organic waste.

Difficulty level for the community members	Working with waste was a bit easier when the initiation was there. Now it is	Handling the waste has become easier.	It would be easier if both types of wastes would be collected
Difficulty level for the staff members	Difficult to unite people.	Easy to convince people on political grounds	Sometimes they do not understand the problem during strikes and bandh.
Role of Municipality	No assistance. A private company is involved in collecting the inorganic waste.	Indirect/nominal assistance. Consultation with the municipality has to be done for legal	Nominal assistance.

Note: Though the populations of the different settlements have a difference and the settlements too vary I thought there were certain things as mentioned above compare worthy.

4.17 SummingUp

Thus this chapter includes some of the facts of waste management through community participation. This chapter basically explains presents the information I received in my filed. The next chapter gives some more detain information about solid waste management in the communities.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.1 Empowerment of the People

Empowerment is a process that challenges about the way things are and can be. It also challenges about our power, helping, achieving, and succeeding. Empowerment is a multi-dimensional social process that helps people gain control over their own lives. Power is often related to our ability to make others do what we want, regardless of their own wishes or interests (Weber, 1946, cited in Page and Czuba (1999). Power does not remain in isolation and it has the ability to change.

So, analyzing the level of empowerment, in all people around my study area to some extent are more empowered. As they have the local organization to work with them together I find them to be in better position as other communities.

The KMC staff has the long term planning to manage waste through community participation. KMC is assisting KP Cleaning, CRC, TMC, and ECI in this process. They collect the waste from the community. It has door to door collection system. The only thing the participants are doing is segregating the waste. Some households even do not bother themselves to do that. They mix the waste. The organic waste collector said that he doesn't collect the waste if it is mixed as he is told to do so from the office heads. Such waste is then collected by the inorganic waste collector.

Service providers and service holders are to some extent doing a good job segregating the waste. But these have also made the participants dependent and think that the work is of the office and not theirs. When I was collecting the information from the households there were frequent problems regarding the collection of waste. Basically, it was for the inorganic waste. I was aware of the fact that the road that linked the Landfill site was not in good condition. Because it was rainy season problems were more. On the other, Craig and Mayo (1995) say that community participation empowers people. They exercise the power to develop their self reliance. But in my case I do not find anything that the projects are trying to empower the community. They also focus that NGOs are historically linked in this matter. Cooke and Kothari (2004) explain participation as tyranny because it does not empower

those who need it but there is exercise of unjust power. Here in this case the people are not the ones that are marginalized as Cooke and Kothari say. It is difficult to say if it is the community that does not want to be empowered or is it the projects that do not want the community to be empowered. Is it the exercise of power that does not allow the powerful to share its power?

People are participating in managing the waste. But I felt that people here are not doing so because they are not aware of the waste management problems. Being a part of the community they were involved in segregating the waste. But if the service is delayed they are helpless. They become rude to the waste collectors and also threaten them saying that they will find other service providers. People compost their waste themselves. They are assisted if they are in trouble. They get help in different things, get new ways to manage their compost, reuse the materials. They do not wait for the service providers in any ways. TMC, ECI-Nepal, and CRC have shown them the way to manage the waste. Though, some problem is seen, people around the study are to some extent are empowered

5.2 Role of Municipality and the Status of the Community Members

According to the staff of the municipality we need to focus on that People from Kathmandu would make lots of expenses on waste, they intend to throw the waste every time and any time, and mix the waste. Nepalese People's behavior is that when they pay money for something they think that their responsibility is finished. Same is the case in waste management.

Municipality is responsible for the street cleanings and all the other concerned activities like door to door collection is performed by the private organizations. But now we are trying to put habit to the people to segregate the waste. It is the first step that has to be done to manage the waste. If segregated, waste can be used for making compost but if it is mixed it is not possible that way. The ever increasing waste is the result of not segregated waste. On the question about reuse/recycling of the waste he replied that people of the community are encouraged to reuse the plastic. Giving an example of Nepali culture he said we have been practicing the reuse from the ancient time. Whenever the baby is born we rarely use the new clothes. We use the clothes from our brothers and sisters, even I am doing so. He was also

showing me a bag that he always carries while going for shopping and does not take extra plastic bags. He was giving me an example that he being the member of the community mobilization unit in Environment Department he was taking the initiation in managing the waste. All the three areas in my research come under the metropolitan area. So, I thought to ask them about the role of municipality in managing solid waste in their organization or the community.

In an informal conversation with a staff member of the ECI/Nepal, he said that municipality has the role of cleaning the city. But it cleans its certain routes only. It only collects the waste in the roads or city centers. The work in municipality is not well managed. In the recent years the private organizations are getting better in managing the solid waste than the municipality. It cannot ignore our work and the private organizations. So, now it has the moral pressure to get better in its works. He said that as far as his knowledge is concerned municipality has not worked in its own. The only difference between the municipality and the private organizations like theirs is that Municipality has the power to maintain law and order. It can give orders to manage the waste if it wishes to. But they can't do so. It makes a great difference. They can only request people. But the municipality staffs are invited in different programs organized by their private company. They cannot be avoided. The staff of TMC also had almost the same opinion about municipality and its works. Other organizations may not want to take risk. There may be so many legal formalities to be fulfilled. Municipality can help in those matters.

According to the staff of ECI/Nepal, the community had already received training about managing the waste through community participation held by the municipality. According to the respondents in Samakhushi, they are not happy with the municipality. They explained that a municipality van comes to their area twice a week. They have to throw the inorganic waste in the van. People who do not own a compost bin have to throw all the waste in the van. It comes to the Chowk (centre of the road, here community) but does not stay there for even five minutes. Sometimes they come to their houses when they see the van but by the time they reach the place again the van is already gone. They were expressing their anger through words. They said that they paid tax but were not having good facilities. Nothing is well managed, no proper roads, no sewage system no waste management.

Municipality's role in all the settlement seems very minor. People have complaints regarding the services provided by the municipality. The staff from different organizations also had the same view. According to Water aid (www.wateraid.org) the municipality has limited budget and skilled resources and if the budget is allocated it is not used in a proper way. This to me seems quite positive after hearing the response from the respondents. They had more complaints to make than appreciate the work of the municipality.

According to Anschutz (1996) community-based solid waste management projects are activities carried out by members of the community. Community members, or their representatives, decide on what to do and how to do it. In the above cases the role of the municipality is very minimum but the roles of community members also do not seem that important. Community members are active in segregation but they are not active in decision making. According to the staff of the projects they listen to what the community members say but maybe it was not true.

5.3 Community Participation and Segregating Relationship

As has been mentioned above waste management is a continuous process. It involves different things from collection to disposal. Every aspect is important in managing the waste and community has always important roles to play in managing the waste. However, the important question is "is it only waste segregation where the community can participate?" the municipality staff replied it was. He said that during trainings they discussed about reusing the things but when it came to reality they wanted people to get involved in segregating the waste first. He said that people do not find it convenient to separate the waste. People have to develop the habit to do that first. The staff from TMC however was not so strict about it. He said that segregating the waste was the initial step a community has to take in managing the waste. But it was not the ultimate goal and the only work people can participate in. He said that once people feel easy to manage the waste and to segregate the waste they can make other people aware. That can be one of the important roles people can play and it will be a great achievement as well. He also told that if there is no support from any organization it is the community that has to play an important role in decision making. Communities have to be ready for all the good and bad because it

is the community that has to involve itself in the work it is not always some kinds of project.

5.4 Need of Awareness and Accessibility

ECI is one of the organizations established with the motive to either manage the inorganic waste or reuse them. CRC is a very small . An organization with such a small capacity cannot take the huge responsibility of managing waste. The initiation to collect and reuse the inorganic waste by CRC is praiseworthy. But I felt that municipality is not giving so much attention to such an organization. I found that the information provided by the municipality is limited. Many of the respondents were not aware of ECI . Those who were also had problems taking the inorganic waste to the place as it was at a distance from their homes. The KP Cleaning staff said that they had to collect more inorganic waste as possible because taking less inorganic waste to ECI became costly. One of the respondents in Ason said that we cannot only blame that people are not taking care of the environment. Human being always goes for the easy solutions. For some it is easy to throw the waste in the river and for some to burn the waste but they can so as they thought at Ason area. Personally too, I feel that every household has to have access to organizations like ECI as everyone comes in contact with waste. There has to be many branches of organization. If people have access to such an organization there is very little chance of the inorganic waste coming out in the streets. If people know about such organizations people may collect those things with a motive to protect the environment and also with a hope that they get some amount for the things they don't want in their homes. It is not necessary that every citizen has to have the access to municipality. But the question is always there that how many people do visit the environment department to collect the information? People have access to radio and televisions. Besides that, it has its one Television program which has to be used for information. Municipality has to be more conscious in this matter and more flexible in this context and encourage people to take things to such organization. It has to think to make it a big organization with more collection points so that everyone has the access to it.

5.5 Expectation

Waste management is a work of cooperation it has to be handled with cooperation. Dangi (2009) mentions that solid waste management in Kathmandu serves an example of failure. So, taking this fact in mind we cannot expect municipality to work alone and succeed and we cannot also assume that communities alone can manage the waste. They have to stand by the side of each other and cooperate. Unity is what is needed.

Different communities have been practicing solid waste management in their own ways. But as there are two different agencies involved there are they both may expect something good from each other. In my research the community people, the municipality and the different projects have different expectations from each other. The municipality staff said that they want the people take the responsibility of their waste. Taking the waste out of one's house does not fulfill the responsibility of the people. Paying for the services is not the only work a person is expected to do. The community people on the other hand expect good services from the municipality. It has been set in the mind that municipality has the responsibility to manage the waste the people have more expectations from the municipality.

5.6 Social Aspect

Waste generation is also conditioned by people attitudes (Schübeler and Countries, 1996). According to the staff of ECI people in Mepi and Samakhushi think that living in a squatter makes them poor and dependent and the government has to think about them and provide the facilities and services they need. Though people there are involved in small business as their economic activity people living there think that it is the government that has to look after every matters of their settlement. As they are living in a squatter and they do not own any properties they do not have their own responsibilities towards their community.

At Lainchour and Thamel , people are keen on managing the waste by themselves. They get encouragement from the concerned projects, and people too are supportive in that aspect. One of the respondents said that her husband even picked the waste in the road and disposed it in the concerned place and he sometimes brought the waste home if he did not get any place to dispose it outside. Another respondent said

she used to have a big drum where she composted her waste in her own. In the other settlements waste management was a type of give and take relationship. Some people were conscious and some were not.

5.7 How can waste be Managed in Better Way?

Awareness helps to sought out more than half of the problems in managing waste. It was very good to hear that people who were aware about waste management felt that people have to be given awareness about waste management. They thought that awareness was the most important aspect in waste management. They also said that they have to segregate the waste and tell them how to manage the organic waste. Inorganic waste had to be reused as far as possible.

5.8 Summing Up

This chapter is the body of the paper and it gives some insights of community participation in waste management. People have their own perceptions of the waste that is generated in their homes.

CHAPTER SIX

SUMMARY, FINDINGS, AND CONCLUSION

6.1 Summary

Rapid urbanization is creating lots of problems in Kathmandu. Air pollution, traffic congestion and problem in managing solid waste management are some. This research concentrates community participation in solid waste management. Solid waste management is a very talked about issue in Nepal today. A lots of garbage is seen piled along the street and in the riversides. Nepal has a very high growth rate. Besides that, the unorganized urbanization is contributing to the unmanaged waste in Kathmandu. Migration is a common phenomenon. People from other parts of the country have migrated to the capital city in search for good facilities, employment opportunities, education and many more.

According to the Local Self-Governance Act, 1999 municipalities are responsible to manage the waste. But in Nepal managing the solid waste is considered as failure. Waste management is a complex task which depends on organization and different actors responsible for it like the public and private sectors (Schübeler and Countries, 1996). This study has focused on the community participation in solid waste management as it is one of the options to tackle the waste and reduced the burden to the municipalities. Thus, broadly, the paper has concentrated on the following questions:

- How did the KMC contributed to solve the problems of solid waste and reduction of waste through the community participation?
- How was overall solid waste management Process managed through community participation?
- Had the community participation approach resulted as intended in managing solid waste in KMC.

The most unsystematic urbanized city of Nepal is Kathmandu which is heavily affected by the waste problem. As, 'Community participation in solid waste management in Kathmandu' is my topic, I chose different places and different

settlements of Kathmandu involved in managing the solid waste through community participation.

I have three study areas:-

Ason:- It is a highly dense settlement and downtown near Rani Pokhari . It started managing waste under a project called Thamel Tourism Center now it is TMC. It started the work in 2010 and the work of managing waste has been handed to the community people.

Thamel:- It is a tourism and local Newari residential area. This area is involved in waste management through Thamel Mobile Cleaners. Besides this, there is Thamel Tourism Council supporting the community in managing the waste management. They are still trying to convince other people to participate in managing the waste.

Samakhushi Town Planning: - This upper class residential area is located near Gongabu, Chakrapath . These areas are on the either side of the ring road. These areas are managing waste under ECI/Nepal. According to the staff of ECI about 500 household in these settlements are involved in waste management. Segregating the household waste has been taken as the focus in this area.

ECI is the organization which has started its work in managing waste since 2012. It works in different parts of Kathmandu district. According to the staff it has started to make people participate in managing the waste with the assistance of the municipality in small area of Kathmandu . It has become almost one year since it has started its work.

CRC is a small organization established in Kathmandu (Lagan) in 2004. It is run by a youth club called KMC Youth Corner Club. According to the staff there it was established with a motive to manage the inorganic waste. It gets some financial help from the municipality. It collects the inorganic materials and pays for those materials.

The communities actively involved in managing the waste. Projects have focused in segregating the waste as it is assumed that most of the household waste is of organic type. The communities are provided with the bins. Communities are not much

involved in reusing and recycling. Disposal of waste (basically the inorganic one) is not done by the communities. They are dependent in one way or the other to other organizations or private companies.

Waste management in Nepal has a history. Long years back when population of Kathmandu was less people used to manage their waste by them. They used to have pits called 'saaga' and 'nauga' where they used to manage the waste. According to another source there used to be common courtyard in the houses of Kathmandu where people dumped the waste. Later as the population started increasing waste also increased. Public cleaning totally stopped. Realizing this fact the then Prime Minister started 'SafaiAdda' (cleaning office) to manage the waste and a caste group 'Kuchikar' was appointed for the cleaning. This led the people think that waste management was not their responsibility. Later the SafaiAdda changed to today's municipality office. The present waste management system in Nepal was developed more than two decades ago in Kathmandu Valley. Implementation of organized solid waste management started in 1980 with the establishment of Solid Waste Management Resource Recovery Mobilization Centre (SWRMC) (Waste, 1996). The Solid Waste Management and Resource Mobilization Act, 1987 (BS 2044) transformed the Solid Waste Management Board into the Solid Waste Management and Resource Mobilization Center (www.mld.gov.np). It was funded by GTZ for the three municipalities in Kathmandu Valley. There were different landfill sites established in different times. All of them were closed due to the opposition of the local residents on the environmental ground. Sisdol in Okharpauwa has been established as the latest land fill site. There are frequent oppositions from the local people in this site too. People come with different demands and there have been frequent closure of this site for days.

6.2 Findings and Conclusion

The rate of urbanization, migration and the problem of solid waste management have become common phenomena of Kathmandu. It has been mentioned in above chapters that people migrate from different parts of Nepal to the capital city for different purpose. As people seek for better opportunities migration in Kathmandu seems unmanageable. The increase in population has a direct relation with waste i.e., increase in population results in increase in waste. Though migration in Nepal is

difficult to control waste to some extent can be solved through awareness programs and involvement of communities.

The concepts of PPP, involvement of informal actors, CBOs are the emerging concepts in managing the waste in recent years. Community participation in solid waste management is one of the best options in managing the waste. During my research I could make a study in three settlements. I tried to find out how waste was managed through community participation. In two of those settlements private CBOs and NGOs were active in making the people participate. In the other NGO involved in the work.

Management of solid waste in the community (waste generation, recycling, reuse, and disposal)

The basic thing I explored was that the foremost thing done by the projects were to encourage people in segregating the waste at source. All the communities and projects I approached had the same focus. They said that when the waste was mixed it had no value and could only be dumped. Segregation was also encouraged because studies show that about 70% of the total waste in Nepal is of organic type which is easily decomposed to use as compost. According to the staff in all the three communities I studied, community members were encouraged to segregate waste but the way it was managed was different. People had their own way of segregating waste. Different organizations approached the communities in their own way. Besides that, the other aspects of waste management like the reuse, recycle, disposal etc. are not much practiced. This may be because even segregating the waste in the communities are in initial phase and according to the municipality staff they are trying to develop the habit of segregating waste in the community.

Municipality and waste management in the communities

Waste in Kathmandu was managed by the people few decades ago. It was due to some rulers and establishment of municipality office which resulted in the shift of cleaning as the job of the municipalities and not the common people. Municipality has the responsibility to manage the waste. Now, when handling the solid waste alone has become a problem for the municipality initiatives have been taken to start encouraging people to participate in solid waste management. All

the three studies areas come within the metropolitan area. All settlement does not receive adequate facilities from the municipality and they are much satisfied with municipality. According to the staff of the projects municipality only stands as a legal organization. Municipality is trying to work in this sector now because private companies and NGOs are doing better jobs than them. Municipality talks and but there is no action. Municipality is a government body and as the project heads say municipality has the power and authority to make the rules and laws work. It should not only stand as a formal organization.

Thus, I did not find KMC playing any important role in the communities as it has to and as it is expected in my study areas.

NGOs and waste management in communities

Role of NGOs in my study area:

Thamel and Ason Area

The attempt of TMC to manage the waste in Thamel and Ason area cannot be considered as a total failure. But it was the first attempt to make people participate in the management of waste so, it is praise worthy. This is also because the community members are still trying to make the community people participate actively in the work as they did before. But there are certain things lagging in this settlement. This is not from the project side but I think from the community itself. According to the TMC staff and the community members too, the committee in the community is not so serious about the work here. Comparing to the other communities I felt that community equally has to take the responsibility of the work they are doing. There has to be someone/something in the community that can control or that can influence the community for betterment.

Samakhushi Town planning

Samakhushi is a highly dense and standard settlement where ECI is working. In addition, there is role of User's Group of this settlement too. Besides that, the local involvement of organizations seems to have encouraged people in the management of waste. The work of managing waste has been initiated by EIC.

According to the municipality staff people of they also had received trainings from the municipality to manage the waste. Now the results seem better because they are working together.

According to the ECI staff they encouraged the people to use the bins there because barren land in that area was not available. The unavailability of land area has become a benefit for the people there. The way the municipality staff used the metaphor of the fish and the net and his explanation for it is more applicable in this area. The management of the waste in the household itself is giving sustainability in managing the waste. People are getting training, guidelines and help for composting the waste. In other words they are empowered and becoming independent in this sense. The ECI staff said that the tenants too are involved in managing the waste and if they move they carry the bins with them. The ECI staff took it as a problem. But personally, I felt that it was a benefit. The members who move from one place to the other with the bin still manage the waste by themselves. They might bring along the bins because they have paid for it. The composting bins I suppose cannot be used for other purpose other than composting. Thus, they are not dependent to others even when they go to a new place. Besides that, they may also help others who are interested to manage the waste in their own. In this way, managing the waste individually in a community seems more sustainable to me. Solid waste management includes many activities besides segregating the waste. There are so many things that can be done reuse recycle, proper dumping etc. But the communities in one or the other way depend upon the service providers or the municipality van to get their waste disposed

6.3 Important Factors

The some important factors that all the actors of community participation have to understand. They are as follows:

- I. NGOs and municipalities lag behind in providing awareness (people dump their waste in Choks; they burn the waste even after their initiation to manage the waste, and implementing ban in littering).
- II. Managing waste is a responsibility and not only a service and there has to be sustainable organizational setup: NGOs, municipality itself, CBOs, PPP.

- III. Municipality has to be more active (not stand only as a formal organization, use power and authority to make policies and laws and implement them) and the people have to be more responsible.

6.4 Summing Up

- The communities, the projects, the way the waste is handled may always differ from one community to the other.
- The people concerned have to take the responsibility for what they do and what they do not.
- Community participation in solid waste management may always be a learning phase for all the people involved.
- It is not necessary that the same approach may be fruitful and successful to all the communities.

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APPENDICES
STUDY OF COMMUNITY PARTICIPATION IN SOLID WASTE
MANAGEMENT, KATHMANDU STRUCTURED QUESTIONNAIRE

Dear respondent,

I am a student at Central Department of Public Administration of TU pursuing an MPhil Degree. I am in my final semester of study and as part of the requirements for the program; I have to conduct a research study. I, therefore, request you to allow me ask you some questions which you can answer as you feel. The information you will give will be treated confidentially and will be anonymously used for purposes of writing the research report, and will not be used for any other purpose. Thank you very much in advance.

.....

Indra Prasad Dahal

Researcher

1. Do you make any kinds of waste in your home? a. Yes b.No
2. Do you manage the waste which is produced in your home? a. Yes b.No
3. If yes how do you dispose of producing waste in your home?
 - a) By making compost
 - b) By giving service provider
 - c) By open dumping outside of the house (throwing public places)
 - d) Put the municipal waste bins
 - e) Burning
 - f) Give for recycling
 - g) Use for animal feeding
 - h) Other
4. Do you have any kind of training for managing the waste? a. Yes b.No
5. If yes who did provide you this type of training?
 - a) KMC
 - b) Private
 - c) Club
 - d) NGO
 - e) Community
 - f) Local government
 - g) Other
6. Do you know existing solid waste management practice is effective?

- a) More effective
b) Less effective
- c) Not effective
7. How much solid waste does your house generate every day?
a) 500 gm b) 1000 gm c) More than 1000 gm
8. What type of solid waste does your house usually generate?
a) Organic b) Non-organic c) Both
9. Do you separate the solid waste? a.Yesb.Noc.Sometimes
10. Do you have any types of services for disposing your waste? a.Yesb.No
11. What types of service do have for managing the solid waste in your tole?
a) Door to door collection d) Any types of recycling
b) communal waste bins disposal bins
c) Common disposal site e) Above all
12. Where do you store wastes in your house before they are disposed?
a) Tokari d) Open space
b) Drum e) Bucket
c) Plastic Bags f) Other
13. How often do you dispose of waste generated from your house?
a) As soon as waste arise c) Once every two or three days
b) Once daily d) Less frequently
14. Who provides door to door collection in your place?
a) Individual e) KMC
b) Private f) Other
c) Community (Club/Ngo) g) Don't know
d) Self
15. How often is your waste collected?
- | | |
|---------------------------------|----------------------------|
| a) Day to day | e) Less than once per week |
| b) More than four time per week | f) Irregular |
| c) Two or three times per week | g) Don't know |
| d) Once a week | |

16. Is the door to door collection serviced done at a fixed time on the collection day?
- a. Yes b. No c. I do not know
17. Do you pay any service charges or fees to service provider for collecting your waste?
- a) Yes b) I do not know c) No
18. If yes, do you satisfy that services for collection of waste in comparison with payment?
- a) Very satisfied d) Not satisfied
b) Somewhat satisfied e) No
c) Dissatisfied
19. Have you ever complained about the waste collection service provider?
- a. yes b. No
20. Do you know that some of waste items such as plastic, paper, metal and textile can be recovered as used as resource? a. Yes b.No
21. Is there someone who comes around to collect or buy your reusable or recyclable materials? a.Yes b.No
22. Which materials do they collect or buy from you?
- a) it.....
b) Glass i) Plastic
c) Cardboard j) Textile
d) Paper k) Leather and rubber
e) Metal can l) Wood/timber
f) Other metal m) Tires
g) Kitchen waste n) Others: Please specify
h) Garden waste
23. Do you know what is compost produced from municipal waste and food wastes and garden wastes?
- a. yes b.No
24. Have you ever been taught how to make compost?
- a) Yes, by KMC d) Yes, by others
b) Yes, by Private companies

- e. Resistance from KMC staffs who fear losing their jobs and are satisfied with the status quo.
- f. All of the above.

Respondents

Name:

Gender :

Address:

Mob:

Email:

.....

Signature

**STUDY OF COMMUNITY PARTICIPATION IN SOLID WASTE
MANAGEMENT, KATHMANDU**

Interview guide I

Dear respondent,

I am a student at Central Department of Public Administration of TU pursuing an MPhil Degree. I am in my final semester of study and as part of the requirements for the program; I have to conduct a research study. I, therefore, request you to allow me ask you some questions which you can answer as you feel. The information you will give will be treated confidentially and will be anonymously used for purposes of writing the research report, and will not be used for any other purpose. Thank you very much in advance.

.....
Indra Prasad Dahal
Researcher

Interview guide I

1. How did KMC enter into community participation in waste management?
2. How does the KMC choose the community?
3. Is community participation about segregating the waste?
4. What was the status about the reuse and recycle in the area where community participation concept was applied?
5. What is the responsibility of KMC is it only collecting waste in the street side?
6. What about the door to door collection?
7. Has the KMC worked in its own or with others?
8. How do you use the compost when people have very small houses and no area for farming?
9. Is it the landfill site that community has to depend for the waste disposal?
10. KMC has power, why does it not use it to manage the waste?
11. How long does the training/assistance exist to promote community Participation?

12. Can composting be done in professional way through community participation?
13. How did the contributed to solve the problems of solid waste through the community participation?
14. How was overall solid waste management Process managed through community participation?
15. Had the community participation approach resulted as intended in managing solid waste in KMC.

Respondent:

Name:

Mob:

Organization & address:

Email:

Position:

.....

Signature

**STUDY OF COMMUNITY PARTICIPATION IN SOLID WASTE
MANAGEMENT, KATHMANDU**

Interview guide II

Dear respondent,

I am a student at Central Department of Public Administration of TU pursuing an MPhil Degree. I am in my final semester of study and as part of the requirements for the program; I have to conduct a research study. I, therefore, request you to allow me ask you some questions which you can answer as you feel. The information you will give will be treated confidentially and will be anonymously used for purposes of writing the research report, and will not be used for any other purpose. Thank you very much in advance.

.....

Indra Prasad Dahal

Researcher

Interview guide II

1. Why did you choose the particular area for community participation?
2. Problems to make people participate in the waste management
3. How do you manage the financial matters?
4. When did the work start?
5. Is community participation about segregating the waste?
6. How does the municipality help you/your project?
7. How did the municipality contributed to solve the problems of solid waste through the community participation?
8. How was overall solid waste management Process managed through community participation?
9. Had the community participation approach resulted as intended in managing solid waste in KMC.

10. In your opinion, what are the problem of public/community participation ?

- Lack of policies and guidelines.
- Inadequate planning.
- Lack of reliable and capable private/ community parties.
- Insufficient coordination between KMC and public sectors.
- Resistance from KMC staffs who fear losing their jobs and are satisfied with the status quo.
- All of the above.
- Respondent:

Name:

Mob:

Organization & address:

Email:

Position:

.....

Signature

STRUCTURED OBSERVATION III

(Indra Prasad Dahal)

Researcher

1. Evidence of sorting Yes No
2. Innovative disposal Yes No
3. Neatness of environment Yes No
4. Presence of container bin Yes No
5. Door to door waste collection system : Satisfied /Unsatisfied
6. Status of waste separation Yes No
7. Problems encountered in solid waste management service. Please tick appropriate spaces.

Problem	Very serious	serious	not so serious	no problem
a. Inadequate service coverage (some people not given service)				
b. Lack service quality (not frequent enough, spill, etc.)				
c. Lack of authority to make financial and administrative decision				
d. Lack of financial resources				
e. Lack of trained personnel				
f. No proper institutional set-up for solid				
g. waste management service				
h. Lack of legislation				
i. Lack of enforcement measure and capability				
j. Lack of planning (short, medium and long term plan)				
k. Rapid urbanization outstripping service capacity				
l. Uncontrolled proliferation of squatter settlements				

m. Difficult to locate and acquire landfill site				
n. Difficult to obtain cover material				
o. Poor cooperation by Government agencies				
p. Poor public cooperation				
q. Uncontrolled use of packaging material				
r. Poor response to waste minimization (reuse/recycling)				
s. Lack of qualified private contractors				
t. Difficult to control contractual service				
u. Inadequate service coverage (some people not given service)				
v. Lack service quality (not frequent enough, spill, etc.)				
w. Lack of authority to make financial and administrative decision				
x. Lack of financial resources				