

SOLID WASTE MANAGEMENT OF LIKHU RURAL MUNICIPALITY FOR
SUSTAINABLE DEVELOPMENT

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DECLARATION

I hereby declare that this dissertation is my original work, and it has not been submitted for the candidature for any other degree at any other university.

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DEDICATION

For the journey ahead.

AN ABSTRACT

Of the dissertation of *Kabita Paudel* for the degree of Master of Sustainable Development presented at Kathmandu University School of Education on 3 August 2022.

Title: *Solid Waste Management of Likhu Rural Municipality for Sustainable Development*

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Solid waste is a significant issue for many developing nations i.e. Urban as well as in rural areas. Main problem of my Rural Municipality was non-degradable waste. So, I decided to know the understanding the practices of community people about solid waste management of Likhu Rural Municipality ward no.1 Shanti Tole, Nuwakot District of Nepal.

The research addresses the research question: “How do people describe their understanding and practices of sustainable solid waste management?” I used an interpretive research paradigm to understand cultures of people on solid waste management as an insider and used an ethnography approach in my research. I took those five participants who were more engaged in the kitchen or non-kitchen activities. Throughout the data collection process, I did listening survey, unstructured interview with the selected participants and observation. I collected the data, then analyzed based on the occurrence of possible themes in interview answers and transcribed the data.

Based on my finding, production and amount of waste vary to family type and the way of managing the degradable waste was same whereas varies in non-degradable waste which were collected at home in a different dustbin or some of them were thrown near rivers or near public places as well as burnt. For protection the environment and reduced the inorganic waste, rather dumping, adopted zero waste and 3 R concept, need to conduct the awareness program among the community people. Despite knowing the ways of sustainable waste management, many educated people did not follow whereas many of them adopted the 3R concept and zero waste management approach.

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Kabita Paudel,
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ABBREVIATION

3R	Reduce, Reuse and Recycling
CP	Cleaner Production
GTZ	German Society for International Cooperation
IWMB	Individual Waste Management Behavior
KMC	Kathmandu Metropolitan City
MoH&PP	Ministry of Housing and Physical Planning
SWM	Solid Waste Management
SWM&RMC	Solid Waste Management and Resource Mobilization Centre
SWMB	Solid Waste Management Behavior
UNEP	United Nation Environment Program

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CHAPTER I

INTRODUCTION

This chapter provides an introduction of this study, setting the context of managing the waste in the rural municipality of Nepal. It also includes problem of the statement, with justification, aim of the study, research question and structure of the dissertation. It begins by presenting a background to the study in the areas of waste management in the rural areas and illustrates the problem and innovative solutions of managing solid waste. The research locates waste management in Likhu rural municipality ward no 1, Shanti tole, Nuwakot District of Nepal. The research is important for deriving the good practices from the rural communities which could be duplicated in the managing the waste in sustainable ways of urban areas along with zero waste as well as 3R concept (Reuse, Recycling and Reduce).

Background of the Study

Waste is all undesirable or released material from residential, commercial, industrial and agricultural operations that may cause environmental problems (Lima & Paulo, 2018). It can be solid, liquid and hazardous waste. Solid waste consists of waste, rubbish (paper, plastic, wood, metal, and glass) etc. The amount of solid waste produced is largely dependent on the population and the effectiveness of the recycling and reuse way (Gidde et al., 2008). Solid waste may be categorized as biodegradable waste and non-biodegradable waste.

Biodegradable wastes are those that readily decomposed by bacteria, fungi and other living organism. Those waste which are generate mostly from kitchen in daily usage. A few examples of degradable waste are food, kitchen waste, dead animals and plants as well as other natural wastes. There are few environmental problems and

risks associated with biodegradable wastes are low. As well as it can be easy to handled. Although, sometimes biodegradable wastes can pollute and negative impacts on our environment. For instance, a lot of microbial flora around the waste is generated, which can increase the risk of transmissible diseases in humans and animals caused by microbes. I believe that biodegradable waste are environment friendly waste. People may use the biodegradable waste to make the manure, compost and fertilizer for kitchen garden.

Non-degradable waste can be identified as waste which cannot be decomposed by the biological method. Almost all inorganic waste cannot be biodegraded. For examples are cans, metals and plastic items etc. They are the largest contributor to air, water and soil pollution that's why non-degradable waste are not environmentally friendly hence they represent a serious threat to environment and surrounding. For instance, people are used the plastics in all activities in daily life and these are not decomposed by the microbes as result it cause the plastic pollution.

I believe that, nowadays solid waste covered all places as result environment becoming more polluted. Unmanaged solid waste can affect directly on our human health, economy and environment as well. An ineffective solid waste management system can lead to severe adverse effects on the environment such as soil pollution, contagious diseases, biodiversity loss and water pollution as well (Ejaz et al., 2010). Solid waste is harmful for our environment and aquatic life as well such soil contamination, water and air contamination, climate change also occurs, harmful towards animal life as well.

However, there are lots of benefits of proper solid waste management. If people managed properly can earn money from solid waste. I believed that recyclable waste is sell on shops and exchange with money, it helps to earn the money somehow.

Moreover, recycling center provides the opportunity for many people as an employment and earns the money from recyclable waste. In addition, the greatest benefits of proper solid waste management is maintain a clean and fresh environment. Rather than just remove the solid waste from surrounding, focus on effective management will decrease the concentration of greenhouse gases such as methane, carbon monoxide that is emitted from the waste assembled (Reddy, n.d). While the solid waste collection is segregated, each stages required numerous human resources and eventually a lot of job opportunities are provided. So proper management create the employment (Reddy, n.d). One approach to managing solid waste is segregation, so if people segregate the waste which are recyclable, then recycling industries will sustain, thereby creating green economy. Green economy refers to the reduction of carbon emission, resource efficiency and social inclusion. So if people management of proper solid waste, employment will be increased, can be reduced the carbon emissions. And it's also help to reduce the waste and land pollution, increase energy efficiency, as well as avoid of the loss of biological diversity and ecosystem services (UNEP, 2022). There are lots of health benefits of well managed waste i.e., reduce irritation the skin or eyes, make it easy to breathe, no headaches and other kinds of illness also prevent from the communicable disease such as diarrhea, flue etc.

To handle the problem of managing solid waste, through the use of the 3R concept and zero waste concept, solid waste can be managed properly. Reuse refers to using a product repeatedly instead of throwing it away. For example, refillable glass beverage bottles, metals, clothes and vegetables shopping bags etc. There is various benefits of reuse like extends resource supplies, reduces energy use and pollution. Recycling refers to the collection, separation and treatment of materials from the waste stream in order to produce a marketable product. For instance paper, aluminum,

plastics etc. there are many advantages of recycling. It efficiently reduces the quality of waste to be landfilled. It reduces transportation cost, reduces raw materials from exploitation and saves/ reduces energy use. Reduce means minimize the volume of waste being created. For its sustainable disposal of solid waste, we can adopt these concepts in our daily life.

Managing a solid waste in a sustainable manner, Zero waste concept is popular now a days. Zero Waste Concept is a theories that motivate to modify the lifecycle of resource hence all items are used again or recycled (Hamid et al., as cited Palmer, 2004). The goal is for no rubbish to be sent to landfills or incinerators. Zero Waste identifies waste management and planning approaches that prioritize waste prevention. Zero waste helps to minimize waste through recycling and reuse, it prioritize on reconstruction of material to reduce waste.

Solid waste has major problem which is facing many developing country i.e. urban areas. We all know that rapid growth of population and economic development make it possible to increase solid waste production. The use of materials from our daily activities that generate waste. I think rapidly growing population exceeds the ability of most municipal authorities to deliver basic solid wastes services. However, researched focused less in rural areas globally. Most of the research have been discussed the solid waste management of urban areas. I also believed that, less of the research has been address the rural areas rather than urban areas. Because I think solid waste quantities are raise day by day in all countries and all around the world because of industrialization, mainly the population growth, high consumption definitely if population is increase then consumption is also high and generation of waste is also high but lack of proper management. Hence, managing the solid waste is huge issues and problem. As a result of these activities creates the huge problems on environment.

Management of solid waste still appears as a central issue of urban development and sanitation, and cleanliness. Urban areas face the straits of managing the solid waste resulting from rapidly industrializing, urbanizing, and inadequate financing. As a result, increase population leads to huge amount of waste production globally, consequently increasing the concern to manage it (Lima & Paulo, 2018). Rapid population growth and increasing urbanization have led to a dramatically rise in production of urban waste and the diversity of its composition (Nguyen et al., 2011). In urban areas it's challenging to manage the proper management of solid waste because of increasing population and unorganized urbanization, insufficient of public awareness and unsanitary waste management and disposal by municipalities.

In my understanding, most of the developing nations are facing the problem of managing the proper solid waste because of lack of adequate financial resources as well as strict rules concerning solid waste management. There is inadequate management of waste collection, transformation to disposal knowledge of people regarding how to properly manage solid waste at their own individual level and households, how to minimize the waste generation, how they are segregated at the source of generation. These all factors are leading to increasing the production of solid waste in rural areas as well as many developing countries.

“To address concerns related to public health, environmental pollution, land use, resource management and socio-economic impacts associated with improper disposal of waste” this is the first priority or initial aims of sustainable solid waste management (Muraleedharan, 2021). “This growing mountain of garbage and trash represents not only an attitude of indifference toward valuable natural resources, but also a serious economic and public health problem” (Muraleedharan, 2021).

The methods used in solid waste managed such as Open uncontrolled and haphazard disposal which is happening most of the developing nations and common ways of management of solid waste (Zurbrügg & Schertenleib, 1998). Open and haphazard dumping means there is an illegal waste disposal site means not specified the any authority and government people throw waste wherever they want to throw. (Zurbrügg & Schertenleib, 1998) mentioned that in solid waste management of developing countries there have some problems to manage the solid waste these problem areas are minimal use of recycling operations, improper management of infectious waste, and lack of proper landfill disposal. I also think all these reasons behind the solid waste is a crucial matter in growing nations as Nepal.

Managing Solid Waste in Countryside

Management of solid waste has been much discussed in urban areas; however, solid waste just as significant to study the traditional as well as local ways of managing solid waste in rural areas. Rural household waste refers to this solid waste, which consists of moist waste for instance leftovers food items and recyclable waste in particular plastic bottles, paper, cloth, meat residues and so on. Of these, kitchen waste constitutes the majority of rural household solid waste (Wang et al., 2018). In rural areas, community people are managed the solid waste themselves by their own practices and traditional ways. That's why, in comparison to urban areas problem of solid waste and their impacts on environment and human health, there is less. But nowadays, rural areas become gradually urbanized; developing and growth of population are increasing day by day. So its becomes create issues in rural areas also that's why at the starting phase of waste production people are need to more concern about it and continue their own ways and traditional practices such as most of the people reused the waste and degradable waste are used for making composting.

Composting is an aerobic method (meaning it requires air) of decomposing degradable solid wastes. Simply people are collecting the degradable waste differently and dig the pit near kitchen garden or house and out the all degradable waste and after fill this pit they cover the pit by using the soil. After degrading the all waste, they used this manure in their field for vegetables and crop production.

Rural residents (community people who are lives in rural areas), solid waste disposal methods include selling, recycling, landfill, and burning and dumping in open areas without any treatment. “Selling defined as family members or “scavengers” who collecting the glass bottles, metal and paper etc. and sell it for income purpose” (Wang et al., 2018, p. 1). “Recycling consists of management of degradable waste by composting to produce the organic manure as well as biogas” (Wang et al., 2018, p. 1). Improvement of quality of life in rural people means adequate amount of water supply and enhance the environmental cleanup. Managing solid and liquid waste involves the environmental cleanliness (Shah et al., 2012).

In rural areas, there is a problem of solid waste management specially these items which are metal, paper, plastic items, unused cloth and infectious waste (non-biodegradable) which are haphazardly throwing everywhere like public places, near stream. Kitchens and gardens waste are used for composting and used the production of crops. Cattle sheds waste are also used in production of crops, vegetables etc. Main problem or issue of our community is non-degradable waste somewhere also issue in biodegradable wastes.

Because of the insufficient of the knowledge and understanding regarding management of solid waste, there is a big problem in our community. In rural area, there is a neglected the solid waste management in household level as well as local level government. That’s why there was a problem of solid waste management

especially non-degradable waste which thrown everywhere haphazardly. So, I was curious to know the understanding and knowledge of community people of Likhu rural municipality regarding sustainable solid waste management. That's why this research was important for me which was conducted on my Rural Municipality.

Problem of the Statement

Managing solid waste is the major problem of rural community (Likhu Rural Municipality). In this municipality there is a problem of solid waste management specially materials such as metal, paper, plastic, cloth (non-degradable waste) which are throwing everywhere haphazardly such as public places, near stream. Main problem or issues of this municipality is non-degradable waste somewhat/ where problem in biodegradable wastes also.

Even though managing the solid waste has been increasing globally, the rural community has been left out of it. It is a well-known fact that the lack of waste management is very harmful to the environment and has serious public health implications. Due to the lack of the knowledge and understanding regarding solid waste management there was a big problem and people throw the waste in everywhere. It has been occurring because of poor management practices, increase household and increase population growth and lack of knowledge how it causes the environmental complication and their health affect.

Regarding management of solid waste, the rural area is neglected. "Solid waste (SW) is a major challenge for local governments because of its steady rise and most of the municipalities maintains waste production records, creation as well as its nature and do not collection of household waste" (Gonzalez & Vega, 2010, p. 167).

This study was important for me because this study was done my own rural municipality and most important things there was problems of solid waste

management when I saw, so I decided to be more explore and knew about their situation of solid waste management. And knew understanding of community people about solid waste management.

“Absence of adequate information which ensures the decisions concerning appropriate waste is managing through assumptions and inferences, resulting in poor management and severe environmental consequences” (Gonzalez & Vega, 2010, p. 167). For instance, due to the leachates which is generated from waste that contaminated river and ground waste. Besides that, it can caused the soil pollution, enhance the greenhouse emission as well as loss of biodiversity. “This is a need to know the intrinsic qualitative and quantitative characteristics of solid wastes, as its increasing those required substitute method of control and treatment options” (Gonzalez & Vega, 2010, p. 167).

Well management of waste is necessary for our good health and well-being as well as environmental sanitation. This is the one reason to study on waste management in rural areas. From the sustainability and health as well as environmental health perspective, this study is important. By the finding of data people know the situation of waste management of rural municipality, according to their information and situation people or concern authorities or local bodies can be provide the knowledge through conducting the awareness program. People gradually familiar the term and approach of zero waste along with 3r concept through different sustainable solid waste management related program and it will be contribute to sustainable development. Hygiene and Environmental Health (n.d.) states that improper handling and management of waste can caused pollution of environment which promotes animal husbandry of disease- carrying insects, scavengers and rodents. As an outcome, extent of diseases spread across the numerous pathways of

exposure, for instance face-oral and terrestrial transmission mechanisms. In my understanding, ending the transmission of pathogens, there is requires environmental clean-up, that means prevention of all humans to waste contact, i.e. control the unclosed excretion and the sound managing of rubbish.

Purpose of the Study

The purpose of my study is to understand the practices of community people's and likhu rural municipality's regarding sustainable solid waste management of Likhu Rural Municipality ward no. 1 shanti tole, Nuwakot District.

Research Question

How do people describe their understanding and practices of solid waste management regarding sustainability of Likhu Rural Municipality?

Significance of the Study

Management of solid waste is a current global as well as national issue. Nowadays, it is the greatest complication and control of sound managing is another crucial matter for our surrounding. Due to the lack of the knowledge and understanding regarding solid waste management there was a big problem in our community. In rural area or my municipality, there was a neglected the solid waste management in household level as well as local level government. So, there was a problem of solid waste management specially materials such as metal, paper, plastic, cloth (non-degradable waste) which are throwing everywhere haphazardly. This research provides the opportunity to the reader about the importance, purpose, and direction and findings of the paper. Also it helped to summarize all the information the writer has reached about the topic. When readers or other students want to explore and know this particular topic they can review this research and get more information

and knowledge about research methodology which I used and all processes of data analysis as well as how to interpret and analyze data.

Structure of the Dissertation

This research divided into six chapters as follows:

Chapter I: This chapter presented an outline of the chapter, background of the study, problem of the statement, purpose of the study, research question. Eventually, this chapter ends with a summary of the chapter and structure of Dissertation.

Chapter II: This chapter includes an overview of the chapter, literature review along with theoretical review. In this chapter explain about waste, Zero waste concept, 3R concept, solid waste management connect with SDGs, how 0 waste management keep support Environmental protection all these things in different topics.

Chapter III: This chapter considered the research methodology that consists of research design (Interpretive Research Paradigm), research approach, research site, all the data collection processes, quality standards and ethical consideration. Finally, this chapter also ends with a summary of the chapter.

Chapter IV: This chapter discussed an overview of the chapter and ethnographic field work.

In this chapter, discussed about the duration and area of my field work, what kinds of information and data were collected from the five participants. So my field work started from 25/ Jan/ 2022 to 5/ Feb/ 2022 in the village of Shanti Tole in Likhu Rural Municipality, Nuwakot. As an insider of the community, I had noticed about the management of solid waste practices. This portion presents the process of listening survey, observation which helped to identify the solid waste management practices within the community.

Chapter V: This presented an overview of chapter, Key findings and discussion. The key findings and discussion of my research in different themes are based on two objectives. One objective explains about the practices of community people of Likhu Rural Municipality regarding sustainable solid waste management. Another objective describes on Practices of Likhu Rural Municipality regarding sustainable solid waste management.

Chapter VI: This discussed an overview of the chapter and summary, conclusion and Inclusion.

Chapter Summary

This chapter delivered an overview of this research by introducing the research purpose, context of the study, problem of the statement, research question and importance of the study. The following chapter provided an in depth discussion of solid waste management, the situation in rural areas of Nepal in solid waste management and developing nations along with why managing solid waste is the major problem in developing countries like Nepal.

CHAPTER II

LITERATURE REVIEW

This chapter incorporates a discussion on the literature review related to my research issues. These chapters address the literature review which was related in different themes such as reduced solid waste by using 3R concept, Zero waste to recover chemicals and control the solid wastes, zero waste management keep support environmental protection, solid waste management connected with SDGs and along with described the theoretical review related of my research issue.

My tile of the study were “Solid Waste Management of Likhu Rural Municipality for Sustainable Development.”

Definition of Wastes and Their Causes

Waste is any harmful and discarded material which comes from residential, commercial, and agricultural activities that can cause environmental problem. It can be solid, liquid and hazardous waste. “As a consequence of population growth, the generation of solid waste has rapidly increased worldwide, consequently, increasing the concern with its management” (Lima & Paulo, 2018, p. 22). “Local household waste is the waste, that contain moist waste such as remains meat residue uneaten food, recyclable waste i.e., cloth, paper, metal, plastic bottles. Out of them, the foremost portion of kitchen waste in rural area’s household solid waste” (Wang et al., 2018, p. 169). Rapid growth of population, urbanization, improper management and handling of solid waste, high consumption as well as high production these are the causes of solid waste production.

Pattern of Solid Waste Production in Nepal

Based on the inspection, among the various local garbage categories, organic material accounted for 66% of the total volume, followed by plastic waste (12%), and paper goods (9%). The specific fraction of that garbage that was institutional residue had the highest proportion of paper items, or 45%, and the lowest percentage of plastics, or 22%, as well as the highest concentration of organic residues (ADB, 2013, p.10). The study conveyed that highest amount of commercial wastes which consists 43% of total organic wastes that followed by remaining 23% are paper products and few amount of plastics i.e., 22%. In average, MSW consists of 56% organic waste, same amount of plastics, and paper products i.e. 16% respectively (ADB, 2013, p.10). Based on this study findings, huge amount of compost manure is produced from biodegradable waste. That means, compost manure contribute to reduce the degradable waste. Very few percentage i.e. 10% of waste are Reusing and recycling with other materials, going to dumping sites if maximized the resource recovery (ADB, 2013, p.10).

Efforts of Government and Non-Governmental Agencies to Address Waste Management Issues

Some NGOs and INGOs play the important role to for the management of solid waste are described below; Urbanization and population growth along with the increase consumption in led to huge amount of waste generation. Previously, there was not any system of managing waste in most of the place, normally individuals through the waste near Bagmati River like as making dumping. “To solve this problem different international aid agencies were consulted in 1971 for the first time and in 1981 GTZ’s solid waste management project started” (Rana, 2013, p. 6). During the interim stage of the project (1983/84-1990) involved the implementation

of a holistic approach to management of waste. “To generate the environmental pressures of waste dumping on riverbanks the Gokarna landfill site was constructed and began operation in 1986 and the same year open the Teku Transfer Station and composting plant” (Rana, 2013, p. 6). At that stage, for community’s waste collection, waste collecting vessel and systematic other vehicles were put in place. “To oversee the waste management activities in the Solid Waste Management and Resource Mobilization Centre (SWM & RMC) was set up. In connection with the end of the implementing period, the project was proceeded under the Ministry of Housing and Physical Planning (MoH & PP)” (Rana, 2013, p. 6). “Various private sectors and NGOs have been involved in the waste management of Kathmandu for five years back and today about three cooperate with KMC, involved with recycling, waste collection and reusing” (Tuladhar, 2003). “Around 13 privatized industries were work in managing the solid waste sector, mostly focused on transportation and discard the waste” (Manandhar, 2003; KMC, 2003, p. 122).

“To address concerns related to public health, environmental pollution, land use, resource management and socio-economic impacts associated with improper disposal of waste, this is first aim of sustainable solid waste management” (Muraleedharan, 2021, p. 60). The growing amount of garbage and waste represents serious health problem in community people and public besides that it encourage to damage of valuable natural resources. Due to industrialization, mainly the population growth, high consumption obviously if population is increase then consumption is also high, and generation of waste is also high but management is not proper.

In Likhu rural municipality, there is a problem of solid waste management specially materials like local waste metal, paper, plastic cloth and hazardous waste (non-biodegradable) which are haphazardly throwing everywhere like public places,

near stream. Kitchens and gardens waste are used for composting and used the production of crops. Cattle sheds waste are also used in production of crops, vegetables etc. Main problem or issue of our community is non-degradable waste somewhere also issue in biodegradable wastes.

This study was important for me because this study will be done my own rural municipality and most important things there is a problems of solid waste management when I see, so I want to be more explore and know about their situation of managing solid waste. Along with to know understanding of community people about solid waste management.

Due to a lack of information, people make decisions about effective waste management based on assumptions and inferences, which can be deceptive and have adverse consequences for the environment (Gonzalez & Vega, 2010, p. 122). For instance, due to leachates, there were a problem of source of water and soil pollution along with increased the greenhouse gas emissions and loss of biodiversity. "It is important to know the intrinsic qualitative and quantitative characteristics of SW as its increase demands alternatives of handling and treatment" (Gonzalez & Vega, 2010, p. 25).

From my point of view, if we all are stay healthy and for our good health and well-being and environmental sanitation, there must be needed the proper solid waste management. Because of poor waste management, which can lead to environmental contamination and the proliferation of disease-carrying insects, scavenger animals, and rodents, a variety of diseases can transfer throughout many channels, including faecal-oral and soil-transmitted mechanisms (Hygiene and Environmental Health, n.d., p. 127). Environment sanitation is required to prevent any human contact with waste, such as preventing open defecation, as well as the proper handling of solid

waste, in order to control the spread of disease germs (Hygiene and Environmental Health, n.d., p. 25).

Growing the volume of waste generation, human activities and their increasing demands towards quality of life are more responsible. Nowadays the rate of Southeast Asian Nations (ASEANs) is alarming, that posing a challenge for governments about environmental pollution in the recent years (Ngoc & Schnitzer, 2009). There is a more expectation regarding waste treatment and waste prevention approaches which will be develop towards sustainability of waste management. For example, "zero emission systems" fall under this assumption. With the technological advancements available today, the notion of zero emissions can be successfully implemented in the agro-based processing business (Ngoc & Schnitzer, 2009).

Although due to poor managing waste, it caused environmental pollution which is not unknown, so there is a need of suitable and sustainable waste management which is one of the most common complaints. Especially due to variety of income levels and size of urbanization, there is an increasing rate of waste generation among all developing country (Ngoc & Schnitzer, 2009). The goal of integrated waste management is to find ways to reduce trash production at its source. More specifically, the goal of sustainable solid waste is to provide an opportunity to prevent waste through designs that take into account a product's whole life cycle, much like natural processes that operate without creating garbage. (Ngoc & Schnitzer, 2009). In order to achieve the principle of "using everything, there is nothing left over," waste materials that are produced must be retrieved for reuse and recycling (Ngoc & Schnitzer, 2009).

A sustainable approach for waste management. To control the solid waste and recover chemicals, Dr. Paul Palmer was the first to use the concept of "Zero waste"

and this theory in 1973. A sustainable method of trash management is zero waste (Hamid et al., as cited Palmer, 2004). One of the most researched ideas, the zero waste idea has remained the most contentious topic in waste management research over the past few decades (Hamid et al., as cited LaBrecque et al., 2015; Greyson et al., 2007, p. 8). ZW, which does not mean burning or burying, refers to a system for the design and administration of products and procedures for waste removal, material retention, and rehabilitation. A holistic approach to trash management known as "zero waste management" views garbage as a resource produced during the transitional stage of the resource consumption process (Hamid et al., as cited Palmer, 2004). Zero waste approach can be applied to different industry and to schools as well as houses. Since they include many stakeholders, and different technological aspects not only the environment aspects.

Solid Waste Management (SWM) is a huge problem that incorporate the political, socioeconomic, institutional, as well as environmental aspects. Due to unplanned urban growth, it has evolved into one of the most important problems that urban areas in developing countries face. The author's research indicates that a systematic review was carried out with the aim of learning about and analyzing awareness of the environment, understanding, attitudes, and practices addressing SWM between 2010 to 2019 in various developing countries (Debrah & Pimenta Dinis, 2021). "The proof of finding advice that the students who are both secondary and tertiary levels have positive environmental attitudes and awareness of environmental issues as well" (Debrah & Pimenta Dinis, 2021, p. 221). "Even if there is a lack of practical knowledge of teachers who guide the students to put SWM into practice in daily life. Students have low environmental knowledge which is related to

a deficiency in teachers' practical experience and knowledge in SWM for sustainability of environment" (Debrah & Pimenta Dinis, 2021, 125).

A relationship between teachers and students regarding knowledge and attitudes towards SWM, as well as distinct in awareness, attitude, and practices of SWM linked with education and age were also found for this study. This analysis also revealed that the lack of environmental education in most developing countries is caused by fragilities in practical environmental curricula of teachers to respond to modern-day environmental issues for sustainable development and cleaner production (CP). (Debrah et al., 2021, p. 9)

In a Philippine rural municipality, this study investigated the particular household people's beliefs and practices of waste management. A sample of rural families totaling 332 homes was employed for this study, and it was selected from the community using a multistage cluster sampling procedure. The selection of data to gather was done using explanatory statistics (Limon et al., 2020, p. 161). "Findings show that local encountered many brings the various problems when it comes to practicing traditional and scientific ways of solid waste management. Moreover, it was revealed that participants were it will informed about the different aspects of waste management, and that there was little reuse and recycling of waste materials among the locals" (Limon et al., 2020, p. 133).

In terms of the participants' solid waste management beliefs, their ratings yielded a \bar{X} score of 1.08, which means that they generally have positive beliefs towards managing domestic wastes. When it comes to their practices, participants obtained a \bar{X} score of 2.59, suggesting that the selected households apply, to various degrees, different acceptable waste disposal

measures” (Limon, Corales and et.al. 2020). “Nevertheless, they also show beliefs and practices that will not be favorable for environment friendly. From these findings, this study proposed a plan of solid waste management activities for households, which was collaboratively assessed by local government authorities. A number of significant implications were offered in this study, such as conducting local level workshops and campaigns for the perfect and effective management of solid wastes. (Limon et al., 2020, p. 25)

The main source of solid waste is due to man-made actions. In many Nepalese cities, the situation has made it a frightening challenge. Because of advances in science and technology and changes in people's lifestyles, the quantity and qualities of rubbish have altered (Joshi & Joshi, 2018, p. 6). “The aims of this study is to characterize the composition of solid waste in Bhimdatta Municipality of Kanchanpur district, Nepal. This study was held in between July to September 2015, for data collection, total 45 number of household was taken, out of these household, 15 was commercial places, and 15 was institutions which were randomly selected” (Joshi & Joshi, 2018, p. 6). Samples of solid trash were taken in recommended plastic bags. The collected wastes were first weighted and categorized. Practices for collection and disposal are also carried out when solid waste is seen. The discussion in focus groups was used to gather qualitative data (Joshi & Joshi, 2018, p. 6). The majority of the waste, or 66.4%, was organic out of the 446.7 kg of solid waste that was collected. In terms of overall solid waste production, which is influenced by daily activities, households generated the most garbage (23.3%), followed by hotels and motels (20.4%), which generated the least (Joshi & Joshi, 2018, p. 6). In comparison to other sector, commercial centers produced the all kinds of waste in largest quantity. Waste management practices in unprotected, uninhabited places have been determined to be

hazardous to human health (Joshi & Joshi, 2018, p. 7). As a result it can harm ecological balances and also increase land, water and air pollution. Due to the increasing urban population increase, the study region has emerged as a problem in the production of numerous types of solid waste (Joshi & Joshi, 2018, p. 7). The organic waste was produced in the huge amount and maximum percentages of solid waste were produced from commercial centers (Joshi & Joshi, 2018).

Reduced Solid Waste by using 3R Concept

Now days in our surrounding and environment, well management of residue has huge challenge whereas its problem become increasing. To overcome this problem, we have proposed to implement composting or vermicomposting and another important thing is segregation which must be done at the source of waste production. It is necessary to separate the recyclable wastes and compost of organic food waste. To manage the solid waste, we can adopt 3R concept, this is the basic principle of sustainability guided I analyze this problem i.e., Reduce, Reuse and Recycling.

Reuse means using a product repeatedly instead of throwing it away. It helps to make economic and environmental sense to reuse products. For example, reuse products for the same purpose, we can save paper and plastic bags also, sell the old clothes, Replace paper cups with ceramic ones, repurpose grocery bags, or carry their individual cloth bags when shopping. Take no more than the necessary amount of bags from the shopping. The following are the methods for recycling items. (Sustainable SA.com).

The next step in managing resources is to reduce the amount of resources used in people's day to day life. The best method to manage solid waste is do not produced it. People should avoid over-packaged goods, especially ones packed with

several materials like foil, paper, and plastic. These materials are difficult to recycle, and people pay more for the package. Buy only those durable goods which will stay longer as well as in long term its keep the money and dumping areas also. People can be use cloth napkins instead of paper napkins. Only carry or use a reusable water bottle which helps to reduce the plastic water bottle. Pack our lunch in reusable containers that help to reduce the waste (Sustainable SA.com).

Recycling is a set of steps that used text or equipment and the process, repeatedly production and sell it as a new product. For instance, paper, aluminum, plastics and so on. It efficiently reduces the quality of waste to be landfilled. Buy those products which are made from recycled material. So that we can use them for recycling (Sustainable SA.com).

Zero Waste Concept for Sustainable Solid Waste management

For a sustainable solid waste management, zero waste concept is came now a days. Zero Waste Concept is a philosophy that promotes the remake of resource life cycles so that all products are reused or recycled properly. The goal of zero waste is no rubbish to be sent to landfills or incinerators. Zero Waste described to waste management and planning approaches that focus on preventing waste. Zero waste encompasses rather than focus eradicating the waste through recycling and reuse, it focuses on restructuring production and distribution systems help to reduce waste.

0 Waste to Recover Chemicals and Control the Solid Wastes

The contribution of theory that can be applied to deal with the issue that I have selected in assignment 1 is “Zero Waste: A sustainable approach for waste management. To control the solid waste and recover chemicals, In 1973 Dr. Paul Palmer was first person who applied this term “Zero waste” and this theory Zero Waste: A sustainable approach for waste management” (Hamid et al., as cited Palmer,

2004, p. 12). Zero waste idea is largest crucial researched but still this is the huge disputed subject in since many years in research on waste management (Hamid et al., as cited LaBrecque et al., 2015; Greyson et al., 2007). ZW is a method for designing and managing products and procedures for waste collection, material maintenance, and restoration, as opposed to burning or burying (Hamid et al., as cited Palmer, 2004), p. 99. The holistic approach to trash management known as "zero waste management" recognizes garbage as a material acquired during the first stage in the process of resource utilization (Hamid et al., as cited Palmer, 2004, p. 243). The zero waste strategy can be used in businesses and manufacturing companies as well as in homes, communities, and schools because these settings involve a large number of stakeholders, including both environmental and technological ones (Hamid et al., as cited Palmer, 2004, p. 15).

0 Waste Management keep Support Environmental Protection

Sustainability is also strongly underpinned by protecting the environment, reducing costs “and additional jobs when it comes to managing and handling the waste back into the industrial cycle” (Hamid et al., as cited in Zaman, 2015, P. 145). Therefore, ZW is concerned with prevention of waste by the help of “sustainable design and consumption practices of people, optimal waste recovery and not practices the waste management by landfill or incineration. ZW always supports to waste prevention and avoidance rather than waste treatment and disposal strongly” (Hamid, Skinder & Bhat as cited in Zaman, 2015).

Solid Waste Management Connected with SDGs

If not handle and managed properly, it's become main concerning matter. The problem of solid waste is not a single place, this problem occupied not only one area, all parts of our surrounding and ecosystem that cause to harmful contamination. It

effects on our surrounding and human and animals life's as well as environment. It causes the air pollution and soil pollution, and also caused the climate change. It is directly linked with SDGs Goal 13(climate action), also linked with goal 3 (good health and wellbeing) and goal 6 (clean water and sanitation). If environments polluted due to unmanaged waste, then there is a various problems like clean water and sanitation as well as it also affects our health and well-being. So unmanaged solid waste are very harmful for human life and environment and affects sustainable development goals as well.

Theoretical Review

Managing solid waste is the major problem of our community (Likhu Rural Municipality). In this municipality there is a problem of solid waste management specially materials such as metal, paper, plastic, cloth (non-degradable waste) which are throwing everywhere haphazardly such as public places, near stream. Main problem or issues of the municipality is non-degradable waste somewhere problem in biodegradable wastes also.

Regarding solid waste management, the rural area is neglected. Garbage represent a biggest challenge the local governments because of its continuously increasing pattern and the most of them does not practice the recording of information on waste generation, its origin and features and also do not collection of household waste. In our community, Biodegradable waste which was produced from house, and kitchen such as raw and cooked food, vegetables peels, waste food, death plants etc. are used for composting and no biodegradable waste are throw everywhere. To unpack the understanding and practices of community people's regarding solid waste management of Likhu Rural Municipality, Nuwakot District.

This study was guided by Individual Behavior Theory which states ‘that aid in understanding the feature and causes of Individual Waste Management Behavior (IWMB) issues’. This theory is discovered by Robert Wichers, Wichers primarily focuses on how social factors affect human behavior and how it changes (Wichers, 1996). In this theory, writer explain about Behaviorism, the idea that "all behaviors are taught via the interaction with the environment" was the fundamental objective.” Depending on this theory of learning, traits that are acquired have relatively little bearing on performance and that traits are instead learnt from the circumstances. (Raghu & Rodrigues, 2020 as cited in Wichers, 1996). The quality of a citizen's surroundings, health, social well-being, economic standing, and lifestyle are all impacted by environmental sustainability, according to Solid Waste Management Behavior (SWMB). It is also a dynamic field that uses state-of-the-art tools, methods, approaches, and procedures (Raghu & Rodrigues, 2020 as cited in Wichers, 1996). “Considering all these factors, we undertook an elaborate review of theories within behavioral sciences, sociology, psychology, technology, and anthropology. Based on originality of this theory (Raghu & Rodrigues, 2020) categorized theories as individual behavior theories, social behavior theories, and technology behavior theories. My research is related to the behavior of community people regarding solid waste management practices. This theory helped me to understand the perspective of individual behavior regarding my research. That’s why I chose this theory of Individual Behavior for my research. The paper explores interpret the people’s thought opinion, their behavior and experience and practices regarding solid waste management of Likhu Rural municipality of Nuwakot District.

Research Gap

In order to prevent waste, ZW focuses on "sustainable design and human consumption habits, maximum refuse retrieval, and does not practice the management of trash via disposal or incineration. ZW consistently promotes to waste reduction and avoidance rather than waste treatment and disposal forcefully. (Hamid et al., as cited in Zaman, 2015, P. 145) and when I researched on Nuwakot district regarding sustainable solid waste management, situation of biodegradable waste was used for composting, and some were collected separately and used for making manure. However, management practices of non-degradable wastes, some were burning the plastic items and unused clothes at their field and open public places and outside the street as well another ways of management was thrown into nearby streams and open places. Based on my finding, there was challenge on mostly management of non-degradable garbage. That's why I felt that there is necessary to research on rural area's waste management practices which is not studied comprehensively. Therefore, there is still a significant gap in these issues and problem of managing and change the behavior as well as practices also understanding the importance of sustainable solid waste management in rural areas. Besides that, it is necessary for the academic, government and other agencies to learn regarding sustainable waste management.

Chapter Summary

This chapter provided an overview of the Literature review. In this chapter, I explained and analyze the different literature which are related to my research. At first I discussed the waste and their causes, then pattern of solid waste production in Nepal, and efforts of Government and Non-Governmental agencies to address the issues on solid waste management. Also I explained the importance of the study. This study is important for me because this study will be done my own rural municipality and most

important things there is a problems of solid waste management. I discussed on different themes such as how can people reduced the solid waste through 3R and zero waste concept. Zero waste help to eliminating waste through recycling and reuse. In addition, zero waste keep to support the environmental protection. Another essential part of this chapter was theoretical review section where I mentioned the theory which were guided my research. My study is guided by Individual Behavior Theory. This theory states “that aid in understanding the nature and causes of Individual Waste Management Behavior (IWMB) issues. This theory were discovered by Robert Wichers. It focused on human behavior and changes influenced by the social context” (Raghu & Rodrigues, 2020). My study were related to the behavior of community people regarding solid waste management practices. This theory helped me to understand the perspective of individual behavior regarding my research. That’s why I chose this theory of Individual Behavior for my research. It helps to explore the people’s opinion, their behavior and experience and practices regarding solid waste management of Likhu Rural municipality of Nuwakot District.

CHAPTER III

RESEARCH DESIGN

In this chapter I have described the research methodology including the plan (Interpretive Research Paradigm), research approach, research site where I went for data collection in Nuwakot district of Likhu Rural Municipality-1, all data collection and analysis processes (data analysis, data coding, data categorizing, and data thematizing), quality standards and ethical consideration. Lastly, this chapter also ends with a chapter summary.

Interpretive Research Paradigm

I used this interpretive research paradigm to understand cultures of people on solid waste management as an insider. Interpretive paradigm gives me sense to understand the solid waste management culture from their everyday life practices. I used the local perspective of waste management in the remote village of the Nuwakot district which helped me to "walk in their boots," "see the world from their perspective," and "experience their pleasure or pain." (Tylor & Medina, 2013, p.5).

Interpretive research paradigm allows me to observe their everyday life practices of the solid waste management. I think and understand from participant's point of view through to "walk in their boots," "see the world from their perspective," and "experience their pleasure or pain." I used interpretive research paradigm because it creates in understand between researchers and participants. Interpretive research paradigm can learn and create knowledge on the waste management. Interpretive research paradigm is interring subjective knowledge construction. During interaction or taking interview between researchers and participants, create the new ideas, information and knowledge. This research paradigm culturally formed and looks

through participant's eyes and understands their views. And also create the new idea or to know practices regarding solid waste management own their community practices and mechanism. To know how they managed the solid waste within their local practices or not. It is a matter of understanding the world as it is based on subjective experiences of people's (Tylor & Medina, 2013).

In interpretive research paradigm, to understand how people interpret and interact within their social environment on solid waste management, I used that research techniques. Interpretive research paradigm culturally formed and looks through participant's eyes and understands their views (Tylor & Medina, 2013). And also create the new idea or to know practices regarding solid waste management own their local practices and mechanism. To know how managed the solid waste management in their local practices or not.

So, I choose interpretive paradigm because my research encompasses the understanding and practices of community people's regarding solid waste management which include subjective experiences of an individual. During my research I will interact with the participants and bring their views and experience for more interpretation. Interpretive paradigm can be helpful in my research to understanding and practice among the community people regarding solid waste management. Hence, this research study is an interpretive research because it explores perception of solid waste management how they practice with their experience and practice in day to day life.

Research Approach

I used the qualitative, ethnography approach in my research. Research approaches are planned as well as research procedures. The word ethnography approach from the Greek words *ethnos* (people) and *graphei* (to write). Simply we

can understand, ethnography approach or design is the study of individuals in their own environment through the use of observational and in person interviewing methods. Ethnography is a one of the qualitative research which gathers observations, interviews and documentary data that helps to produce detailed as well as overall description of different social circumstances. Ethnography approach helped to study of social interaction and helps to explore cultural phenomenon which describe investigations and experiences (Kitto et al., 2013). I find ethnography suitable for my research because ethnographic research design can be useful “To unpack the understanding and practices of community people’s regarding solid waste management” and to know the participants or community people’s perspectives and their practices regarding solid waste management in these settings or community. That’s why ethnography would be really helpful for me. Qualitative research approach imply collecting and analyzing these data which are non-numerical like audio or video and text, which help to know idea, experiences and point of view. It can be used to collect in-depth information about a problem or generate new ideas for the research topic. Qualitative research is used to understand how people experience and practices regarding solid waste management (Bhandari, 2020).

Research Site

The study was conducted in Likhu Rural Municipality of Nuwakot District. For this study “To know the understanding and practices of community people’s regarding solid waste management” and “to know the practices of Likhu Rural Municipality regarding solid waste management with sustainability. I selected the Likhu Rural Municipality of Nuwakot District because there is my home/ birth place. Another reason of choose this site or area because in my hometown or community there is a big issue or say problem of solid waste management, solid waste are throw

everywhere in public area also haphazardly when I was travelled in my village. So I was curious to know people's understanding and their practices on solid waste management. I chose Shanti Tole in the same municipality. There were about thirty households in the area. I have conducted listening survey among the members of each household in the initial stage.

Research Participants

The study relies mainly on interviews. This study mainly depends upon the people's understanding, practices and open structured interviews. I selected those participants who were more engaged in the kitchen or non-kitchen activities. They directly or indirectly involved with waste production and management in the family. I took few participants for my research from around 5 participants i.e. two participants were male and remaining three were female because rather than male mostly female are more engaged with kitchen activities in daily basis. Data was collected through interview. Data was collected from one of the villages of ward no 1, Likhu Rural Municipalities of house makers or who are directly or indirectly connected with waste production and management. This helped me to explore depth information and knowledge and their practices regarding solid waste management.

Data Collection Process

I used three main activities in the field: listening survey, unstructured interview with the selected participants and observation of the waste management practices of the community people and municipality efforts.

Listening Survey (Barefoot assessment)

Listening is based on hearing and understanding what people say to others. If we want to find out what people are saying then we must go to the places where people are talking (UNICEF, 1993). For my study or research, if I want to find out

what people are saying and know their understanding and practices regarding solid waste management then I must go to the places where my research area is and talk to them. In shanti tole (community) around thirty household is there and I gone through all thirty household to know their practices on sustainable solid waste and how they managed and handle their household wastes. Besides that, I tried to know their understanding regarding this issues. By the help of some guideline question which I prepared based on my objectives and purpose, I collected all information from every household and listening their stories meanwhile I noted this information on my notebook which I want to know for my study. A "Listening Survey" is different from a "traditional" survey where researchers collect information by questionnaires and some guidelines related to research or issue. In a listening survey, the researcher moves about and listens to what people are saying in practices regarding solid waste management where people feel relaxed. The information which is gathered through a listening survey is recorded by the researcher (UNICEF, 1993). Listening survey helped my research to know the practices and understanding on solid waste management of community people. In my case, following mentioned above processes I took the listening survey among the thirty participants regarding daily practices in solid waste management individually.

Unstructured Interview

An unstructured interview was taken on their own language. An unstructured interview is a one kind of interview in which the interviewer asks only a few predefined questions whereas the remaining of the questions are not designed prior. In this interviews, a few questions are predetermined asked all sample participants, whereas others arise impulsively in a free-flowing conversation. Unstructured questionnaire contain a combination of closed and opened ended questions. In

unstructured interview I used some guideline, there is information about participants and some open ended questions. Open ended question was flexible structure. So I need that information which was some information about participants such as surname, education level, family type, age like that and as well as participant's opinions, experiences, understanding, thoughts regarding solid waste management.

Permission was taken from individual participants. During the data collection I taken interview from some people from my own village of ward no 1, Likhu Rural Municipality because to know the understanding and practice regarding solid waste management. This study was qualitative study. I took interview through visit the field and I was go door to door visit it was not possible due to COVID-19 situation. I took interview via messenger and note taking and remembered their views and practices. I managed the data by note taking and transcribing the interview and observation. In observation, I recorded what I saw, heard, or met in the detailed field work notes. In interviews, I personally asked questions to individual people in conversations through messenger, direct phone call or video call or any virtual conversation or interview.

Observation

Observation is a deliberate, systematic and selective way to look at and listening for an interaction or phenomenon as it occurs. In observation, researchers observe their behavior or practices of the individuals or surroundings and analyzing it. The observation method involves researcher observe of what people actually do in their daily life and activities regarding solid waste management. There are different types of observation such as; participant's observation, non-participants observation, structured, unstructured observation etc. among these types of observation, I was select the non- participants observation. Because in non-participants observation, Observer does not take part in the situation and interaction, i.e. observer has no

chance to interact observer sit quietly in the corner observing the setting, and their daily activities and observe the solid waste management practices in their daily life. That's why I observed and recorded their behavior and practices in solid waste management at field.

Data Analysis

When conducting qualitative research, “analyzing data is the undertaking of systematic way to finding and scheduling the transcripts of interviews, observation notes, or other non-textual documents collected by investigator to better understand the phenomenon” (Wong, 2008, p. 7). “Usually it create the sense of large amount of data through reducing the size of raw information, followed by identifying important design and finally drawing meaning from data and subsequently building a logical chain of evidence” (Kawulich, 2004, p. 96). The purpose of data analysis is to convert the data into usable information. In my understanding, research needs data analysis because it makes data analysis much easier and more precise. Data analysis enables researchers to clearly interpret the data and avoid omitting any information that might be useful for drawing results and conclusions.

For the collection of data for the respective topic, first I collected data through face to face interview, categorize the data and processed it to make the meaning. For qualitative data analysis, no any appropriate techniques are helped to make finding. Besides in this research, the data analyzed and interpreted in words after summarizing the data. I transcribed the data elicited from all the participants of my research and describe the data.

As researcher, I took information from thirty participants by using the listening survey. Taking about demographic information, I found these following information in my study. Study shows that out of thirty participants more than half of

participants were female and rest of the eleven participants were male. Reason behind this data, in comparisons of male, generally female are more engaged in household activities and mainly the kitchen work. Ethnicity wise distribution data shows that, majority of respondents were Brahmin/ Chettri whereas very few number of participants were Janajati i.e. twenty eight and two respectively. My research shows that equal number of participants have joint families and nuclear family. Most of the participants were well educated who completed above intermediated level, less number of them were below SLC level. That means, this most of the community people were literate. I found variety of occupation have thirty participants such as out of thirty participants, majority of participants were students and secondly highest number of participants had farming as well as house maker i.e. eight whereas six participants only house maker, very few of the participants had teacher and business with house maker and only farmer and teacher i.e. 2,2,1,1 respectively.

My research shows that, amount of generated waste depends on the family size which varies on daily activity as well. Almost all participants made composting manure and threw in manure pit in the case of biodegradable waste. However I found there were a problem of non-degradable waste like plastic items, unused clothes, metal items and broken glass. Out of thirty participants, fifteen participants managed the waste by burning whereas seven were threw near Tadi river side or sometimes burn it as well. Those eight participants who completed above intermediate level, they had different thoughts and practiced i.e. making decorated pieces for home and reuse this non-degradable waste. Along with, all participants faced the problem during handling the non-degradable waste. As per their information, municipality and local level they did not do anything for management. Majority of participants had thoughts regarding sustainable solid waste management, all people should be improved the

practices on solid waste management by reducing, reuse and recycle the waste along with segregation from the source. On the other side of those participants who are under SLC, their opinion is do something at ward or local level. In more than half participant's point of view, for sustainable solid waste management, some important practices which were start the separation of waste at the source and avoid plastic items as well as adopt the 3 R concept. Less than half participants had opinion to manage the waste that idea should be to allocate the specific and safe place for safe disposal of sanitary landfill however this idea is not sustainable solution of waste management.

Data Thematizing

Thematizing based on analysis of interview responses. The data are analyzed based on the occurrence of topics in interview responses. As a field work or virtually I interviewed around 3-5 person who are lives in Nuwakot District of Likhu Rural Municipality who are house makers in my Research. And I asked the some questions which is related to my research issues understanding and practices regarding Solid waste management. In my study according to participant's information based on questions some key themes was made such as types of solid waste and way to managed, Participant's opinions on sustainable solid waste management, amount of solid waste in daily basis. There was the possible themes which is based on participant's opinion or given information and understanding or findings.

Quality Standards

In qualitative research includes the systematic collection, ordering, description and interpretation of written data generated from observation and interview.

Qualitative research often engages with the subjective view of participants which shapes the research frame and the whole process. "The quality criteria is mostly cited in developing the overall trustworthiness in qualitative research that is developed by

Guba, Lincoln and colleagues and they carry on with to advocate for five key concepts which can be used to evaluate the quality of qualitative research such as credibility, transferability, dependability, conformability and authenticity” (Treharne & Riggs, 2015, p. 57). In qualitative research quality standards are more appropriate as it deals with people’s everyday life along with the subjective explanation of it. In my research guided by two quality standards out of five quality standards which are dependability.

Authenticity

In qualitative research authenticity is most important because in the field of qualitative research which help to observe and participation in authentic experiences of the people that can be described and show the purpose of getting a deeper and closer understanding to a particular issue.

This study represented the voice, opinions and thought of participants. My research was to identify their and Likhu Rural Municipality’s practices and thoughts or understanding regarding solid waste management. My research was educative because I rely on that every participants are attached with society, polices, beliefs and practices, so that they can explain their own understanding and identified about the solid waste management. The study was also beneficial to know the participant’s thoughts, views and practices about solid waste management. How they managed the solid waste, what are the thoughts and knowledge regarding solid waste management?

Dependability

Dependability affirms the research findings of this study as being consistent and repeatable, which is crucial to trustworthiness (Streubert, 2007).

Dependability refers to the consistency and reliability of the research findings. In

qualitative research, dependability concerns that the findings could be repeated and are consistent. Ensure that nothing was overlooked inside the research and that the researcher's conclusions are accurate in the final report (Trochim, 2020). Essentially the main concern with outcome whether the result we identified and observe the same thing time and again (Trochim, 2020). To check the dependability of the study, as a researcher I had aware about the negligence or errors in the conceptualization of the study, data collection, interpretation of the findings and presentation the results. I think, if the researcher is consistent in the research process, the more dependable will be the results.

The research maintained dependability because to get enough knowledge. I have to depend upon participants who are live in Likhu Rural Municipality of Nuwakot District on understanding and practices of solid waste management in that area. To verify the dependability, I conveyed my research draft with dissertation supervisor to get feedback and suggestion on the field challenges and updated findings. This assisted me in both maintaining the focus of my study goal and honing the concepts and ideas I had. I gave my draft findings with a peer researcher of my university who had more ideas than me. This allowed me to reflect critically on the study.

Ethical Considerations

Ethics is the disciplined study of morality which will show what one's behavior should be. Ethics is the science of morality. It deals with the rights or wrong of any activity. Ethics is principle of right conduct. In research ethics, analysis of moral worth of all the actions involved in human or animal experimentation. Research ethics is also defined as which is morally and legally fair in research (Praveen and

Showkat, 2017). It includes, protection of dignity of participants and distinguish between acceptable and unacceptable behavior.

The key ethics issues during research are include informed consent, beneficence (do well), non-maleficence (do not harm), respecting autonomy, privacy and confidentiality, deception, reciprocity, equity and justice, plagiarism and other issues.

This research was clearly guided by the research ethics. Before taking an interview with participants the researcher was take the verbal consent from each participants, this was help to protect participant's right to autonomy. Confidentiality was maintained by giving surname to the participants instead of their names. This study does not tend to harm or disrespect participants. It was also respect individuals or groups that comes into contact during the research and will treat them equally.

Participants assured that the data collected was used only for the study purpose. During the research no one was be unjustly favored or discriminated. The study was also avoiding plagiarism and acknowledges original authors. Furthermore, this proposal was avoid potential risk such as physical, mental, social, economic and legal harm, and is aware of biased language or words against gender, racial or ethnic group, disability or age. Furthermore, my paper was fully guided by the ethical guidelines for research from Kathmandu University and adhere ethical principles in order to protect dignity and rights of research participants.

I hereby declare that the research proposal entitled, 'to know the understanding and practices of community people's and LR municipality's regarding solid waste management of Likhu Rural Municipality, Nuwakot District', is a record of original work. The information and data illustrated in literature review is authentic to best of my knowledge.

Chapter Summary

This chapter summarized the research methodology by introducing the research design which I used in the Interpretative research paradigm. In this chapter, I used the qualitative, ethnography approach in my research. I selected five of those participants who were more engaged in the kitchen or non-kitchen activities. They are directly or indirectly involved with waste production and management in the family. The following chapter includes justifying the research area, deeply discussing the research methodology and data collection process along with the quality standards and ethical consideration. I conducted this research under interpretive research design. The Interpretive research paradigm allows me to observe their everyday life practices of solid waste management. This research study is an interpretive research because it explores the perception of solid waste management and how they practice with their experience and practice in day to day life.

CHAPTER IV

ETHNOGRAPHIC GAZE IN RURAL WASTE

This chapter presented and described the information of the ethnographic field work. It provided some important information related to ethnographic fieldwork, when I started the field work and took the interview, also provided the process of listening survey and observation which helped to identify key practices of managing the solid waste in the community. By the help of a listening survey I collected some information regarding my purpose of the study and observation help to observe what people actually do in their daily life and activities regarding solid waste management.

Ethnographic Field Work

My field work started from 25/ Jan/ 2022 to 5/ Feb/ 2022 in the village of Shanti Tole in Likhu Rural Municipality, Nuwakot. As an insider of the community, I had noticed about the solid waste management practices. This section describes the process of listening survey, observation which helped to identify the major practices of managing the solid waste in the community.

My research area was Likhu Rural Municipality of Nuwakot District. Out of thirty participants, nineteen were female and remaining all was male. The composition of the participants in the listening survey represented from different ethnic group. Majority of participants were Brahmin/ chettri whereas just two participants were Janajati. Most of the families belonged to joint families and half were belonged to Nuclear families. They had varieties of occupation were students followed by homemaker, farmer with homemaker, business and teacher with homemaker respectively. Majorities of participants completed their secondary level education, and university level. Perhaps, they studied Environment, Health and

Population a compulsory course in school curriculum. Only few of them completed under the secondary level.

As a researcher I engaged with the listening survey among thirty participants who were involved in the kitchen and non-kitchen activities. Three women and two men were selected from the thirty participants of listening survey using the purposeful sampling method, and they gave their consent for interviews and story-telling. Due to time and resource constraints, I modified the conventional purposeful sampling method that enables us to select individuals consciously. Among these thirty participants, most of the participants were female and educated. Some of them belong to joint families and some of them were nuclear families. Most of the participants' occupation were farming and few of them were students also. They directly or indirectly involved with solid waste production and its management in the family. I did not differentiate their roles at home because solid waste production was common to all because waste was generated by our daily activities or say human activities. I believe that all of us were responsible for waste production.

While I was walking in the village or community during my stay, in festivals, some occasions and personal reasons, I observed people's everyday life activities for solid waste management practices. Regarding management of biodegradables waste, some were used for composting and some were collected separately and used for making manure. Whereas management practices of non-degradable wastes, some were burning the plastic items and unused clothes at their field and open public places and outside the street as well. Some throw these wastes into nearby streams and open places. When I saw some interesting things such as people made designer decorated pieces by using the plastics bags bottles, paper and used glass. When I went into the field or household, some educated people were designing decorated pieces using

plastic bottles, polythene bags, and x- ray cards as well. I was happy to see the skills of community people. Reuse was the best way to practice managing the plastic waste.

Ethnographic Anecdote: Biodegradable Waste are Using for Composting

Ms. Paudel, age 45 were a farmer and sometimes he engaged in kitchen activities as well as doing household activities. He were spent day in the same activities i.e farming sometime cooking and he lived in Nuwakot, Likhu rural municipality with joint family and he passed primary level of education. Based on my research issues I asked some questions such as in your opinion, what unit of solid waste is created from your house on a daily basis? He gave the answer, she thinks solid waste is in different amounts (approximately 3 kg) which are uncertain and depends upon daily activities such as sometimes relatives came in her house and generated more houses, and at the time of festivals waste is more generated. Then my next question was what types of wastes are found in your house? He answered me, the types of solid waste which were found in houses are solid rubbish, plastic wastes, metal, paper and organic waste which are generated by the kitchen. Furthermore I went through next question, how you manage the solid wastes which are generated in your house. He managed organic or biodegradable waste by making composting and used for crop production or kitchen garden and throw manure pit for making manure. While making compost manure, simply he collected the degradable waste differently and digs the pit near kitchen garden or house and out the all degradable waste and after fill this pit she covered the pit by using the soil. After degrade the all waste, he used this manure in their field for vegetables and crop production. Plastic materials such as plastic bags, bottles and another non-degradable waste i.e. broken glass, old or unused clothes and metals are collected at home in a different container or dustbin and

throw near river or near public places and sometimes burn it. He said she has no other option to manage the non-degradable waste.

My question was 'what the present situation of solid waste management is in your community or municipality'. According to him, the situation of the community is not satisfactory in solid waste management. If rural municipalities take some strict measures towards the proper management of solid waste then it's a satisfactory and good thing. Then another my concerned was 'what are the main problems suffering from solid waste management?' He answered 'she has suffered from different problems such as bad smell while burning the plastic items, unused clothes, causes of air pollution, environment pollution, and other problems to find the space where she threw these waste and degrade the soil fertility as well due to unmanaged solid waste'. I questioned to him, what kinds of actions the rural municipality is taking towards solid waste management in your community? He said rural municipalities did not do any activities and action towards the solid waste management. Some months ago, they came to collect and clean the community and street area or side but it did not follow up timely and repeated it. Another question was do municipal vehicles receive the waste from your household or community? He said no municipal vehicle or waste collection vehicles receive the waste from your community. My next question was 'what are the challenges you face for the management of solid wastes?' He has faced the challenges to manage the broken glass, unused metals, clothes, sharp items, space as well. And then I asked, what are the practices that can be adopted to sustainable solid waste management or zero waste at own individual level and rural municipality level? Based on him opinions and her point of view, to manage the waste sustainable and improve the practices, the municipality level should be to allocate the specific and safe place for safe disposal of sanitary landfill and collect the waste from the

community regularly and don't throw waste anywhere or public places. My last question was 'in your opinion what should be done for protecting environment from pollution?' He answered 'stop burned the plastic items, unused cloths, practicing make the composting in every house hold, proper management of solid waste'.

Thoughts on Sustainable Solid Waste Management

Mrs. Lamichhane, age 23 were a bachelor student, from shanti tole likhu rural municipality, Nuwakot. She has a nuclear family. I asked some questions regarding my research issues such as in your opinion, in what unit of waste is produced from your house in a regular activities? She gave the answer as follows; on a daily basis, around 1.5 kg of solid waste is generated from her house. Somehow the generation of solid waste is uncertain. I prompted her, what types of wastes are found in your house? She answered, the types of solid waste which are found in houses are plastic waste bags, bottles, metal, paper and organic waste which are generated by the kitchen such as peels of vegetables, waste food vegetables etc. My next queries, how you manage the solid wastes which are generated in your house? She manages organic or degradable waste making composting, plastic and other non-degradable waste are collected at home in a container and thrown near Tadi river, sometimes they burn it. Most of the polythene bags and bottles are reused in daily activities. Then I questioned 'what the present situation of solid waste management is in your community or municipality?' She said in her community wrappers, plastic bags, bottles were haphazardly spread. She thinks that to minimize the generation of plastic waste, all people practice the reuse of plastic items. Furthermore, next question about what kinds of actions the rural municipality is taking towards solid waste management in your community? A long time ago they conducted a cleaning campaign in the community. After that I asked do municipal vehicles receive the waste from your

household or community? And my next question was ‘what are the challenges you face for the management of solid wastes?’ She said municipal vehicles should not come to receive so she faced different challenges during collection like lack of space, container and polluted our environment like soil pollution and air pollution also. And then I questioned her, what are the practices that can be adapted to sustainable solid waste management or zero waste at own individual level and rural municipality level? And my final queries about in your opinion what should be done for protecting environment from pollution? For sustainable solid waste management she said recycling methods should be done to reduce the solid waste, collection and segregation at the origin of waste production, awareness programs regarding 3r concept and zero waste concept should be conducted in all communities, avoid the burning and avoid the use of polythene bags or less used as well as reused it, set the strict rules and policies in local government level should be done for solid waste management for protecting environment from pollution.

Biodegradable Waste are Using for Composting

Mrs. Acharya, age 35 from Likhu rural municipality ward no 1 Nuwakot, with a joint family. She read only class five. She is also a house maker and farmer she doing farming. My first concerned was opinion of participants regarding what unit of solid refuse is occurs from your house on a regular activities? She replied, on a daily basis waste generation may be up to around 2 kg per day. Then I asked on what types of wastes are found in your house? She said most of the solid waste is from the kitchen and others are paper, metal, and plastic and so on. Next question was ‘how you manage the solid wastes which are generated in your house?’ Most of the time she collects the dry wastes in a dustbin, in case of kitchen wastes she buries the vegetables pile in the pit and makes compost and this manure used in the kitchen

garden. Case of non-degradable waste such as plastic wrappers, bags, bottles, clothes etc., she collects them separately and throws it near Tadi River and burns it also sometimes. I asked what the current condition of managing solid waste is in your community or municipality? She said in her community wrappers, plastic bags, bottles were haphazardly spread. I asked what kinds of actions the rural municipality is taking towards solid waste management in your community? She said at the municipality level, they are not taking any action for sustainable solid waste management. I prompted her, do municipal vehicles receive the waste from your household or community? She said in her community, there is no vehicle that comes and receives the waste. My next question was 'what are the challenges you face for the management of solid wastes?' She faced different challenges during collection like lack of space, container and polluted our environment like soil pollution and air pollution also. At municipal level, no any practices and set the rules or any management related practices are adopted and no any action was taken. And then my next queries regarding, what are the practices that can be adopted to sustainable solid waste management or zero waste at own individual level and rural municipality level? Her opinion at their own individual level, less use of plastic items, cleans the house surroundings, don't burn the waste. These are the practices that should be adopted for sustainable solid waste management. In her opinion, some action should be taken from the municipality level for sustainable solid waste management or zero waste practices at likhu rural municipality. Need to manage the vehicle for waste collection from the community, need to allocate some specific dumping site. And lastly I prompted her 'In your opinion what should be done for protecting environment from pollution?' She answered we should be avoid or stop burning the waste and make the environment healthy, this way for protecting the environment from pollution.

Education Changed Their Minds about SWM and Inspired new Ideas

Mr. Dhamala, aged 48 were a farmer, with a joint family and he was a farmer he did farming to fulfill his family basic needs and livelihood and he did bachelor and from likhu rural municipality ward no 1, Nuwakot. My first concerned for him such question related my research issue such as, In your opinion, what unit of solid waste is occurs from your house on a regular basis? He answered, on a daily basis waste generation in his home is around 1.5 kg per day. Then my further concerned was 'what types of wastes are found in your house?' He said most of the solid waste is degradable which is generated from the kitchen and others are paper, metal, and plastic and so on. My next question for him, how you manage the solid wastes which are generated in your house? Regarding the waste management he practiced at first, he collect the waste in different bucket separately the type of waste and the making composting from use degradable waste or some time throw the manure pit also for making manure, and plastics bags bottles are reused sometimes and remaining non-degradable waste are throw near tadi river or burn it. He said there was no other option to manage the non-degradable waste. I asked what the present situation of solid waste management is in your community or municipality? My next queries on what kinds of actions the rural municipality is taking towards solid waste management in your community? Near his house hold and street found plastic wastes because community people as well as municipality level neglected the waste and there are not any actions taken regarding proper management of solid waste. Then I tried to know regarding 'do municipal vehicles receive the waste from your household or community?' He explained, there is no provision or practices and management receives the waste from the community. My next question was 'what are the challenges you face for the management of solid wastes?' He and his community

faced the challenges to manage the non-degradable waste mainly the broken glass. And then he were questioned by me, what are the practices that can be adapted to sustainable solid waste management or zero waste at own individual level and rural municipality level? In his opinion less use or reuse of the plastic items, this practice helps to improve the waste management at an individual level and from municipality level, provide the skillful training to make the different items which are used to decoration of our home and room from using the plastic bottles, polythene bags, and reuse the unused cloths. Rather than making dumping sites, recycling reused, trying to avoid the plastic materials, conduct the awareness program regarding solid waste management and zero waste concept as well as 3r concept among the community people should be prioritized. And my final question regarding ‘in your opinion what should be done for protecting environment from pollution?’ She answered we should be avoid or stop burning the waste, less used and reused the plastic items like shopping bags, polythene, bottles and make the environment healthy, this way for protecting the environment from pollution.

Own Practices to Managed the Solid Waste

Mrs. Alemagar, age 50 were a house maker and belongs to a joint family and she was house maker, she doing farming also. She passed SLC and lived in shanti tole, likhu rural municipality ward no. 1, Nuwakot. I asked her such question related my research issue such as, In your opinion, in what unit of solid waste are occurs from your house in a regular activities? She said around 2 kg solid waste created on a day to day life. I asked what types of wastes are found in your house? From her house, degradable and non-degradable waste are generated. Furthermore I wanted to know about management the solid wastes which are generated in your house? She collects it into the sack differently and then degradable waste is used to make manure and used

in the kitchen garden and non-degradable waste is burned and plastic items are reused in daily activities. Solid waste were found here and there, in open places, public places, near streets. Then my next queries on ‘do municipal vehicles receive the waste from your household or community?’ She answered, there was no vehicles that receive the waste from the community. My next question was ‘what are the challenges you face for the management of solid wastes?’ She along with her community faced the challenges to manage the non-degradable waste mainly the broken glass. My concerned about what kinds of actions the rural municipality is taking towards solid waste management in your community? She gave me answered, at the municipality level, they are not taking any action for sustainable solid waste management. And then my next quires about what were the practices that can be adopted to sustainable solid waste management or zero waste at own individual level and rural municipality level? Her opinion at their own individual level, less use of plastic items and well managed waste, don't burn the waste. These were the practices that should be adopted for sustainable solid waste management. In her opinion, some action should be taken from the municipality level for sustainable solid waste management or zero waste practices at likhu rural municipality. Need to manage the vehicle for waste collection from the community, need to allocate some specific dumping site. And lastly I asked In your opinion what should be done for protecting environment from pollution? She answered we should be avoid or stop burning the waste and make the environment healthy, this way for protecting the environment from pollution.

Chapter Summary

This chapter provided an overview of ethnographic gaze in rural waste and elaborated the ethnographic field work. All collected data was explained on the basis of research question. For the data collection I interviewed with participants, listening

survey and observation which helped to identify the major practices of managing the solid waste in the community as well as collected lots of information regarding my purpose of the study and through observation I knew what people actually do in their daily life and activities regarding solid waste management. I engaged with the listening survey among thirty participants who were involved in the kitchen and non-kitchen activities. Among these thirty participants, most of the participants were female and educated and some of them belong to joint families and nuclear families. Most of the participants' occupation were farming and few of them were students also. All of the community's people were directly or indirectly involved with solid waste production and its management. I also observed people's everyday life activities for solid waste management practices. Biodegradable waste, some were used for composting and some were collected separately and used for making manure. Whereas management practices of non-degradable wastes, some were burning the plastic items and unused clothes at their field and open public places and outside the street as well another management ways of non- degradable waste was thrown into nearby streams and open places. I explained the information which I collected from participants in different titles such as biodegradable waste are used for composting, different participants have different thoughts on sustainable solid waste management, education changed their thoughts towards Sustainable Solid Waste Management and invent new ideas and own practice on solid waste management.

CHAPTER V

FINDINGS AND DISCUSSION

This chapter described the key findings and discussion of my research in different themes and based on two objectives. In objectives one there were some themes i.e. quantity of created solid waste in day to day life, Type of solid waste and way to managed, Practices can be improve and adopted to sustainable SWM at own Individual level, Practices can be adopted to sustainable SWM at Likhu Rural Municipality level Participant's opinions on sustainable solid waste management for protecting Environment and another objectives describes on Practices of Likhu Rural Municipality regarding sustainable solid waste management.

Key Finding and Discussion

In my research according to participant's information based on objectives wise questions some key themes are given below:

Community Waste Management Practices: Daily Solid Waste and Source

The quantity or amount of waste created on a daily basis which were based on family type. As per participant's information, around 1- 3 kg solid waste were generated daily from a joint family and around 0.5- 1 kg solid waste were generated from a Nuclear family. This all data was taken by interview of participants. I think based on family type quite more; somehow it can be reduced from the source of generation. Household waste, kitchen waste, domestic waste, may be agricultural waste these are the source of waste production. By adapting the 3 r concept, obviously quantity of waste can be reduced and it helps to management of solid waste. If we consume and used less of plastic items, mainly these kinds of waste which are not degradable, production of waste can be decrease.

Type of Solid Waste and way to Managed

“Local household waste is defined as solid waste, which includes recyclable waste (paper, plastic bottles, metal, cloth) among them, biodegradable wastes and garbage which is produced from kitchen, that is the key portion of local household solid waste” (Wang et al., 2018, p. 23). As mentioned Wang et al. (2018) my research also shows that generated solid waste which were biodegradable such as waste vegetables and food, kitchen waste, dust and non-biodegradable or recyclable wastes such as broken glass, plastic items like bags, bottles, old metal, old cloths etc.

“To address concerns related to public health, environmental pollution, land use, resource management and socio-economic impacts associated with improper disposal of waste” this is an earliest purpose of sustainable management of solid waste (Muraleedharan, 2021). I agreed with this statement and I also think to make environment healthy, people focused on the permanent solid waste management. I found the ways of solid waste management are mostly the same method of all participants. They manage organic or biodegradable waste by making composting and used for crop production or kitchen garden and throw manure pit for making manure and plastic materials such as plastic bags, bottles, and another non-degradable waste i.e. broken glass, old or unused clothes and metals were collected at home in a different container or dustbin and throw near river or near public places. There were no one particular place for waste disposal. Sometimes they burn plastic waste, clothes etc. Since the rural municipality has not started to collect the wastes and not allocate the sanitary landfill. Community people know it is not a good idea to burn the waste but they have to do it they have no other option. Most of the time shops provide us plastic packaging which is a waste material and they throw it away. Most of the participants reused the plastic bags and bottles for daily purposes.

During the interview, I found some interesting views from educated participants who are completed in Bachelor level. They managed the biodegradable waste like others composting and using as a manure for kitchen garden and field. Non-Biodegradable waste like plastic bottles and polythene was used for reuse, reduced during the source and making different designated decorated things from the bottles and plastic bags as well. But still there was problems managing the broken glass and unused material. “Lack of information causes that the decisions regarding proper waste management are based on assumptions and inferences, which brings about its mishandling with serious consequences for the environment” (Gonzalez & Vega, 2010, p. 128). This statement are relevant with my finding, Education changed thought and perception. They had different ideas rather than illiterate people.

Based on the participants' views, the situation of the community were not satisfactory in solid waste management. They had suffered from different problems due to unmanaged solid waste such as bad smell while burning the plastic items, unused clothes, causes of air pollution, environment pollution, and other problems to find the space where they throw these waste and degrade the soil fertility as well.

Rural municipalities did not do any activities and action towards the solid waste management. Some months ago, they came to collect and clean the community and street area or side but it did not follow up timely and repeated it. Not any municipality's vehicle or waste collection vehicles receive the waste from your community. They had faced the challenges to manage the broken glass, unused metals, clothes, sharp items, space as well.

Individuals can Adopt Better SWM Practices

Zero waste is a description of waste management approaches that prioritize waste prevention. Zero waste confine the eradicating of that waste which are

recyclable and reusable and also it mainly focuses on redesigning the production and distribution of waste (Hamid et al., as cited Palmer, 2004). That's why zero waste concepts is most important to make the waste free community. So I think for a sustainable solid waste management, Zero waste concept and 3R concept should be adopted and practices in our daily life.

In most of the participants who have completed the graduation their opinions, people should be improved the practices on solid waste management through using 3R (reducing, reuse and recycle) and along with segregation of waste from the source of generation. On the other side of those participants who were under SLC, their opinion were do something at ward or local level, composting the biodegradable waste and non-degradable waste were assembled and managed in the specific place. They have to change their behavior and practices for sustainable solid waste management.

Based on the participant's opinions and their point of view, there are many practices that can be adapted to solid waste management in sustainable manner. Most important practices which maintain the practices of waste collect separately and segregate at the source of solid waste. Stop using the polythene bags, less use, reuse it and reduce the waste generation on a daily basis. Another management idea should be to allocate the specific and safe place for safe disposal of sanitary landfill. This idea is not sustainable actually. For a sustainability of solid waste management, zero waste is the best concept and also Reduce, reuse and recycling practices as well and we all are involved to make the zero waste community and achieve this concept. I believe that, zero waste management approach contribute the sustainable development in different ways such as benefits communities people. Reducing, recycling generate the more job than disposal of waste. In this way, it supports a local economy. Sustainable

development goals number 11; sustainable cities and communities, zero waste management approach directly contribute to achieve this goal. Because zero waste have sustainable concept to manage the waste by low production of waste at the source and priority to reuse and recycle the waste rather than dumping. So this concept help to achieve this goal. From the non-degradable waste, we also make different decorated items from plastic items such as bags, bottles etc. For broken glass it should be proper management. Rather than dumping and disposal or other ways to manage we should try to less generation of waste at the source in every individual level.

Sustainable SWM can be adopted in Likhu Rural Municipality

In the participant's opinion, at Likhu Rural Municipality level, they should be developed an appropriate rules, policy as well as strategic activities which are implemented immediately. Reduce, Reuse, recycling and Zero waste concept along with their benefits and advantages to us should be promoted among the community people through conducting the awareness program such as drama, story etc. medium are used. Municipality enhances the community participation and coordination with ward elected people along with stakeholders as well for adopting the sustainable solid waste management practices. Municipality should immediately stop the current poor and unmanaged practices such as open and haphazard dumping and burning wastes. At the municipality level, they should allocate the sanitary landfill and timely receive the waste from every household of this community and area as well. Another possible way to manage the plastic items, municipalities provides the skills of making the decorated things from plastic bags and bottles. In municipality level, rather than dumping and disposal or other ways to manage we should try to less generation of

waste at the source in every individual level and provide the awareness among the community people regarding zero waste concept as well as 3 R concept.

Opinions of Participants on Sustainable Solid Waste Management to Protect the Environment

As per participant's opinion, In order to protect the environment from pollution they think community people must only buy necessary things in cloth bags which are brought from home. Avoid using things made from plastics. All participants said there is a big problem with solid waste management. Rural municipalities should make some rules and implement it for solid waste collection and to prevent the environment from soil and air pollution and keep the environment healthy and clean. Majority of participants think for local sustainability recycling, reducing, reusing, segregation methods should be done and banned the use of plastic bags. There should be strict laws. Many places have banned plastic, but we can see plastic in those areas. Rather, dumping site recycling, reuse and reducing should be prioritized. Plastic bags degrade the soil quality and decrease the food production because Nuwakot is an agricultural place. There is huge production of crops and potatoes etc. Due to unmanaged waste and dumping practice leads to environment pollution. I think zero waste management approach helps to protect and good for the environment and helps to conserve the natural resources. I believe that, all greenhouse gas emission are caused by generation and consumptions of good for instance packaging the food. So reduce, reuse and recycling conserve the energy and also can reduce the carbon emission as well as helps to minimize the soil pollution.

Practices of Likhu Rural Municipality Regarding Sustainable Solid Waste Management

In my research, according to their responsible person based on objectives “Practices of Likhu Rural Municipality regards sustainable solid waste management” wise questions some of the important information is given below: As a responsible person of Likhu Rural Municipality, from their side they did the cleaning campaign in the community. During the waste management they also faced some challenges in the management of non-degradable waste like plastic items, broken glass etc. They are planning at their own level to make the proper solid waste management. They make a plan to conduct the awareness program for non-degradable waste management as well as provide the training for composting among the community level. Besides that they have a plan to encourage the 3R concept (Reuse, Reduce the waste and recycle) and other things they have to make sure all community people use less plastic bags, bottles and reuse them. To make the municipality a waste free municipality, these practices are implemented in the present and future too. They have another plan for appropriate solid waste management. They put dustbins based on the type of waste like plastic items in different places all communities centered along the side of the street. In future, they have to plan to allocate the suitable place for waste disposal. There will be a focus on less use of plastic bags, conduct the awareness program to implement the 3 R concepts and provide the training to make the designated decoration items from Plastic items such as junk food wrappers, polythene, bottles etc. From protecting the waste pollution from the environment, they take strict action towards stopping burning the waste, more focused on making composting for biodegradable waste.

Chapter Summary

This chapter summarized the key findings and discussion of my research. I described the findings in different themes based on purpose of the study. There are different themes in one objectives such as quantity of solid waste created in daily basis, type of solid waste and way to managed, practices can be improve and adopted to sustainable SWM at own Individual level, practices can be adopted to sustainable SWM at Likhu Rural Municipality level, participant's opinions on sustainable solid waste management for protecting Environment and another objectives described on practices of Likhu Rural Municipality regarding sustainable solid waste management. Regarding types and amount of waste generation in daily basis which were based on family type. Approximately 1- 3 kg solid waste was generated daily from a joint family and around 0.5- 1 kg solid waste was generated from a Nuclear family. My study shows that generated solid waste which was biodegradable such as waste vegetables and food, kitchen waste, dust and non-biodegradable wastes such as broken glass, plastic items like bags, bottles, old metal, old cloths etc. From study, I found the ways of solid waste management were mostly the same method of all participants. They used biodegradable waste to make composting and plastic materials or other non-degradable waste such as plastic bags, bottles, broken glass, old or unused clothes and metals were collected at home in a different dustbin or some of them were throw near river or near public places as well as burnt sometimes because lack of proper waste disposal place. Participants said that rural municipalities did not do any activities and action towards the solid waste management. Participants thoughts were varies regarding sustainable solid waste management, graduation participants said that people should be improved the practices on solid waste management by reducing, reuse and recycle the waste along with segregation from the

source. On the other side of those participants who are under SLC, their opinion is do something at ward or local level. In participant's point of view, for sustainable solid waste management, some important practices which were start the separation of waste at the source and avoid plastic items as well as adopt the 3 R concept. Another management idea should be to allocate the specific and safe place for safe disposal of sanitary landfill however this idea is not sustainable solution of waste management. For a sustainable solid waste management, zero waste is the best concept and also Reduce, reuse and recycling practices as well and people were involved to make the zero waste community and achieve this concept. Based on participant's thoughts, rather than dumping and disposal or other ways to manage, we should try to reduce the production of waste at the source at every individual level and municipalities provide the awareness among the community people regarding zero waste concept as well as 3 R concept.

CHAPTER VI

SUMMARY, CONCLUSION AND IMPLICATION

This chapter described the overview of summary, conclusion and implication of this research. In this chapter, I conclude my research through summary with implication. In summary, I explained the major findings that was based on my research question and purpose of my study with research methodology. Whereas in conclusion and implication, I included and discussed all chapter and conclude my study and also mentioned that this study will be beneficial to other research who are interested on this research area.

Summary

There are two purposes of my study i.e. to understand the practices of community people and Likhu Rural Municipality regarding sustainable solid waste management of Likhu Rural Municipality, Nuwakot District. I used an interpretive research paradigm to understand cultures of people on solid waste management as an insider and I applied an ethnographic approach of different techniques, i.e. interview, listening survey and observation to gather data from my research site at Likhu Rural Municipality of Nuwakot District. In the process of analysis and interpretation, I transcribed, translated field data, generated themes, and interpreted it based on theoretical review.

The findings were presented and discussed in two different chapters according to the research questions and purpose of my study. One chapter described the ethnographic gaze in rural waste and elaborated on the ethnographic field work. In the ethnographic field work chapter, all collected data was explained on the basis of a research question. During the data collection I interviewed with participants, listening

survey and observation which helped to identify the major practices of managing solid waste in the community along with collected lots of information regarding my purpose of the study.

In another chapter, I explained the key findings in different themes based on the purpose of the study such as amount and type of solid waste generated in daily basis and its way to management, practices can be improve and adopted to sustainable SWM at own Individual level and Likhu Rural Municipality level, participant's opinions on sustainable solid waste management for protecting Environment and another purpose described on practices of Likhu Rural Municipality regarding sustainable management of solid waste. The amount of waste generation depends upon people's family size i.e. around 1- 3 kg solid waste was generated daily from a joint family and around 0.5- 1 kg solid waste was generated from a Nuclear family. I found that the ways of degradable solid waste management were the same for all of the participants. Biodegradable waste, some were used for composting and some were collected separately and used for making manure. Whereas management practices of non-degradable wastes, some people were burning the plastic items at their field and open public places and outside the street as well another management ways of non-degradable waste was thrown into nearby streams and open places. I found the information which I collected from participants which varied from different participants having different thoughts on sustainable solid waste management. Participants said that, for well management of waste dumping site is not a sustainable solution. There are other ways to manage, we should try to reduce the generation of waste at the source at every individual level and municipalities provide the awareness among the community people regarding zero waste concept and 3R concept as well as promote them to apply these concepts. I must say that the education changed people's

thoughts towards Sustainable Solid Waste Management and invented new ideas and practices on solid waste management. This thought kept in my mind while I was analyzing data.

Conclusions

Today, well management of the solid waste is largest difficulty and critical matter for our surrounding. This study was done on the basis of two objectives in different themes that was to understand and practice regarding solid waste management of community's people and municipality's level. There was purpose of my study, based on the purpose I collected the data from community's people and chairman of municipality. I found different points of view from different people which distinguish their educational level. Throughout the data collection process, I did listening survey, unstructured interview with the selected participants and observation. I collected the data, then analyzed based on the occurrence of possible themes in interview answers and transcribed the data.

Based on my finding, production and amount of waste vary to family type and the way of managing the degradable waste was same whereas varies in non-degradable waste which were collected at home in a different dustbin or some of them were thrown near rivers or near public places as well as burnt. For protection the environment and reduced the inorganic waste, rather dumping, adopted zero waste and 3 R concept, need to conduct the awareness program among the community people. Despite knowing the ways of sustainable waste management, many educated people did not follow whereas many of them adopted the 3R concept and zero waste management approach. Those participants who had passed the bachelor level their view were different than low literate participants regarding waste management. Participants said that rural municipalities did not do any activities and action towards

solid waste management. Participants' thoughts were varied regarding sustainable solid waste management. Graduation participants said that people should improve the practices on ways of managing the solid waste by reducing, reuse and recycle the waste along with segregation from the source. Another way of management that should be allocated is a specific and safe place for safe disposal of sanitary landfill; however this idea was not a sustainable solution of waste management. For a sustainable solid waste management, zero waste is the best concept and also reduce, reuse and recycle practices as well and people were involved to make the zero waste community and achieve this concept. I think solid waste is directly connected with the goal of SDGs i.e. sustainable cities and communities. Zero waste approach contribute to make the cities and communities are sustainable, clean environment, to conserve the natural resources as well as helps to support the local economy.

This study made many contributions from community people as well as municipality's level. Participants and other community people provided the chance to take information, so they considered taking the interview. There are other wards and communities in likhu rural municipality, the results generated from my study were not generalizable and due to the time period all wards were not covered. Thus, this study concludes that certain ideas about the understanding and practices of sustainable solid waste management practices in sustainable ways i.e. recycling, separation of waste and composting in the Likhu Rural Municipality in Nuwakot District.

Implications

This study will be useful to other researchers interested in conducting more in depth studies in the field of sustainable solid waste management in rural areas. In this study adds to the literature and theoretical review related to my research area that is to understanding and practices regarding solid waste management.

The study has found household and community people implication in the sense that finding advocates for aware of the proper management of waste material in everyday life practices. Moreover, for environmental aspects proper management has been needs to ensure the sustainability of the waste management otherwise this problem became biggest in rural areas as well likewise nowadays increasing day by day in urban areas and cities which are difficult to handling.

The study has found different views and thoughts related to sustainable solid waste management which varied the different participants. Based on my findings, I think there is a need for awareness campaigns among the community people. Local governments is to be the most responsible for that and they should conduct the program. From my finding, local governments helped to find out the weakness and take a decision what should be done from local level to encourage and handle properly the solid waste in sustainable manner.

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