MAKERERE UNIVERSITY

SOLID WASTE MANAGEMENT PRACTICES IN PALLISA DISTRICT: A CASE OF
PALLISA TOWN COUNCIL, UGANDA

BY

GALYA MUHAMMAD

SUPERVISOR: DR.UMAR KAKUMBA

A RESEARCH PROJECT REPORT SUBMITTED TO THE COLLEGE OF BUSINESS
AND MANAGEMENT SCIENCES IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE AWARD OF THE DEGREE
OF MASTER OF PUBLIC INFRASTRUCTURE
MANAGEMENT OF MAKERERE
UNIVERSITY

SEPTEMBER 2014
Declaration

I, Galya Muhammad, hereby declare that this research project is my own work and has never been presented to this or any other institution of higher learning for any academic award.

Signature…………………………………………..Date………………………………
Approval

This project report has been submitted for examination with my approval as a supervisor

Signed …………………………… Date…………………………
Dr. Umar Kakumba
Supervisor
Dedication

I dedicate this research work to my parents and family for their inspiration and encouragement.
Acknowledgements

I wish to extend my appreciation to my supervisor, Dr. Umar Kakumba for his tireless effort with which he supervised this study. My sincere gratitude is also extended to all the staff of College of Business and Management Sciences (COBAMS), the Chief Administrative Officer-Pallisa Mr. Mbooge Isa and all the staff of Pallisa District Local Government, for all the support they rendered me during the time I was undertaking this study.

Special thanks go to my fellow students for their cooperation and encouragement during the course and critique that enabled me to complete this study. Special thanks and acknowledgement also go to my parents, Mr and Mrs Ahmed Abdallah Galya for their inspiration, encouragement and invaluable moral support.

Finally, I acknowledge the respondents for having accepted to participate and be part of this study.
Table of Contents

Declaration......................................................................................... i
Approval .......................................................................................... ii
Dedication ....................................................................................... iii
Acknowledgements ......................................................................... iv
Table of Contents ........................................................................... v
List of Tables .................................................................................. ix
List of Acronyms and Abbreviations ................................................. x
Abstract ........................................................................................ xi

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY ............. 1
1.1 Introduction .................................................................................. 1
1.2 Study Background ....................................................................... 2
1.3 Problem Statement ..................................................................... 6
1.4 General Objective ....................................................................... 7
  1.4.1 Specific objectives ................................................................ 7
1.4.2 Research Questions ................................................................ 7
1.5 Significance of the Study ........................................................... 7
1.6 Scope of the Study ..................................................................... 8
1.7 Limitations ................................................................................ 9

CHAPTER TWO: LITERATURE REVIEW ....................................................... 10
2.1 Introduction ................................................................................ 10
2.2 Waste.......................................................................................... Error! Bookmark not defined.
  2.2.1 Municipal waste .................................................................. 10
2.2.2 Solid Waste .................................................................11
2.2.3 (Solid) Waste Management........................................11
2.2.4 Waste management practices ....................................12
2.2.5 An integrated strategy to solid waste management ........14
2.3 Waste generation and management on a Global perspective ...15
2.4 Planning and Organizing for Waste Management ................16
2.5 Leading and Controlling for Solid Waste Management ........20
2.6 Mechanisms for improved Solid Waste Management ...........22

CHAPTER THREE: RESEARCH METHODOLOGY .......................... 25
3.1 Introduction .....................................................................25
3.2 Research design ............................................................25
3.3 Study population ...........................................................25
3.4 Sample size determination ............................................25
3.5 Sampling procedure .....................................................26
3.7 Data collection Instruments ..........................................27
3.7.1 Questionnaire .........................................................27
3.7.2 Interview guide .......................................................27
3.8 Validity and Reliability ..................................................27
3.8.1 Validity .................................................................27
3.8.2 Reliability ..............................................................28
3.9 Procedure of Data Collection ........................................28
3.10 Data Analysis ..............................................................28
3.10.1 Quantitative Data ....................................................28
3.10.2 Qualitative Data .......................................................................................................................... 28

CHAPTER FOUR: PRESENTATION, ANALYSIS AND INTERPRETATION OF THE FINDINGS .................................................................................................................. 29

4.1 Introduction ........................................................................................................................................ 29

4.2 Response rate ................................................................................................................................ 29

4.3 Background information of the Respondents ............................................................................... 30

4.3.1 Gender of the Respondents ........................................................................................................ 30

4.3.2 Age of respondents .................................................................................................................... 31

4.3.3 Level of education ....................................................................................................................... 32

4.3.4 Working experience of the Respondents .................................................................................. 32

4.4 Planning and organizing for waste Management .............................................................................. 33

4.5 Leading and Control for waste Management .................................................................................. 39

4.6 Mechanisms to improve on waste Management ............................................................................ 42

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS .................. 47

5.1. Introduction ....................................................................................................................................... 47

5.2 Summary of the findings .................................................................................................................. 47

5.2.1 Planning and Organizing Solid waste Management ...................................................................... 47

5.2.2 Leading and controlling Solid Waste Management ....................................................................... 48

5.2.3 Mechanisms for improving solid waste management .................................................................. 48

5.3 Conclusion ......................................................................................................................................... 49

5.4 Recommendations ............................................................................................................................ 50

5.4.1 Policy Enhancement ................................................................................................................... 50

5.4.2 Technical Intervention ................................................................................................................. 50

5.4.3 Economic Strengthening ............................................................................................................. 50
5.4.4 Administrative recommendations .................................................................51
5.5 Areas for further research ..............................................................................52
References .............................................................................................................53
Appendix ................................................................................................................56
List of Tables

Table 3. 1: Sample Size and selection Per Category .................................................. 26
Table 4. 1: Summary of response rate from Pallisa Town Council .................................. 29
Table 4. 2: Sex of the respondents .............................................................................. 30
Table 4. 3: Age of the respondents .............................................................................. 31
Table 4. 4: Level of education of the Respondents ....................................................... 32
Table 4. 5: Working experience of the Respondents ...................................................... 33
Table 4. 6: Responses on Planning and Organisation functions for Waste management .......................................................... 34
Table 4. 7: Level of respondents on functions of management Leading and Control for waste Management .................................................................................. 40
Table 4. 8: Level of respondents on mechanisms to improve on waste management .......... 43

List of Figures

Figure 1 ......................................................................................................................... 8
Figure 2 ......................................................................................................................... 59
### List of Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBO</td>
<td>Community Based Organization</td>
</tr>
<tr>
<td>CET</td>
<td>Centre for Ecological Technology</td>
</tr>
<tr>
<td>COBAMS</td>
<td>College of Business and Management Sciences</td>
</tr>
<tr>
<td>CVI</td>
<td>Content Validity Index</td>
</tr>
<tr>
<td>KSU</td>
<td>Kansas State University</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Environmental Management Authority</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>PTC</td>
<td>Pallisa Town Council</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations, Environment Programme</td>
</tr>
<tr>
<td>USA</td>
<td>United States of America</td>
</tr>
<tr>
<td>USEPA</td>
<td>United States Environmental Protection Agency</td>
</tr>
<tr>
<td>CAO</td>
<td>Chief Administrator Officer</td>
</tr>
<tr>
<td>KDHE</td>
<td>The Kansas Department of Health and Environment</td>
</tr>
</tbody>
</table>
Abstract

The purpose of the study was to examine the managerial processes of solid waste management in Pallisa District. Pallisa Town Council was the case study. The study was guided by the following specific objectives; to assess the planning, organizing tools and practices engaged in Pallisa Town Council in managing solid waste; to examine the leading and controlling practices engaged by Pallisa Town Council in managing solid waste; and to identify possible mechanisms of improving solid waste management in Pallisa Town Council.

The study used a cross sectional survey design. Data were collected from 34 respondents comprising of councilors, staff (employees) and top management officials. Questionnaires and interviews were used for data collection while Stratified, simple random and purposive sampling were used to select the informants. Data were analyzed using SPSS and frequency percentage tables generated (for questionnaires).

Findings of the study indicated many deficiencies in planning and organizing for solid waste management. Notable, was insufficient budgeted funds, lack of training and failure to make research on productive use of waste. On leading and controlling, the study found that machinery and modern technology for waste management was lacking and as well, motivation was low as well as failure to cater for occupational safety of the staff. A number of mechanisms for improvements were supported by the respondents which when implemented would bring about improved waste management.

The study concluded that poor planning and organizing as well as controlling and leading greatly affected the management of solid waste in Pallisa Town Council. The study recommended the need for involvement of the public in waste management planning; need for training the households on best practices of waste management and need for sourcing for better waste handling and recycling equipment among others.
CHAPTER ONE
INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

Solid waste disposal and management is both an urban and rural problem. Every person is a potential generator of waste and thus a contributor to this problem. To generate waste is one thing, the type of waste generated is another and yet also the way the generated waste is managed or disposed of is quite a different issue. In Uganda like in many other developing countries, typically one to two thirds of the waste generated is not collected (Zerbock, 2003). This has resulted to, the uncollected waste, which is often also mixed up wastes and dumped indiscriminately in the streets/wards and in drains, contributing to flooding, breeding of insect and rodent vectors and the spread of diseases such as cholera.

According to Water Aid (2011), solid waste is any garbage, refuse, trash and other materials or products including putrescible and non-putrescible waste, organic and inorganic waste, combustible and non-combustible waste, and liquid non-hazardous waste, but does not include hazardous waste or human body parts. Waste is a man-made substance in a given time and places which in its actual structure and state is not useful to the owner or is an output without an owner and purpose. In other words, waste is anything that we no longer need. It is also commonly referred to as rubbish, trash, garbage, refuse, effluents and “unwanted or unusable materials” (Zake, 2007).

Solid waste, also known as garbage is not very different from municipal waste. This study takes on the definition by the State of the Environment Report for Uganda (NEMA, 2007:275) that defines solid waste as “organic and inorganic waste materials produced by households, commercial, institutional and industrial activities that have lost value in the sight of the initial user”. Solid waste management encompasses generation, collection, transportation and disposal of wastes. Authorities have the responsibility to ensure safe, reliable and cost effective removal and disposal of solid waste Garbage is collected from both the well to do households and poor ones.

The study was conducted in Pallisa Town council which is made up of 5 wards namely: Kagwese, Hospital, West ward, East ward and Kaucho located within Pallisa District in Eastern region, Bukede
region. The population is 34,150 (2002 Population and Housing Census) persons and the study focused on 100 respondents.

1.2 Study Background

Pallisa Town Council has seen a number of businesses springing up in response to the demand of social services. Restaurants, guest houses, shops, and bars have come up to meet the demand for social services. The permanent resident population which is on the increase due to the growing urban centre of Pallisa has attracted the establishment of such businesses as mini supermarkets, rice and ground nuts hurlers, retail shops, and food markets. The repercussion in this development is that the volume of solid waste generated from the several development projects and daily activities in the town council is increasing enormously. It has consequently become one of the issues of concern to town council authority as well as the public who reside and/or work within the town council. According to the Pallisa Town Council Five Year Development Plan (2010-15), poor waste management and waste disposal is identified as one of the environmental threats. This is attributed to the increased urbanization without proper planning, use of polythene bags, which are non-bio-degradable and inadequate garbage collection points. Pallisa Town Council Development Plan (2010-15) also indicates that 60% of the residents dispose of their solid waste by burning while only 15% use waste bins. However, not all the solid waste is properly disposed of. Pallisa Town Council with 6,830 household generating approximately 10 kgs per day per household totaling to 68.3 tons per day, the researcher’s efforts to find the related literature were futile (PTC Health Inspector Office).

Most researchers have linked waste generation directly to the population size and different activities undertaken by different categories of the population including large scale industries, small-scale industries, businesses, municipal, farming, household, schools and hospitals among others. Hence, it clearly means that waste generation will increase with increasing population growth (UNEP, 2009). Although there are several efforts, legal and institutional frameworks in place to enhance proper solid waste management, there is still persistent poor waste management in Uganda and Pallisa inclusive. There are a number of legal frameworks that is to say the Constitution of the Republic of Uganda (1995, Article 245 [a]) which provides measures intended to protect and preserve the environment from abuse, pollution and degradation; the Local Governments Act (1997), the National Environment
(Waste Management) Regulations, S.I. No 52/1999; all having provisions of how all wastes shall be properly managed.

In spite of the above highlighted legislative and institutional framework, in Kampala alone, waste generation estimations have been rated at 0.2 metric tons per person annually on average (Ngategize & Moyini, 2001). Studies indicate that each person in Kampala City produces 1 Kg of solid waste per day (Tenywa et al., 2007). Therefore, taking up the urban population of 3.7 million people that is; 13.4% of the total population (Uganda Population secretariat, 2007), hence, it was approximated that 740,000 metric tons of solid waste are generated in urban areas per year and of this, only 41% solid waste generated is disposed of properly (UNDP, 2005). The balance of 51% is left uncollected thereby ending up being dumped in drainage and sanitary drainage channels, natural water courses, manholes, undeveloped plots and road sides among other unfit places (NEMA, 2004). Hence, little attention has been given to waste water disposal and storm drainage. Drainage is poor and limited to major roads and pathways.

A number of local governments and urban councils have, now and again, identified solid waste as a major problem and this has may be, been attributed to poor institutional arrangements, poor technologies used and lack of the capacity to handle wastes. Three key trends with regard to waste can be observed- increase in volume of waste generated by urban residents; change in the quality or make-up of waste generated; and the disposal method of waste collected, by land-fill, incineration among others. Inefficient collection and disposal of municipal solid waste is a problem that needs serious attention in a developing country like Uganda. Rapid urbanization in developing countries has been one of the problems of waste disposal because the amount of solid waste increases with urbanization leading to adverse effects on human health and the environment (Kgathi & Bolaane, 2001; Toliba et al, 1992). This has led to increased incidences of diseases like cough, diarrhea, fever among others, hence increasing public expenditure on drugs. Yet a properly managed waste is wealth (Zake et al 2008:6).

The cardinal functions of management namely: planning, organizing, leading and controlling are critical for effective solid waste management. Planning is the process of determining organizational aims, developing premises about the current environment, selecting the course of action, initiating activities required to transform plans into action, and evaluating the outcome. The types of planning
that managers engage in will depend on their level in the organization and on the size and type of the organization. Generally there are four major types of planning exercises: strategic, tactical, contingency, and managerial. Strategic planning involves determining organizational goals and how to achieve them. This usually occurs at the top management level. Tactical planning is concerned with implementing the strategic plans and involves middle and lower management. Contingency planning anticipates possible problems or changes that may occur in the future and prepares to deal with them effectively as they arise (Marshall, 1992). Managerial planning is usually considered as micro level planning. It helps in combining resources to fulfil the overall objectives of the extension organization.

Planning is designing the future, anticipating problems, and imagining success. In short, planning is essential for anyone who wants to survive. The functions of organizing, leading, staffing, and budgeting are means of carrying out the decisions of planning. Everyone is a planner - a planner of meals, of work time, of vacations, of families. Formal planning, however, distinguishes managers from non-managers, effective managers from ineffective managers. Formal planning forces managers to think of the future, to set priorities, to encourage creativity, to articulate clear objectives, and to forecast the future in terms of anticipated problems and political realities. (W. Waldron, J. Vsanthakumar, and S. Arulraj 1994, 1984).

This study thus sought to examine how far the above imperatives of planning have been engaged in managing solid waste in Pallisa. Once strategic planning and management planning are implemented, organizing to get the job done is next. Organizing is the process of establishing formal relationships among people and resources in order to reach specific goals and objectives. The process, according to Marshall (1992), is based on five organizing principles: unity of command, span of control, delegation of authority, homogeneous assignment, and flexibility. The organizing process involves five steps: determining the tasks to be accomplished, subdividing major tasks into individual activities, assigning specific activities to individuals, providing necessary resources, and designing the organizational relationships needed. In any organizing effort, managers must choose an appropriate structure. Organizational structure is represented primarily by an organizational chart. It specifies who is to do what and how it will be accomplished. The organizing stage provides directions for achieving the planning results. There are several aspects to organizing - time, structures, chain of command, degree of centralization, and role specification (Marshall, 1992).
This study sought to examine the organizing aspect of structure, system, processes and resources in management of solid waste. Organizations need strong leadership for optimum effectiveness. Leadership is a trait which is both inbuilt and can be acquired. Also organizational leadership deals with both human psychology as well as expert tactics. Organisational leadership emphasizes on developing leadership skills and abilities that are relevant across the organizations. It means the potential of the individuals of face the hard times in the industry and still grow during those times. It clearly identifies and distinguishes the leaders from the managers. The leader should have potential to control the group of individuals (Chester Barnard, 2013).

Leading involves the need of strong leadership for optimum effectiveness. Leadership, is a trait which is both inbuilt and can be acquired also. Organisational leadership deals with both human psychology as well as expert tactics. Organisational leadership emphasizes on developing leadership skills and abilities that are relevant across the organizations. It means the potential of the individuals of face the hard times in the industry and still grow during those times. It clearly identifies and distinguishes the leaders from the managers. The leader should have potential to control the group of individuals (Management study Guide, 2013).

An ideal organizational leader should not dominate over others. He should guide the individuals under him, give them a sense of direction to achieve organizational goals successfully and should understand the need of the group members. An organizational leader should not only lead others individually but also manage the actions of the group. Individuals who are highly ambitious, have high energy level, an urge to lead, self-confidence, intelligence, have thought knowledge of job, are honest and flexible are more likely to succeed as organizational leaders. Individuals who learn the organizational leadership develop abilities and skills of team work, effective communication, conflict resolution, and group problem solving techniques. Organizational leaders clearly communicate organizational mission, vision and policies, build employees moral, ensure efficient business operation; help employees grow professionally and contribute positively towards organizations mission. It includes employees’ involvement, genuineness, effective listening and strategic communication (Management study Guide, 2013).

This study sought to analyse the utility of leadership fundamentals in solid waste management.
Controlling involves establishing performance standards and monitoring the output of employees to ensure each employee’s performance meets those standards. The controlling process often leads to the identification of situations and problems that need to be addressed by creating new performance standards. The level of performance affects the success of all aspects of the organization (Management study Guide, 2013).

Community participation is an important aspect of control function of management. It is very clear that without community support and involvement at least at sorting stage (which has to be done at the source before waste collection), even recycling may be very costly to undertake. Here, the community manifests as a very important stakeholder in solid waste management and the level of their participation counts on the success of recycling in particular and solid waste management in general (UNEP, 2007:225).

The study sought to explore/investigate the managerial process of solid waste management in terms of strength, challenges and strategies in Pallisa Town Council. The purpose of the study is to generate more information to the already existing knowledge and address the problem in the area of waste management especially Pallisa Town Council.

1.3 Problem Statement

Efforts to manage garbage in Pallisa Town Council are continuously overwhelmed and frustrated by the ever increasing population of the urban residents and levels of economic activities. A lot of garbage lies on the streets uncollected causing inconvenience, environmental pollution by burning it while still on the streets and it is a risk to public health. It may lead to the outbreak of diseases. The cost of solid waste management is enormous and puts a lot of strain on the little resources of the urban authorities and constrains service delivery critical to human development.

People seem not be caring about the way wastes are handled, possibly because of the ignorance about the likely dangers of poor waste management, and the institutions like Pallisa Town Council might have managerial challenges that could be affecting the execution of its statutory mandate with regard to solid waste management. There are concerns about the lack of proper institutional arrangements, poor technologies like modern trucks and the lack of the capacity by Pallisa Town Council to handle
the wastes generated. For instance, Pallisa Town council it’s estimated that each household generates 10 kg per day, is hardly collected and even what is collected is not sorted and there is no gazetted area to dispose of wastes (PTC Five year development plan 2010-2015).

This state of affairs is linked to management functional capacity and has far reaching implications on community livelihoods and environment; posing great health risks, for instance; solid waste at informal disposal sites produces toxic gases, bad odour and creates air pollution.
Therefore, this study sought to explore the managerial process of waste management in terms of the strengths, challenges and prospects in such processes such as planning, organizing and leadership and controlling.

1.4 General Objective
The main objective of the study was to examine the managerial processes of solid waste management in Pallisa Town Council to establish strengths, challenges and possible mechanisms for improvement.

1.4.1 Specific objectives
1. To assess the planning, organizing tools and practices engaged in Pallisa Town Council in managing solid waste

2. To examine the leading and controlling practices engaged by Pallisa Town Council in managing solid waste

3. To identify possible mechanisms of improving solid waste management in Pallisa Town Council.

1.4.2 Research Questions
The following research questions linked to the specific objectives guided the research process:

1. What are the planning, organizing tools and practices which are in Pallisa Town Council in managing solid waste?

2. What are the leading and controlling practices are in town council in managing waste?

3. What are the possible mechanisms in place of improving solid waste management in Pallisa town council?
1.5 **Significance of the Study**
This research is expected to generate more information to the already existing knowledge and address the problem in the area of waste management especially Pallisa town.

Also the research findings will help policy makers, local leaders and the local people of the gaps existing in the waste management. These findings will help in drafting appropriate policies. The council will be in position to initiate programs that will empower citizens and make them be aware of the dangers of poor waste management, this will let both the council and citizens join efforts to solve the problem at hand.

In addition to the above, the study will also provide future scholars and researchers with information regarding the managerial process of solid waste management in terms of strength, challenges, planning and organizing.

1.6 **Scope of the Study**
The study was conducted in Pallisa Town council within 5 wards namely: Kagwese, Hospital, West ward, East ward and Kauido. The researcher confined the study to the managerial process of solid waste management in terms of strength, challenges, planning and organizing in Pallisa Town Council. The population was 34,150 persons and the study focused on 100 respondents.

Figure 1
1.7 Limitations
The study was comprehensive and the researcher required considerable finances to execute the study successfully. However, despite the envisaged limitations of logistical and financial difficulties, the researcher endeavored to get the required resources to complete the study within the required time frame.

Another greatest challenge for the researcher was time factor. There was limited time period for the researcher to go the field, make introductions, carry out research, collect data, interpret the findings and then write a project report. Inability of the respondents to adequately fill the questionnaires as required and failure of some respondent to fill the questionnaires was a big challenge. This led to the disqualification of 5 partially filled questions and suspension of 3 late returned questions narrowing down the sample size to 30 respondents.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review that relates to the study topic and its main themes. It starts by introducing some key concepts and terminologies and then a review of the related literature under themes that were developed from the study objectives. The review of related literature is as follow: the first section presents a general literature related to solid waste management and managerial process with particular inclination to the research questions. It then reviews literature on Uganda’s perspective on waste management. The last part presents the policy context/frameworks for waste management in Uganda, internationally and regionally.

2.2 Waste

Waste is a dynamic concept which can be defined in different ways (Pongrácza, 2009:93). UNEP defined wastes as substances or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law. Waste also refers to “an item, material or substance you as an individual consider useless at a given time and place” (Mugambwa, 2009:1). Pongrácz introduces an innovative description of waste in what she refers to as “object-oriented modelling language, PSSP. PSSP stands for purpose, structure, state and performance, which are object attributes” (Pongrácz, 2009:93). In most cases, the definition of waste depends on the type or category of waste under consideration. Some of the dominant types of waste include; municipal waste, solid waste, hazardous waste and, electronic waste. I defined municipal and solid waste, which was relevant to this study.

2.2.1 Municipal waste

Cointreau-Levine and Coad (2000:4) take municipal waste to refer “to wastes from domestic, commercial, institutional, municipal and industrial sources, but excluding excreta, except when it is mixed with solid waste”. It is however necessary to note that in developing countries, many a times, it becomes difficult or even impractical to put a line between excreta and solid waste. In many instances,
solid waste mixes with excreta to the extent of being potentially hazardous to human health.

2.2.2 Solid Waste

Solid waste, also known as garbage is not very different from municipal waste. This study takes on the definition by the State of the Environment Report for Uganda (NEMA, 2007:275) that defines solid waste as “organic and inorganic waste materials produced by households, commercial, institutional and industrial activities that have lost value in the sight of the initial user”.

According to Water Aid (2011), solid waste refers to any garbage, refuse, trash and other materials or products including putrescible and non-putrescible waste, organic and inorganic waste, combustible and non-combustible waste, and liquid non-hazardous waste, but does not include hazardous waste or human body parts. Waste includes any matter prescribed to be garbage/refuse/trash, and any radioactive matter, whether liquid, solid, gaseous or radioactive which is discharged, emitted or deposited into the environment in such volume, composition or manner as to cause an alteration of the environment (Water Aid, 2011).

According to Zake (2007), waste is a man-made substance in a given time and places which in its actual structure and state is not useful to the owner or is an output without an owner and purpose. In other words, waste is anything that we no longer need. It is also commonly referred to as rubbish, trash, garbage, refuse, effluents and unwanted or unusable materials.

2.2.3 (Solid) Waste Management

Waste management refers to the “collection, transportation, processing, recycling or disposal of waste materials” (Mugambwa, 2009). It ought to be appreciated that waste management practices differ for developed and developing countries, for urban and rural areas, and for residential and industrial producers. The volumes and types of waste in these different sources of waste justify the difference in the waste management practices. It therefore implies that the methods appropriate in one setting may be incompatible within another setting. It is imperative to take into consideration the context of the waste source, to arrive at an appropriate method.
2.2.4 Waste management practices

There are several factors that have facilitated increase in the volume of solid waste generated. One of the factors that have led to increased solid waste generation is rapid urbanization (UNEP, 2007).

Urbanization comes with expansion of towns which manifests through the growth of social and economic infrastructure/services and industrialization. The growth in such services warrants the increase in population in such areas. An increased population automatically means increased demand for not only social services but also consumables which potentially present a larger base for waste generation-in most cases solid waste. The increase in the volumes of waste generated has also been proved to be synonymous with the “new lifestyles associated with greater affluence” which convert into higher consumption levels, thus generating more waste amidst changes in waste composition (UNEP, 2007:224).

Affluent people tend to adopt superfluous demand and purchase patterns to acquire more of what is not very necessary for their wellbeing. When people possess more than what they actually need, failure to consume all that they affluent have, eventually leads them to get rid of the useless excess which turns into solid waste. In most cases more purchases also mean more packaging material- which readily translates into solid waste especially for the manufactured products. The manufactured products contain materials which are very difficult to decompose, for example plastics, thus increasing waste volumes uncontrollably (Bournay, 2006).

According to United Nations Environment Programme, in a capitalistic world, the ultimate aim of the manufacturers is to make as much profit as the market can permit. Because of this line of thought, the manufacturers are more concerned about suiting the product to the consumer. Little or even no effort is made to package the products in an environmentally sensitive way and those that make an effort, are still very few. Usually, the burden is left to the consumer to dispose of the waste packaging material by their own means. In doing so, the manufacturers actually externalize the costs of solid waste management by extending it to the consumers. The problem here is that in most cases the manufacturers do not even bother to give any instructions to the end user on how to manage the waste appropriately. This complicates the solid waste management process as those who “manufacture” the
solid waste have not considered internalization of the cost of solid waste management, say as a way of doing corporate social responsibility. Generally, there is a tendency for development to come with increased waste generation. Data from Asia confirms that the more developed countries like Japan, Laos and Thailand, have more municipal waste generated per capita. Interestingly also, there have not been signs of abating the increasing amounts of waste generated (UNEP, 2007:224).

The rapid increase in waste generation has therefore made effective waste management in many countries, challenging. Consequently, it has put human life and the environment at stake. Some countries in Asia have taken on eco labelling as a market-based tool/strategy to deal with the waste problem (UNEP, 2007:225). On top of eco-labelling, the 3-R approach: (reduce, reuse and recycle) is also becoming popular in Asia (and other parts of the world). There is an indication that the ways in which solid waste is managed, are as diverse as the human race itself. Some methods of waste management are proper and environmentally sound, while some are not. Conventionally, solid waste (in most cases referred to as garbage) is usually collected as a bundle of trash by local authorities or by private firms to be taken to a transfer station and then to a landfill (sometimes collected and taken straight to the landfill).

However, considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of (UNEP 2002). As a result, landfills, burning waste, rodents and odours which are very common in developing countries have made residential areas susceptible to health hazards (UNEP, 2007). In agreement, the United States Environmental Protection Agency (USEPA) affirms that improper disposal of solid waste exposes the environment and human life to danger by way of emission of greenhouse gasses and contamination of ground water, respectively (USEPA, 2002).

At landfills, the Kansas State University (KSU, n.d:6) reports that: “Containers break open and spill their contents. Liquids put in the landfill combine with rainwater and soak through the garbage. Soluble hazardous materials may be washed with them, producing leachate. Leachate will flow downhill over surface land, or will percolate through the soil until it reaches an impermeable layer. Leachate can contaminate groundwater and surface water” (KSU, n.d:6). Therefore solid waste, if not
well managed, can cumulatively have long-lasting and difficult-to reverse negative effects on the environment. There have been efforts to improve on the management of solid waste. One of the suggestions has been the application of an integrated waste management strategy (KDHE, 2010).

2.2.5 An integrated strategy to solid waste management

The United States Environmental Protection Agency (USEPA) (1993a, 1994) outlines and explains three main components in an integrated municipal waste management strategy- that is; waste prevention, recycling including composting and, combustion. In a review of these components, USEPA (2002:4), categorically introduces and defines five main activities (in a hierarchy) classified under integrated solid waste management (waste prevention, recycling, composting, combustion and landfilling), and the similarity is noticeable between the former components and the later activities classified.

a) **Waste Prevention** also known as *source reduction* in the design, manufacture, purchase, or use of materials and products to reduce the amount and/or toxicity of discarded waste. Waste prevention also means, in simple terms, “reducing waste by not producing it” (USEPA, 2002:4). USEPA asserts that since it reduces the amount of waste that a community must manage, waste prevention is the preferred municipal solid waste management technique. According to USEPA (1998:2), source reduction involves reuse activities and “has come to be recognized as a commonsense approach with significant potential to use resources efficiently, save money, and reduce waste” and because of the various advantages it presents, many states in the United States of America (USA) have increasingly engaged in innovative ventures towards solid waste prevention. Grass cycling and backyard composting are taken to be “forms of source reduction or waste prevention because the materials are completely diverted from the disposal facilities and require no municipal management or transportation” (USEPA, 2005:7-9).

b) **Recycling** involves the reuse of materials that are potential waste but are rather turned into valuable resources. The most important advantage with recycling is that it reduces the production of greenhouse gases since there is diversion of the waste from the landfills. Recycling also reduces the use of new resources, in a way contributing to sustainable development. Materials like paper, glass, steel, plastic, and aluminium can be recycled such that instead of disposing them of, they can be regained and
c) *Composting* refers to; “the controlled aerobic biological decomposition of organic matter, such as food scraps and plant matter, into humus- a soil-like material. Compost acts as a natural fertilizer by providing nutrients to the soil, increasing beneficial soil organisms, and suppressing certain plant diseases” (USEPA, 2002:4). This implies that the need for chemical fertilizers will be reduced and at the same time, composting helps in reduction of greenhouse emissions from solid waste.

d) *Combustion* refers to the controlled burning of waste in a bid to reduce the volume that has to go to landfills, and in some cases to generate electricity. Combustion can be employed for waste that cannot be prevented or recycled. There is also an element here of providing safer disposal methods for example through “improving the design and management of incinerators and landfills” (USEPA, 1993b:2). Although “the combustion process can generate toxic air emissions, these can be controlled by installing control equipment such as acid gas scrubbers and fabric filters in combustors” (USEPA, 2002:4)

e) *Landfilling* - this presents a safer alternative to uncontrolled dumping of solid waste. It is very clear that poor waste disposal can be dangerous to human life as well as the environment; therefore establishment of designated places (landfills) where waste that can neither be recycled nor composted can be managed, becomes necessary. A standard landfill is designed in a way that it can protect ground water from contamination, and also avoids fires that would break out as a result of methane emission.

### 2.3 Waste generation and management on a Global perspective

According to the 1999 State of the Environment Report for South Africa (DEAT, 1999), the country generates over 42 million m³ of solid waste every year. It’s about 0.7 kg per person per day, which is more of developed countries than a developing country in comparison to UK is 0.73 kg, 0.87 kg in Singapore and 0.3 kg in Nepal. In addition, 5 million m³ of hazardous waste is generated every year (DEAT, 1999). Every day 2.6 million of domestic and commercial waste water is processed at treatment works. The last figure does not include agricultural and some industrial waste, which are the largest sources of waste (DEAT, 1999).
Until recently, the focus in South Africa for example; has been on waste disposal and impact controls treatment (DEAT, 2000). However, this focus has faced a number of challenges and these include:

- Lack of waste avoidance, minimization and cleaner production technology initiatives;
- Lack of regulatory initiatives to manage waste minimization;
- Few incentives for reducing waste;
- Industries not required submitting plans for waste disposal when applying to establish new enterprises;
- Inadequate resource recovery and a general lack of commitment to recycling, no legislation, policy or waste management culture that promotes resource recovery or makes it financially viable; and
- Lack of appropriate waste management strategies and treatment technologies associated with these policies also have a negative effect on human health. In addition to lack of a variety of appropriate waste treatment methods.

Some of the consequences of previous waste management policies include; continued air and land pollution, the pollution of fresh and marine waters, resulting in the disruption of ecosystem processes, habitat destruction and species loss. The amount of waste produced also places increasing pressure on the country's landfills. Increasing amounts of land set aside for landfills could lead to habitat destruction and species loss.

2.4 Planning and Organizing for Waste Management

Planning is designing the future, anticipating problems, and imagining success. In short, planning is essential for anyone who wants to survive. The functions of organizing, leading, staffing, and budgeting are means of carrying out the decisions of planning. Everyone is a planner - a planner of meals, of work time, of vacations, of families. Formal planning, however, distinguishes managers from non-managers, effective managers from ineffective managers. Formal planning forces managers to think of the future, to set priorities, to encourage creativity, to articulate clear objectives, and to forecast the future in terms of anticipated problems and political realities. (W. Waldron, J. Vsanthakumar, and S. Arulraj 1994, 1984)

Participation of people in any kind of project needs careful planning by way of laying down strategies to encourage it. Tsai recommends that in order to encourage households to participate in waste
recycling, there needs to be “a well-informed waste collection regime, good quality of environmental education and attitudes, an effective enforcement scheme from social norms, proper economic incentives and promotion from local communities” (Tsai, 2007:44-45). This is what many authorities have not been able to do especially in the developing world.

Once strategic planning and management planning are implemented, organizing to get the job done is next. Organizing is the process of establishing formal relationships among people and resources in order to reach specific goals and objectives. According to Marshall (1992), is based on five organizing principles: unity of command, span of control, delegation of authority, homogeneous assignment, and flexibility. The organizing process involves five steps: determining the tasks to be accomplished, subdividing major tasks into individual activities, assigning specific activities to individuals, providing necessary resources, and designing the organizational relationships needed. In any organizing effort, managers must choose an appropriate structure. Organizational structure is represented primarily by an organizational chart. It specifies who is to do what and how it will be accomplished. The organizing stage provides directions for achieving the planning results. There are several aspects to organizing - time, structures, chain of command, degree of centralization, and role specification. The benefits of planning and organizing are;

- Help to utilize the available resources more efficiently.
- Help to implement the 3R system (Reduce, Reuse, Recycle) more effectively and thereby reduce the quantities of waste needing collection, transport and disposal.
- Can identify potential resources to urban development and local authority revenues.
- Could achieve social and economic benefits by reducing the marginalization of poor people. Unplanned disposal of waste generally takes place in areas where poor people live. Therefore, a properly planned disposal site will help to identify suitable land and provide neighbours with buffering from Solid Waste Management activities.
- Improve the aesthetic values of the area and make it more attractive to private investment and more liveable for area residents.
- Can identify strategies that rely less on landfills or dumping sites and focus on improved resource recovery processes.

Community institutional structures are also of importance in managing solid waste. In their study,
Bekin et al., note that in the absence of appropriate institutional structures, it becomes difficult to ensure solid waste reduction at an individual level. This kind of arrangement is bound to give power to the existing structure to operate in a manner within their own choice of means (Bekin et al 2007:279).

Waste reduction begins at the stage of production when there is deliberate effort to prevent production of waste material, but this can be very difficult if the structure within which production is made does not deliberately support the prevention of such materials at production stage. When this is ensured by the structure, it simplifies the solid waste management system at the next level of consumption (Tsai 2007:44-45).

Although solid waste is quite challenging to manage and dispose of, it is not always totally useless. Innovative ways of dealing with solid waste can be devised to make solid waste useful. The Centre for Ecological Technology (CET) which supports sustainable technologies in New England undertook such a venture, turning waste composting into a “way of doing business” (Majercak, 2002:1). Through collaboration with commercial haulers, commercial waste generators and farmers, the project took off with the farmers being the composting agents who would then send the products to the market.

Engaging in such a complex of collaboration, in itself presents an opportunity for constructing a synergy that would beneficially take advantage of solid waste to make it productive. This would result into a double gain since composting can fit very well in the marketplace dynamics as it provides an opportunity for benefits both economically (income to farmers) and environmentally (reducing greenhouse gasses and reduction on leachate production), from organic waste. Farmers also get empowered to manage their own waste by using it as fertilizers, thereby minimizing on the use of synthetics or petroleum-based fertilizers (Majercak, 2002). Such an undertaking may not necessarily be simple to start and maintain, but it could definitely turn out to be worthwhile.

Read et al. (1998:82) found out that local governments were increasingly encouraging waste reduction as a better way of managing solid waste. In their study on waste reduction, Bekin, Carrigan and Szmigin argue for waste reduction as a more environmentally viable and yet involving way of mitigating the solid waste problem. They found out that in communities that engaged in production of some consumption items (vegetables and fruits), there was reduced solid waste generation (Bekin et
al., 2007:277). In these communities however, they found out that there were structures that had ensured an understanding of the need for deliberate measures to deal with waste from a sustainable development point of view. The community members were actively involved in the appreciation of the need for collective effort and thus agreement on such undertakings. It is not out of context therefore that Read et al., recommended that despite financial constraints, the private and public sectors need to embrace waste minimization as an important venture to invest in, for waste management (Read et al., 1998:88).

Tsai (2007:45) reported that “households living in a region with a higher degree of social capital are more likely to work against opportunism and participate in waste management”. The implication of this is that there is potential in strategizing for solid waste management from the community/public angle. If the members of the public are supported to build and concretize their social capital, their constructive participation in solid waste management can easily be harnessed. The members of the community are capable of thinking of more tailor-made, viable and sustainable ways of managing solid waste, when availed the opportunity. Tsai believes that waste recycling is a perfect method of managing waste and that it fits very well in sustainable development practices. However, his discussion of the findings from his study on the impact of social capital on regional waste recycling, gives a link to the effect that recycling is “a function of community involvement” (Tsai, 2007:53). Community participation in all activities related to waste management is pivotal and un-ignoreable. It can be seen that the public has a big stake in most of these processes/activities in solid waste management. It is the public that can decide or not, to buy products that produce less waste. They are the ones who have to play the basic waste sorting role at household level, before the waste can be conveniently collected for recycling or composting purposes. Therefore, in order to cultivate sustainable waste management, there is need to do more than just creating awareness and disseminating knowledge (Barr, 2004). There is a dire need to strategically involve the public in solid waste management.

Apart from cutting costs of management and disposal, since waste collection, sorting and processing is in most cases labour intensive, it serves to employ a substantial number of people. It is revealed that in India, over one million people are employed in the waste sector (Gupta, 2001, in UNEP, 2007:225). Potentially, a number of otherwise would-be unemployed people can gainfully engage in the process of
sorting and collecting especially recyclable waste materials either on a private individual (informal) basis or at (formal) company level.

2.5 Leading and Controlling for Solid Waste Management

Leading involves the need of strong leadership for optimum effectiveness. Leadership, as we know, is a trait which is both inbuilt and can be acquired also. Organisational leadership deals with both human psychology as well as expert tactics. Organisational leadership emphasizes on developing leadership skills and abilities that are relevant across the organizations. It means the potential of the individuals of face the hard times in the industry and still grow during those times. It clearly identifies and distinguishes the leaders from the managers. The leader should have potential to control the group of individuals.

An ideal organizational leader should not dominate over others. He should guide the individuals under him, give them a sense of direction to achieve organizational goals successfully and should understand the need of the group members. An organizational leader should not only lead others individually but also manage the actions of the group. Individuals who are highly ambitious, have high energy level, an urge to lead, self-confidence, intelligence, have thought knowledge of job, are honest and flexible are more likely to succeed as organizational leaders, individuals who learn the organizational leadership develop abilities and skills of team work, effective communication, conflict resolution, and group problem solving techniques. Organizational leaders clearly communicate organizational mission, vision and policies, build employees moral, ensure efficient business operation; help employees grow professionally and contribute positively towards organizations mission. Organizational leadership involves all the processes and possible results that lead to development and achievement of organizational goals. It includes employees’ involvement, genuineness, effective listening and strategic communication (Management study Guide, 2013).

Controlling involves establishing performance standards and monitoring the output of employees to ensure each employee’s performance meets those standards. The controlling process often leads to the identification of situations and problems that need to be addressed by creating new performance standards. The level of performance affects the success of all aspects of the organization. Barr, (2004) argues that it is not the role of the product producers alone, to reduce waste but also a duty
of the general public to manage waste in a sustainable manner. This argument is valid because the will for involvement of the public needs to be guaranteed so that the roles of the producers and the consumers in waste reduction can reinforce each other. It should be appreciated that success of participation relies strongly on collective action by group/community/society members. Implicitly, the members in the group need leadership to have cohesion as a basis for their collective operation in solid waste management. Tsai, (2007:45), emphasizes the importance of social capital in waste management. Social capital in this case offers an opportunity to the people to collectively construct meaning and vision, consequently reducing probability of divergence in belief and ideology. They instead are most likely to share a common vision and thus able to work together to attain it.

It can be emphasized that waste reduction may only be viable in a community with some control over production and consumption of some items (Bekin et al, 2007:279). Community participation is an important aspect of leadership control functions of management. It is very clear that without community support and involvement at least at sorting stage (which has to be done at the source before waste collection), even recycling may be very costly to undertake. Here, the community manifests as a very important stakeholder in solid waste management and the level of their participation counts on the success of recycling in particular and solid waste management in general. Notably, the costs of collection, transportation and land for landfills, are high; however engaging the community serves to reduce such costs. In a way, this proves to be a sustainable mode of waste management. For example: in Dhaka where community-based solid waste management and composting projects have been implemented, a lot of such costs have been reduced (UNEP, 2007:225). The projects have been able to save the municipalities from the costs of collection while at the same time reducing the need for landfills (UNEP, 2007). Diversion of costs from the municipalities allows them to invest in other services that benefit the community.

Chung and Poon, (2001) agree that having a clear structure of charges for waste collection and disposal in place, may even work as an incentive for waste reduction. They believe that there is need to change the approach for waste reduction from the “command-and-control” to the use of economic incentives and “polluter-pays” (Chung and Poon, 2001:102). This can be a step in involving the public in solid waste management and also forms an impetus for innovative thinking to devise cheaper and more convenient ways of managing solid waste. On the part of government, employing the waste
management hierarchy may be a viable strategy. Production of materials that are less likely to become waste can be emphasized. Before the products are disposed of, consideration for reuse, recycling, composting and energy recovery can be encouraged before materials are finally disposed of (Barr, 2004:33)

2.6 Mechanisms for improved Solid Waste Management

Financial gains would permeate to those who engage in sustainable waste management practices, and thus encouraging sustained participation. The role of the public in waste management and in solid waste management in particular, has become indispensable and, can be through various ways. According to Tsai (2007:54), a society that is willing to work together presents an opportunity for “creativity and innovation” in dealing with the waste problem. Tsai’s observation brings out the importance of the will of the people/public to work together on matters of waste. Mutual understanding and agreement is vital in having the members of the public to work together. When solidarity is achieved, it presents fertile ground for the germination of creative ways of handling waste in a sustainably agreeable manner. It therefore becomes a responsibility of the public to be willing to work together in solid waste management, among other things.

Bekin et al., (2007:280) recommended that purchasing second-hand items as a way of waste reduction is important before people can resort to recycling and composting. This can go a long way in having potential waste kept at the minimum. It is a form of re-use of items which implies that less new items on top of the already under-use items will be purchased. The developing countries have been operating within this kind of arrangement, however with different push factors like inability to afford first-hand, new items.

When the waste aspect of these items is put into perspective, one could easily arrive at the conclusion that to a larger extent, the importation and use of second-hand items has actually accelerated the solid waste burden. Despite the emphasis on waste reduction and recycling as compared to disposal, avoiding or even reducing disposal is easier said than done specifically in developing countries (Chung and Poon, 2001). The developing countries especially in Asia and Africa usually import second-hand items from Europe and America, though a number of affluent Asian countries also export some of their
send-hand items to Africa for reuse. A large volume of these second-hand items are either obsolete thereby ending up as waste sooner than expected, or they just have a very short lifespan remaining and thus becoming out of use. This scenario is not very different from the argument that rich countries negatively contribute to the waste burden in the developing countries by exporting second-hand items (Bournay, 2006). The appropriateness of this suggestion as a way of waste reduction is brought under check, especially in the poor countries which may not have adopted effective and efficient recycling systems.

Waste collection regimes do not seem to receive enough attention and environmental education has almost not been taken seriously. For the public to be interested to be associated with a project, and put in their efforts, they need to be assured that their efforts will yield success and progress, and the best way to do this is by presentation of a clear and easy-to-understand system of operation.

These efforts notwithstanding, there is need for consideration of some other factors. The social and economic status of the people also has a connotation on whether or, and how the people will participate in solid waste management. The authorities need to keep such factors at the back of their mind as they plan strategies for ensuring quality participation of the public. Tsai (2007) gives evidence that higher incomes and higher education levels elicit the will to participate in waste management programmes like recycling in order to protect the environment. However, he does not show whether the influence of the income and education level goes only as far as recycling is concerned. Recycling is different from other activities in solid waste management.

The authorities could easily take advantage of such factors to begin recycling programmes in areas where high income earners reside and or work and the successes that may be registered in such areas may form a basis for rolling it out to other areas. It could be a resource-cutting measure to start with such a group as it is believed that the rich and middle-class households organize themselves to privately collect and transfer their waste to centres where the authorities can pick it from. This assumption is premised on the belief that it is very rare that the municipal or city authorities will engage in door-to-door collection of the waste, especially in the developing world (Joardar, 2000). The limited resources within which the authorities in developing countries operate make it hard to do waste collection at a door-to-door basis. If the households can collect their waste to a centre where the
authorities can in turn pick it from, it may make the work easier.

In India, Non-governmental Organizations (NGOs) have helped in civic campaigning, arranging for door-to-door collection of waste as well as assisting in the establishment of cooperatives for “rag pickers” (Joardar, 2000:329). NGOs, especially those that have an environment orientation need to be supported to mobilize the community to participate in solid waste management as a sustainability measure. NGOs have been instrumental in promoting popular participation in the developing world. The people believe in them, and the voluntary nature of their work, gives authenticity and virtue to their programs. Besides, their membership is widely civic and thus qualifying their interventions as self-help, with a higher chance for success and sustainability. To Joardar, introduction of a “user charge based on door-to-door collection” can support waste sorting and recycling (Joardar, 2000:327). The user charge can also work as a stimulus for item reuse thus reducing on the rate of waste generation at the source. The charges can be levied on both residential and commercial establishments but with consideration of household size and with “built-in cross-subsidization in favour of slum dwellers and petty traders” (Joardar, 2000:327).
CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction
This chapter outlines the research methodology that was used to conduct the research. It constitutes the research design, population of study, sample size and selection, data methods and instruments, reliability and validity of instrument, data management and analysis.

3.2 Research design
The study used quantitative and qualitative approaches, according to Kumar (2005), a research design serves as a plan, structure or strategy of investigation, or the arrangement of conditions for collection and analysis of data, the study used the descriptive method. A descriptive research presented facts concerning the nature and the status of the situation of town council, as it existed at a time of the study and described the present conditions, events or systems based on impressions or reactions of the respondents of the research.

The study adopted mixed methods approach (i.e. qualitative and quantitative approaches) was used. The study, both methods where utilized for instance the qualitative opinions that were used to confirm by statistical data. Finally, the study used in-depth interviews, observations (qualitative) as well as survey and statistical records and tables (Quantitative).

3.3 Study population
According to Oso and Onen (2005) population is the total number of subjects or the total environment of interest to the researcher while Amin (2005) look at population as a complete collection or the universe of all the members or units of a group that is of interest in a particular study. The targeted population for this study was constituted of 40 respondents comprising of councillors, employees of PTC and top management of PTC.

3.4. Sample size determination
In this study, the researcher was guided by Krejcie and Morgan 1970 Table as cited in Amin (2005:454) to determine the sample size for each category because it is easy to use and thus saved time. To be able to get appropriate representatives, the researcher stratified the accessible population according to departments. Each department formed a stratum. The researcher used simple random sampling to select the respondents while purposive sampling was used in selecting key informants respondents because they were knowledgeable about the managerial processes of waste management in the Town Council.

Table 3.1: Sample Size and selection Per Category

<table>
<thead>
<tr>
<th>Category</th>
<th>Population Size (N)</th>
<th>Sample Size (n)</th>
<th>Sampling Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees of PTC</td>
<td>30</td>
<td>28</td>
<td>Stratified Sampling, Simple random sampling</td>
</tr>
<tr>
<td>Councilors</td>
<td>10</td>
<td>10</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td>Top Management</td>
<td>4</td>
<td>4</td>
<td>Purposive sampling</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>44</strong></td>
<td><strong>42</strong></td>
<td><strong>Purposive sampling</strong></td>
</tr>
</tbody>
</table>

*Source: Adopted from Krejcie and Morgan (1970) Table of Sample size Determination*

3.5 Sampling procedure

The study used stratified sampling technique and then after a simple random sampling method (lottery approach) was used to select the respondents from each stratum. The departments formed the strata. The sampling technique was used because it enables a balanced representation of a study area as the constituents of a given area are subdivided and respondents selected from each sub division (stratum). Simple random sampling was used in each stratum. The selection of the technique was attributed to its key advantage of eliminating bias and giving all the targeted respondent equal chances of participating in the study.

Purposive sampling was also used in selecting knowledgeable staff. According to Katebire (2007), this technique is sometimes referred to as judgmental sampling where a researcher on his/her own judgments targets specific subjects to participate in the study because they have perceived knowledge or experience in relation to the study under investigation. Purposive sampling was used to select the
key informants such as councilors and top management staff of PTC.

3.7. Data collection Instruments

3.7.1 Questionnaire
The researcher designed a set of questions and produced questionnaires basing on the objectives of the study and research questions in chapter one. The questions were mainly be closed ended to increase ensure easy data analysis. Responses to a five point Likert scale were used to measure data for all the above variables of the study. The five point Likert scale ranging from strongly agree (5) to strongly disagree (1) was used because it is the most common and above all it assesses the strength of respondents feelings or attitude towards a subject. The questionnaire was selected as the main data collection tool because it is cheap to administer and covers a wide geographical area; it provides a hard copy that was filed for reference purposes. The questionnaire was equally used because the information had to be collected from a large sample in a short period of time (Sekaran, 2003).

3.7.2 Interview guide
An interview guide was used in the study to collect detailed data from the key informants. The researcher administered interviews using an interview guide in order to gather information on managerial processes of waste management in PTC. Interviews were administered to councilors and top management staff of PTC. The top management officers included the Health Inspector, the Mayor, deputy mayor, the senior community development officer and town clerk. The instrument was used in data collection because it enabled researchers to get in-depth information about the study in question. In addition, an Interview guide is flexible and therefore allows the researcher to adjust the questions so as to tap the required information from the respondents (Odiya, 2009).

3.8. Validity and Reliability

3.8.1 Validity
According to Katebire (2007:29), validity refers to the extent to which that data collection instrument collects data that have the characteristic or attribute the researcher wants to measure. Odiya (2009:198) defined validity of an instrument as the ability of the instrument to collect justifiable and truthful data; that is, measuring what it is developed to measure (Odiya, 2009:198). My supervisor and other experts
in the field were consulted about the content of instruments, relevancy of question items and their relevancy.

3.8.2 Reliability

Reliability deals with the accuracy of the instrument and the constancy of the data collection by it (Katebire, 2007). Amin (2005) defined reliability as the consistency of the instrument in measuring whatever it is intended to measure when repeatedly used. The questionnaire was pretested in Pallisa Town Council.

3.9 Procedure of Data Collection

After the proposal, the researcher proceeds to collect data and prepare the report thereafter. This necessitated the researcher to introduce to the local authorities where the study was conducted for permission. Reliable and validated questionnaires were administered to the respondents by the researcher assisted by his research assistants. With regards to face-to-face interviews, the researcher contacted the key informants and provided them with a snap-shot of the study was about and thereafter requested for their consent to participate in the study.

3.10 Data Analysis

3.10.1 Quantitative Data

All the returned questionnaires were edited and cleaned to ensure that the required information has been captured so as to facilitate easy analysis. Data analysis was done using SPSS and the outputs derived from SPSS were used to discuss the findings of this study. Frequency-percentage tables were used in analyzing the responses to each of the variables investigated.

3.10.2 Qualitative Data

Qualitative data collected from interviews were sorted and grouped into themes. The researcher analyzed the adequacy of information in answering the research questions through identifying categories and parameters that emerged in response to the study variables (Mugenda & Mugenda, 1999). While analyzing qualitative data, summaries were made on how different themes/variables were related. Narrative statements were used as well as verbatim quotations from the key informants.
CHAPTER FOUR
PRESENTATION, ANALYSIS AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents analyses and interprets the findings. The study investigated the challenges and managerial process in solid waste management in Pallisa Town Council. The objectives of the study were: To assess the planning, organizing tools and practices engaged in Pallisa Town Council in managing solid waste; to examine the leading and controlling practices engaged by Pallisa Town Council in managing solid waste and; to identify possible mechanisms of improving solid waste management in Pallisa Town Council.

Frequency tables, photographs, charts and graphs were used in presenting data. This study employed a triangulated design, therefore the interpretations and analysis of data was derived from close-ended questions in the questionnaire and structured interviews for selected key informants. The main research instrument and tool was the questionnaire.

4.2 Response rate

Out of the 38 questionnaires that were distributed, 30 were returned, yielding a response rate of 78.9%. All the 4 key informants targeted were interviewed resulting into a response rate of 100%. The response rate for this study was high since it surpassed the 70% as the lowest limit for social science research.

Table 4.1: Summary of response rate from Pallisa Town Council

<table>
<thead>
<tr>
<th>Category of Respondent</th>
<th>Questionnaire</th>
<th>Interview guide</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of questionnaires distributed</td>
<td>Returned</td>
</tr>
<tr>
<td>Staff and Councilors</td>
<td>38</td>
<td>30</td>
</tr>
<tr>
<td>Key informants</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
**Source: Primary Data**

The response rates for both the questionnaires and interview guides administered during the study were higher than the world standard of slightly above 22% (Ulengin & Uray, 1998). The high response rates of 90% and 100% respectively indicated that majority of the respondents were interested in the study. The interaction with key officials in Pallisa Town Council as well as other categories of respondents to the study partly explains the high response rate. This rhymes the observation made by Asiimwe (2007) who stated that his past association with many of the respondents at various functions influenced the response rate. However, to ensure that such interaction did not bias the responses, the objective of the research was explained in the introductory remarks in which the respondents were requested by the researcher to answer the questionnaire objectively and that their responses would be kept confidential and anonymous.

### 4.3 Background information of the Respondents

The researcher sought to obtain data on selected socio-economic characteristics of the respondents which included sex, age, institution of service, highest academic qualifications leadership status, occupation and working experience. This section presents a summary of the findings about the socio-economic characteristics of the respondents.

#### 4.3.1 Gender of the Respondents

Respondents were asked to indicate their sex as stated in the self-administered questionnaires and the interviews. The following results were obtained;

**Table 4.2: Sex of the respondents**

<table>
<thead>
<tr>
<th>Sex</th>
<th>Category of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff and Councilors (n=30)</td>
</tr>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>Male</td>
<td>26</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
</tr>
</tbody>
</table>

**Source: Primary Data**

As indicated in table 4.2 above, male respondents were 26(87%) for staff and councilors and 3(75%)
for key informants. Female respondents were 4(13%) and 1(25%) for staff and councilors and then key informants respectively. There was a domination of male respondents over the females. This finding reflects the general position that women have relatively lesser numbers in both elective (Councilor) and appointive (Civil Servant) positions in local government. The situation is worse in far-hard-to-reach and rural local governments.

This finding does not mean that women are not (would not make) good administrators and decision makers as well as key in taking up new innovations but the stereotypic beliefs and conditions that deny them balanced representation in key positions of decision making. This finding also implies that the study results reflect the views of both categories of gender though there is gender imbalance in the distribution of the respondents. Males were more likely to contribute to improved waste management in Pallisa Town Council because of the higher propensity with which they get involved in the making of decisions pertaining to agriculture operations.

4.3.2 Age of respondents

The respondents were asked to indicate the age range in which they belonged. The following results were obtained:

Table 4.3: Age of the respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>Category of Respondents</th>
<th>Staff and Councilors (n=30)</th>
<th>Top Management(n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>%</td>
</tr>
<tr>
<td>20-30</td>
<td></td>
<td>10</td>
<td>33</td>
</tr>
<tr>
<td>31-40</td>
<td></td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>41+</td>
<td></td>
<td>5</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: Primary Data

According to table 4.3, 10(33%) of staff and councilors fell in the age bracket of 20-30 years age bracket. None of the top management staff belonged to this age bracket. The study findings further indicated that majority of the staff and councilors belonged to the 31-40 years bracket in the same age bracket were 2(50%) of the top management while 5(17%) of staff and councilors and 2(50%) top managers respectively were aged 41 years and above. This finding implies that the study was
comprehensive since it covered a cross section of different age brackets. The age bracket of 31-40 years offers greater potential for improved waste management practices.

4.3.3 Level of education

The respondents were asked to indicate their highest academic qualification that was applicable to them as stated in the questionnaires and interviews. The following results were obtained;

Table 4.4: Level of education of the Respondents

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Category of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Staff and Councilors(n=30)</td>
</tr>
<tr>
<td></td>
<td>F</td>
</tr>
<tr>
<td>No formal education</td>
<td>-</td>
</tr>
<tr>
<td>Primary</td>
<td>3</td>
</tr>
<tr>
<td>Secondary</td>
<td>9</td>
</tr>
<tr>
<td>Tertiary</td>
<td>18</td>
</tr>
</tbody>
</table>

Source: Primary Data

Table 4.4 shows that none of the respondents from both categories was without formal education. 3(10%) had completed primary education; 9(30%) had completed secondary education while 18(60%) had pursued tertiary education studies. The study findings showed that all the key informants, 4(100%) had completed tertiary education. Among the key informants, the high level of education among the respondents was largely because the positions they hold had formal training beyond primary school level as a minimum standard. The different levels of academic qualifications indicated a mixed category of respondents who participated in providing data for this study. By implication, the findings of the study are informative largely because they captured the views of the respondents from different academic calibers.

4.3.4 Working experience of the respondents

The respondents were equally asked to indicate the number of years they had worked in their respective positions. This investigation was based on the proposition that the more the number of years, the greater would be the level of experience and therefore the more would be the knowledge they exhibit on the study variables. The following results were obtained;
Table 4.5: Working experience of the Respondents

<table>
<thead>
<tr>
<th>Working experience</th>
<th>Category of Respondents</th>
<th>Staff and Councilors (n=30)</th>
<th>Top Management (n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>F</td>
<td>%</td>
</tr>
<tr>
<td>Less than One year</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1-5 years</td>
<td>10</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>5-10 years</td>
<td>15</td>
<td>50</td>
<td>3</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>5</td>
<td>20</td>
<td>-</td>
</tr>
</tbody>
</table>

*Source: Primary Data*

As reflected in table 4.5 above, none of the respondents had worked for less than one year; 10(30%) indicated that they had worked for 1-5 years; 15(50%) had worked for 5-10 years, while 5(20%) had worked for more than 10 years. The study findings showed that 1(25%) of the key informants had a working experience of 1 to 5 years; 7(20%) while 3(75%) had worked for 5-10 years. None of the top management officials had worked for more than 10 years. As is common in formal organizations, the employees have term limits; some are laid off, others transferred while some work on contracts and therefore serve for a period not exceeding 10 years. From the above table, majority of the respondents had served for more than 5 years in their respective designations. The long experience in these respective areas provided a basis for the accumulation of knowledge about the variables investigated by this study.

The higher response rate from the farmers and key informants that had worked in the PTC for more than 5 years implied that the respondents were knowledgeable about the dynamics of solid waste management in the Town Council.

4.4 Planning and organizing for waste Management

Research Question/objectives one of the study investigated the planning and organizing functions for waste management in Pallisa Town Council. As a guide into the fulfillment of the requirements of the research question, thirteen questions were set and administered to the respondents as in Section B of the questionnaire. Table 4.6 illustrates the descriptive statistics showing frequency and percentage of the respondents’ responses on.

In Table 4.6 below, "A" stands for "Agree" - indicating respondents who agreed with the assertion and
"D" stands for "Disagree" - indicating respondents who disagreed with the assertion. Relating this to the questionnaire in the Appendix "A" is the sum of both those who "Strongly Agreed" (SA) and those who "Agreed" (A). On the other hand, "D" is the sum of those who "Strongly Disagreed" (SD) and those who "Disagreed", while “NS” is a representation of those who did not agree or agree, altogether.

Table 4. 6 Responses on Planning and organizing for waste management

<table>
<thead>
<tr>
<th>Statements</th>
<th>A</th>
<th>D</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The organization makes plans for waste management</td>
<td>10(33%)</td>
<td>20(67%)</td>
<td>0(%)</td>
</tr>
<tr>
<td>2. PTC conducts research on better waste management practices</td>
<td>9(30%)</td>
<td>18(60%)</td>
<td>3(10%)</td>
</tr>
<tr>
<td>3. The organization conducts planning for waste recycling</td>
<td>9(30%)</td>
<td>16(53%)</td>
<td>5(17%)</td>
</tr>
<tr>
<td>4. Designated places have been planned for waste disposal</td>
<td>10(33%)</td>
<td>18(60%)</td>
<td>2(7%)</td>
</tr>
<tr>
<td>5. The Town Council has a sufficient budget for waste management in a year</td>
<td>0(0%)</td>
<td>30(100%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>6. The Town Council has a sufficient staff for waste collection and management</td>
<td>5(17%)</td>
<td>18(60%)</td>
<td>7(23%)</td>
</tr>
<tr>
<td>7. The Town Council skips all over for waste collection</td>
<td>8(27%)</td>
<td>16(53%)</td>
<td>6(20%)</td>
</tr>
<tr>
<td>8. The Town Council conducts trainings on waste management</td>
<td>4(13%)</td>
<td>24(80%)</td>
<td>2(7%)</td>
</tr>
<tr>
<td>9. The organization has sufficient policies and regulations in managing solid waste</td>
<td>8(27%)</td>
<td>15(50%)</td>
<td>7(23%)</td>
</tr>
<tr>
<td>10. The Town Council has machinery and technology used in managing waste.</td>
<td>6(20%)</td>
<td>21(70%)</td>
<td>3(10%)</td>
</tr>
</tbody>
</table>

Item 1 from Table 4.6 shows that 10(33%) of the respondents agreed that PTC regularly modified plans for waste management as compared to 20(67%) who disagreed. By implication, management of PTC often rely on previous year’s plans for managing solid waste and yet other parameters often change such as number of businesses that open up in a period, increase in the numbers of people
relocating to the town council for work, trading, social life and any other reasons, which cause increment in the population of the town Council. This would thus entail drafting plans that take care of the changes in some of the above mentioned parameters. The failure to match plans with the changes in other socio-economic variables can thus lead to poor waste management practices in PTC. In conformity with Tsai, recommends that in order to encourage households to participate in waste recycling, there needs to be “a well-informed waste collection regime, good quality of environmental education and attitudes, an effective enforcement scheme from social norms, proper economic incentives and promotion from local communities” (Tsai, 2007:44-45). This is what many authorities have not been able to do especially in the developing world and Pallisa in particular.

**Item 2** shows that 9(30%) of the respondents agreed that PTC conducted research and/or had research information on waste management. Majority of the respondents, 18(60%) disagreed that the institution conducted research on waste management and therefore never had research information on waste management; while 3(10%) were non-committal as regarding the issue. Basing on the views of the majority, the state of waste management in Pallisa Town Council is poor given that the management seldom ventures into researching about the best practices in the management of waste.

**Item 3 from Table 4.6** shows 9(30%) of the respondents agreed that management of PTC conducted planning for waste recycling; 16(53%) disagreed that such was done; while 5(17%) were not sure. Majority of the respondents disagreed and were not sure whether planning for waste recycling was made by PTC. This implies that PTC still uses the outdated and traditional practices of waste management unlike other town and/or municipal councils like Mbale where waste recycling is one of the key strategies that management is putting thrust on to reduce on the challenges of waste management (ULGA, 2009).

The Town Clerk of Pallisa Town Council held the view that the people can take advantage of waste and start making a living out of it especially the organic waste which can be used as manure. He further noted that:

As town council we are trying to persuade the local residents to consider coming up with an idea in waste management whereby they can collect the solid waste and sort-out the organic waste which they can improve on and sell as fertilizer to the outskirts to those who practice
agriculture. They will be both earning and at the same time helping in solving the solid waste problem. This kind of arrangement is working in Mbale District and it is moving on well and those dealing in it are happy.

**Item 4** shows that 10(33%) of the respondents agreed that designated places have been planned for waste disposal in PTC. Majority of the respondents 18(60%) however disagreed that management of PTC had enough gazetted places for waste disposal in all the wards; while 2(7%) of the respondents were not sure. The failure of management to gazette the waste disposal sites in the wards could be responsible for littering waste on the streets, hence leading to poor hygiene and sanitation in the area. USEPA (2002) affirms that improper disposal of solid waste exposes the environment and human life to danger by way of emission of greenhouse gasses and contamination of ground water from poorly managed gazette area for waste disposal, respectively. Furthermore as a result, landfills, burning waste, rodents and odours which are very common in developing countries have made residential areas susceptible to health hazards (UNEP, 2007).

**Item 5** shows that all the respondents, 30(100%) disagreed that PTC had a sufficient budget for waste management. The respondents indicated during interviews that during the budgeting process, many other activities seem to take precedence and waste management is relegated to non-priority and key sectors and yet, its poor disposal affects the performance of services. For example, in the financial year 2013-14 the town council budgeted for 18,000,000/= for town cleaning and only 14,467,000/= was released; fuel for removing wastes in the town they budgeted for 7,500,000/= and only 3,000,000/= was released; removing garbage hips 1,500,000/= was budgeted for and no funds were released. The town council budgeted 3,000,000/= for procuring land for a landfill only 500,000/= was released (Pallisa Town Council, budget 2014-15).

Blue flies, stench, increase in pests such as rats as well as flying polyethene bags were identified as some of the key challenges befalling businesses in the area such as restaurants, retail shops, among others. This is in conformity with the UNEP (2007:224) that urbanization comes with expansion of towns which manifests through the growth of social and economic infrastructure/services and industrialization. The growth in such services warrants the increase in population in such areas. An increased population automatically means increased demand for not only social services but also
consumables which potentially present a larger base for waste generation-in most cases solid waste. The increase in the volumes of waste generated has also been proved to be synonymous with the “new lifestyles associated with greater affluence” which convert into higher consumption levels, thus generating more waste amidst changes in waste composition UNEP, 2007:224.

In agreement considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of (UNEP 2002)

**Item 6** shows that 5(15%) of the respondents agreed that the town council had sufficient staff for waste collection and management, 18(60%) disagreed while 7(23%) were not sure. Inability to have adequate staff for waste collection and management implies that sometimes, some waste is collected after a long period of time, which creates deficiency in the effectiveness of waste management practices. Community institutional structures are also of importance in managing solid waste.

It was affirmed in Bekin et al (2007) that in the absence of appropriate institutional structures, it becomes difficult to ensure solid waste reduction at an individual level. This kind of arrangement is bound to give power to the existing structure to operate in a manner within their own choice of means. Tsai (2007) also urged that waste reduction begins at the stage of production when there is deliberate effort to prevent production of waste material, but this can be very difficult if the structure within which production is made does not deliberately support the prevention of such materials at production stage. When this is ensured by the structure, it simplifies the solid waste management system at the next level of consumption (Tsai 2007:44-45).

**Item 7** shows that 8(27%) of the respondents agreed that PTC had put skips all over the Town Council areas for waste collection, 16(53%) disagreed while 6(20%) were not sure whether skips had been put all over the place in the town council.

**Item 8** shows that 4(13%) of the respondents agreed that management of PTC conducted trainings and sensitization of the communities on waste management, 24(80%) disagreed while 2(7%) were not sure whether such was done. Knowledge about the importance and benefits of sorting waste is one thing, and having knowledge on the recyclable waste material is another. People do realize that it is a good
thing to sort solid waste so that not all of it is dumped together. The intention is to easy the management of the waste by having some of the waste items recycled. The knowledge base about recyclable items among the people of Pallisa Town Council is minor and very low. The people know little about recyclable items and this in itself forms a barrier to waste sorting. For one to embrace waste sorting, one needs to know which items to particularly sort-out, without this knowledge, it becomes useless and unlikely so to happen.

In the study conducted by Barr (2004) affirms that the ones who have to play the basic waste sorting role at household level, before the waste can be conveniently collected for recycling or compositing purposes. Therefore, in order to cultivate sustainable waste management, there is need to do more than just creating awareness and disseminating knowledge (Barr 2004). There is a dire need to strategically involve the public in solid waste management. In relation to the above Joardar, introduction of a “user charge based on door-to-door collection” can support waste sorting and recycling (Joardar, 2000:327)

**Item 9 from Table 4.6** shows that 8(27%) of the respondents agreed that PTC had sufficient policies and regulations for managing solid waste, 15(50%) disagreed while 7(23%) were not sure whether such existed in PTC. The absence of sufficient policies and regulations has created a loophole that is utilized by the generators of waste to dump it in any place because there is gross absence of regulations for the same. This has led to filthy streets in PTC. Effectively planned regulations and policies would address all this.

**Item 10 from Table 4.6** shows that 6(20%) of the respondents indicated that PTC had machinery and technology used in managing waste, 21(70%) disagreed while 3(10%) indicated that they were not sure whether such existed in PTC. Modern machinery and technology is important in the management of waste. A case in point here is the use of incinerators that destroy hazardous waste such as broken bottles and glass as well as refuse from clinics and health units that includes used needles and syringes.

Planning and organizing enable management to determine organizational aims, developing premises about the current environment, selecting the course of action, initiating activities required to transform plans into action, and evaluating the outcome. From interviews with the top management officials, it was revealed that planning and organizing for waste management is always done at PTC. However,
some of the planning tools used such as the budget was of less significance in bringing about effective solid waste management as waste management was always relegated to non-priority section of the budgeted for programmes. This affected other functions that would equally too, improve on solid waste management such as training of the community members, availing more skips and deploying more staff among others. United Nations Environment Programme affirms considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of (UNEP 2002).

The Senior Community Development Officer and the Local Council III (Mayor) agreed that planning and organizing for waste were below the desired levels. They attributed the deficiency to a lack of experts who are technical into the areas of waste management as such continue to have a preference for developed towns like Mbale, Soroti, Tororo and Jinja because life in these places is quite better than it is in PTC. They revealed that efforts are being taken to lure technical personnel to assist the political and local leaders in the area to bring about an improvement in the quality of services delivery, waste management inclusive.

4.5 Leading and Control for waste Management

Research Question/objective two of the study investigated the effectiveness of the leading and control functions for waste management in Pallisa Town Council. As a guide into the fulfillment of the requirements of the research question, seven questions were set and administered to the respondents as in Section C of the questionnaire. Table 4.7 illustrates the descriptive statistics showing frequency and percentage of the respondents’ responses. In Table 4.7 below, "A" stands for "Agree" - indicating respondents who agreed with the assertion and "D" stands for "Disagree" - indicating respondents who disagreed with the assertion. Relating this to the questionnaire in the Appendix "A" is the sum of both those who "Strongly Agreed" (SA) and those who "Agreed" (A). On the other hand, "D" is the sum of those who "Strongly Disagreed" (SD) and those who "Disagreed", while “NS” is a representation of those who never “agreed” and “disagreed” respectively.
Table 4.7: Level of respondents on leading and control for waste Management

<table>
<thead>
<tr>
<th>Statements</th>
<th>A</th>
<th>D</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The Town Council has the motivational and retention packages in waste management</td>
<td>3(10%)</td>
<td>27(90%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>2. The Town Council involves NGOs and CBOs in waste management</td>
<td>9(30%)</td>
<td>6(20%)</td>
<td>15(50%)</td>
</tr>
<tr>
<td>3. Follow up is made on compliance of residents with proper waste disposal</td>
<td>0(0%)</td>
<td>12(40%)</td>
<td>18(60%)</td>
</tr>
<tr>
<td>4. Management of PTC keeps and inventory of landfills management</td>
<td>10(33%)</td>
<td>8(27%)</td>
<td>12(40%)</td>
</tr>
<tr>
<td>5. PTC management provides for the safety and health of waste collection crew</td>
<td>9(30%)</td>
<td>18(60%)</td>
<td>3(10%)</td>
</tr>
<tr>
<td>6. PTC has CCTV to monitor waste collection and disposal</td>
<td>0(0%)</td>
<td>30(100%)</td>
<td>0(0%)</td>
</tr>
</tbody>
</table>

**Item 1 from Table 4.7** Shows that 3(10%) of the respondents agreed that PTC had motivational and retention packages in waste management while majority, 27(90%) disagreed and indicated that such were not available in PTC. None of the respondents were not sure. Waste collection and disposal involves occupational hazards that arise from the objects handled as well as the stench that causes nausea all the time inducing the staff to smoke. Failure to provide all gum boots and mouth shields as well as incentives for the workers in waste management leads to high rates of attrition that consequently affect the effectiveness of waste management in PTC. (UNEP 2002). states that considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of.

**Item 2 from Table 4.7** shows that 9(30%) of the respondents agreed that the Council involved NGOs and CBOs in waste management, 6(20%) disagreed while 15(50%) were not sure whether they were involved by PTC in waste management. NGOS and CBOs are known to be key non state agents that promote community hygiene and sanitation development especially those that have sanitation and
hygiene and even environmental management as their maiden objectives. Absence of this thread of collaboration has therefore affected the effectiveness of waste management in PTC.

**Item 3** shows that none of the respondents agreed that follow up was made on the compliance of residents with proper waste disposal, 12(40%) disagreed while majority, 18(60%) were not sure whether follow ups were made regarding the compliance of residents with proper waste management.

**Item 4** shows that 10(33%) of the respondents agreed that management of PTC kept inventory on landfills, 8(27%) disagreed while 12(40%) were not sure whether such was done by management of PTC. Inventories of landfills are important because they help management of town council to plan for their maintenance. Management of PTC by failing to have such inventories consequently fails to control the disposal of waste. In agreement, the United Nation Environment Programme considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of (UNEP 2002). As a result, landfills, burning waste, rodents and odours which are very common in developing countries have made residential areas susceptible to health hazards (UNEP, 2007).

**Item 5** shows that 9(30%) respondents agreed that PTC provided for the safety and health of waste collection crew; 9(30%) disagreed; while 3 (10%) were not sure. From the above finding, it is clear that majority disagreed that management of PTC catered for the safety and health of the crew and yet it is very important and a necessity for the successful execution of waste management activities. Waste collection gear in form of gloves, gumboots and overcoats among others is very crucial if the workers were to ably collect the garbage and other solid waste from the disposal sites. This has been strengthened by UNEP that considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of (UNEP 2002).

**Item 6** shows that none of the respondents agreed and were not sure whether PTC had CCTV cameras to monitor the movement of waste collection vehicles, all the respondents, 30(100%) disagreed that the CCTV cameras were available. Stealing of fuel and laxity among staff are challenges that are eminent
because of failure to have such a monitoring system on board.

From the interviews with the key informants, the study findings revealed that PTC like other local government units has a series of internal controls such as charges for waste collection and disposal in place; waste generators pay money to remove the waste generated by them that are supposed to be the guiding points ought to be followed by the staff as they execute the duties assigned to them. However, it was observed that whilst these controls are in place, the anticipated outcomes have not been realized and PTC continues to perform poorly like other local government units in the greater Pallisa. Collaborations with CBOs and NGOs have for example not taken course because the management of the PTC has failed to benchmark other districts such as Kampala and Mbarara where collaborations with the duo have so far delivered good results.

The management officials further revealed that it would be very prudent to have CCTVs in operation such that route map follows ups can be made at the center. Buying gear for the waste management staff, it was revealed, has become a recurrent issue in the past budgets. However, the little has been done to that effect. The Mayor had this to say

   Sometimes, issues requiring heavy sums of money remain perspective to us.
   We always plan for them but the plans are not implemented. This is planning without plans. However, we are optimistic we shall get there one day.

4.6 Mechanisms to improve on waste Management

Research Question Three of the study investigated the mechanisms that ought to be put in place to improve on waste management in Pallisa Town Council. As a guide into the fulfillment of the requirements of the research question, nine questions were set and administered to the respondents as in Section D of the questionnaire.
### Table 4.8: Level of respondents on mechanisms to improve waste management.

<table>
<thead>
<tr>
<th>Statements</th>
<th>Frequency (n=30)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increasing on the number of skips is important</td>
<td>24</td>
<td>80</td>
</tr>
<tr>
<td>2. Involvement of public participation is crucial</td>
<td>28</td>
<td>93</td>
</tr>
<tr>
<td>3. Allocation more money on the budget could address the issues of waste management</td>
<td>16</td>
<td>53</td>
</tr>
<tr>
<td>4. Emphasizing research on the productive use of waste</td>
<td>22</td>
<td>73</td>
</tr>
<tr>
<td>5. Training local communities in productive waste recycling</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>6. Conducting regular trainings on waste management</td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td>7. Improving on policies and regulations in managing solid waste</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td>8. Adopting a comprehensive legal or institutional framework to address waste management issues</td>
<td>20</td>
<td>97</td>
</tr>
<tr>
<td>9. Sourcing for machinery and technology for managing waste is desirable.</td>
<td>27</td>
<td>90</td>
</tr>
</tbody>
</table>

**Item 1 from Table 4.8** shows that 24(80%) of the respondents indicated that waste management in PTC will tremendously improve when management of the Town Council allocate more skips in the study areas (five wards). Through informal conversations with the respondents, it was revealed that enforcement staff of the Town Council sometimes fails to apprehend the residents for wrongly disposing waste because the skips available in the areas are less than the numbers of people.

**Item 2 from table 4.8** shows that 28(93%) of the respondents indicated that involvement of the
general public in matters pertaining to waste management was very important as this would bring about an improvement in the management of waste in the Town Council. Interviewees reported that involved community members become active and key stewards and work for the success of community based projects, of which waste management is part.

In agreement, the United Nations Environment Programme, the community manifests as a very important stakeholder in solid waste management and the level of their participation counts on the success of recycling in particular and solid waste management in general. Notably, the costs of collection, transportation and land for landfills, are high; however engaging the community serves to reduce such costs. In a way, this proves to be a sustainable mode of waste management. For example: in Dhaka where community-based solid waste management and composting projects have been implemented, a lot of such costs have been reduced (UNEP, 2007:225).

**Item 3** shows that 16(53%) of the respondents indicated that there was need for allocating more money on the vote of waste management in the budget of the Town Council to address the issues of waste management. The respondents reiterated that more than often, limited funding for waste management has always been scored as one of the key factors leading to poor waste management by the Town Council. An upward revision of the funds allocated for waste management would thus address this gap. This has been affirmed by United Nations Environment Programme that considering the fact that there are not always enough resources and infrastructure for waste management, especially in developing countries, this scenario ultimately implies that some waste will not be collected, or will be improperly disposed of (UNEP 2002).

**Item 4** shows that 22(73%) of the respondents indicated that emphasizing research on the productive use of waste would help to improve on waste management systems in the Town Council. The respondents indicated making bricks from refuse, using the spoiled straws for mat making and so forth would help in the improving on the management of waste in the Town Council.

**Item 5** shows that all the respondents ,30(100%) indicated that training the local communities in productive recycling of waste would be a very ideal strategy for reducing on the rate at which waste was poorly disposed by the households and business establishments in the Town Council.
Item 6 shows that 21(70\%) of the respondents indicated that improving on the policies and regulations in managing solid waste was key in addressing the problems of waste management existent in the Town Council. The key to the success of these policies on regulations is rigorous sensitization of the communities lest the revised policies and regulations remain mere paperwork and defective. Sensitization of the public therefore forms the nexus for the success of the revised policies and regulations in PTC. Although there are several efforts, legal and institutional frameworks in place to enhance proper solid waste management, there is still persistent poor waste management in Uganda and Pallisa inclusive. There are a number of legal frameworks that is to say the Constitution of the Republic of Uganda (1995, Article 245 [a]) which provides measures intended to protect and preserve the environment from abuse, pollution and degradation; the Local Governments Act (1997), the National Environment (Waste Management) Regulations, S.I. No 52/1999; all having provisions of how all wastes shall be properly managed.

Item 7 shows that 20(97\%) of the respondents indicated that for waste management to improve, there was need for adoption of a comprehensive legal or institutional framework to address waste management issues in the Town Council. The comprehensive framework will enlist all those gazetted areas for waste disposal, the same will usher in penalties for careless disposal of waste and might even steer efforts for the productive conversation of bulk waste into products that will earn some income to the households.

Item 8 shows that 27(90\%) of the respondents indicated that there was need for sourcing for machinery and technology for managing waste in the town council. The respondents through informal conversations indicated that there was need for machinery such as self-loading trucks that require less man power as is the case with Jinja Municipality and Kampala Capital City Authority and also need for machines such as incinerators that could facilitate to burn some of the toxic and lethal waste such as hospital and clinic garbage, broken bottles, to mention.

From interviews with the key informants, different mechanisms were identified for improving on waste management in PTC. Sourcing for technology and machinery; training the community leaders to empower households; updating the databases of business units and residents in the town council; and recycling of waste in that pecking order were identified as key mechanisms for improving waste management in PTC.
The Senior Community Development Officer acknowledged that empowerment of the households with knowledge about turning waste into other productive items would help to save the management of PTC from high expenditure that has always been incurred on solid waste management. The Deputy Mayor on this aspect had this to say;

a trained community on productive recycling of waste is a dream opportunity for PTC…, while they will not only save us from high expenditure on waste collection, disposal and landfills maintenance, they will also save money they would have incurred buying the very products they now can make from waste. This is a double saving opportunity.

The Mayor revealed that waste management is a public issue and cannot become effective in the isolation of the communities. The households and market vendors are the key stakeholders in waste management and therefore any effort undertaken to bring about an overnight change in the dynamics of solid waste management will never come to fruition unless the community is part and parcel in its formulation such that they can own it and be at the forefront of implementation. From the foregoing, public participation is very crucial.
CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction
The study assessed the managerial processes of solid waste management in Pallisa Town Council. The focal issues included; planning and organizing for solid waste management, leading and controlling solid waste management and mechanisms for improving on solid waste management. This chapter therefore presents a discussion, conclusions and recommendations based on the study findings.

5.2 Summary of the findings
5.2.1 Planning and Organizing Solid waste Management

Findings of the study identified a series of inequities and anomalies in the planning and organizing functions for Solid waste management in PTC. For example, management of PTC often relied on previous year’s plans for managing solid waste notwithstanding the variation in other dynamics behind the increase in the scale of solid waste. In addition, management seldom ventured into researching about the best practices in the management of waste and as well never had enough gazzetted places for waste disposal in all the wards. Combined with the limited staff manpower and lack of expertise for solid waste management activities which implies that sometimes, some waste is collected after a long period of time which thus creates deficiency in the effectiveness of waste management practices, the collection and disposal of solid waste was poor.

Budgeting for waste management is done but funds are not released as budgeted leading to poor waste collection and disposal. Funding of waste management activities are based on local revenues at times is not realized which at times takes long to collect the wastes. PTC still uses the outdated and traditional practices of waste management unlike other town and/or municipal councils like Mbale where waste recycling is one of the key strategies that management is putting thrust on to reduce on the challenges of waste management. The knowledge base about recyclable items among the people of Pallisa Town Council is minor and very low. The people know little about recyclable items and this in itself forms a barrier to waste sorting.
5.2.2 Leading and controlling Solid Waste Management

Staff working in sectors that are susceptible to occupational hazards such as waste management (collection and disposal) require be motivating and giving incentives such that their morale is kept high. The opposite was true in PTC where it was observed that management never had motivational packages for the employees in the waste management sector. In addition, collaborations with CBOs and NGOs at its best was dim and at worst nonexistent and yet these non-state actors most especially those that have bias on WASH and environmental management sometimes earmark money to partially fund such activities. This lack of collaboration has greatly affected effectiveness of solid waste management in the town council.

In public sector management as is the case with private sector, follow ups are very important. They ensure compliance and bring about detection of deficiencies in the operations of a system thus improving on its effectiveness. Findings of the study indicated that follow ups on compliance of the respondents was never made and yet they ought to be planned for in advance to bring about effectiveness of the waste management system.

An inventory of landfills is important because it brings to the attention of management of the improvements that ought to be done to improve the waste disposal activities. Management of PTC rarely updated the inventory. In addition, CCTV monitoring would be important in tracking the movements of vehicles to ensure that all the ear marked sites are reached out by the staff. The CCTV would too control on the way how the staff are collecting waste from the skips as well as curtail uncouth activities such as siphoning of fuel.

5.2.3 Mechanisms for improving solid waste management

Solid waste management requires comprehensive planning and should take into account changes that occur as a result of developments occurring in a given urban center. Increase in the population as well as businesses would thus require additional space to accommodate waste generated. Increasing on the number of skips is thus an ideal strategy that will greatly improve on solid waste management in the town council. Effective solid waste management system is based on stakeholder involvement. Involved community members become active and key stewards and work for the success of
community based projects, of which waste management is part.

One of the immediate factors considered by business startups is the hygiene and sanitation of an area. Therefore, development of PTC is occult on improved waste management which then calls for increasing on the funds allocated to the vote on solid waste management. Research on the productive use of waste is important and will improve on solid waste management in PTC. The dissemination of the results about the discoveries made to the public is pivotal in increasing the propensity with which the community will recycle the waste into important things. For example, bricks can be made from some refuse such as ash and banana peelings and this helps the households to make savings on their energy bills.

Improving on the policies and regulations in managing solid waste and the adoption of a comprehensive legal or institutional framework to address waste management issues is key in streamlining the management of solid waste in PTC. The regulations, policies and legal framework will thus provide solution to the anomalies identified by the study. However, such policies and regulations will work perfectly in the presence of improved technology and machinery, public participation and community sensitization.

5.3 Conclusion
Managerial processes for waste management in PTC have deficiencies. Planning and organizing for solid waste management is still poorly coordinated. Leading and controlling functions are equally haphazardly implemented. This could partly be attributed to constrained budgets that local governments operate on. It is understandable that all local government units operate under meagre financial resources and thus have to set their priorities right. In most cases, solid waste management misses out in the strategic plans and consequently in the budget.

Waste management is not an economically rewarding investment and therefore not very much a priority and continues to be looked at as a ‘wasting asset’. In the contemporary world today where the environment is at stake and where sustainable development is the way to go, it is high time that solid waste management was prioritized and budgeted for because it is one of the problems that have far-reaching effects on the environment when not mitigated before it gets overboard.
5.4 Recommendations

5.4.1. Policy Enhancement

- There is need to acknowledge and recognize the instrumental role played by other waste collectors. Provisions should be included in the existing policies so as to give these players a legal backing as far as their activities are concerned. The scavengers should also form cooperative unions. Through these groups, they will be able to secure loans, receive business and health care training. The result will be enhanced dignity, improved incomes and ultimately better social recognition.

5.4.2. Technical Intervention

- PTC needs to buy more collection vehicles to supplement its present fleet. This will improve on the speed and the areas served within a small time and ultimately reduce the public nuisance associated with uncollected waste. It also needs to equip each of the vehicles with a covering material (preferably using the locally made plastic liners) so as to prevent the waste from being blown off the trucks when in transit. There is need for PTC to gazette the land fill and appointed agents to monitor and control the management at the landfill. Moreover, it was part of the original plan.
- In order to enhance environmental protection and conservation, alternative sites for the disposal of hazardous wastes should be located. The disposal operations should follow acceptable methods and standards as stipulated in the existing legislation.

5.4.3. Economic Strengthening

- Using its mandate under the Local Governments Act (1997) and the Decentralization Policy, PTC should attract investors interested in setting up paper and glass recycling industries. This will not only save the country large sums of foreign exchange lost to the processing industries in Nairobi, Kenya, but will also offer both formal and informal employment opportunities to the many jobless people. Evidence from Cairo in Egypt, Manila in Philippines and Ibadan in Nigeria shows that industrial recycling of waste can be a profitable venture (IDRC 1999). Apart from achieving a cleaner environment, effective recycling of waste is a feasible strategy for employment creation, income generation and poverty alleviation. KCC through its various economic programs should therefore give priority to private initiatives and proposals to recycle wastes.
Support for local groups

- Pallisa Town Council Authority needs to extend support to local community groups to encourage them to recycle materials. Such support may not necessarily be monetary. It may include allocation of space from where they can carry out their activities. On top of what they are already involved in, the groups should focus more on the production of energy saving Refuse Derived Fuels (RDF) from the wastes. The RDFs do not require expensive investment and have ready market. This use will save many of Uganda’s rural forests that are currently cut down to supply of fuel wood and charcoal.

Investment in projects

- Pallisa Town Council further needs to invest in income generating projects so that it can become more self-sustaining. The reliance on remittances from the central government is not sustainable as exemplified by the Council’s failure to meet its financial obligations as and when required. Potential areas of interest include real estate development, transport and heavy construction machinery which it may rent out to private constructors. The income from such ventures could be used to supplement the Council’s budget.

5.4.4 Administrative Support/ Improvement

- There is also need to establish frameworks through which local community representatives to the Pallisa Town Council Assembly can become more accountable and responsive to the people they represent. This framework should focus on improving information flows between the authority and local people. Through this, the local communities will become part and parcel of the decisions that are made and so will be less resentful to new recommendations. The involvement and participation of children and housekeepers in information meetings needs to be given particular emphasis since they are very important actors at the household level.

Investment in reducing waste

- The success of any solid waste recycling and reuse strategy depends on the vigilance with which the generators of the waste are willing to sort it at the point of generation. This permits easy salvage and identification of items that can be reused and recycled, while saving time and costs of
transportation, treatment and disposal of the waste. Waste separation is also bound to succeed if a market for the sorted out items exists, otherwise, there is often a risk of non-compliance by waste generating communities in cases where, no economic value or direct reuse value exists for such items.

**Improvement on waste management**

- In order to get an insight of the people’s attitude towards waste separation, I started by briefing the respondents about the advantages of separating the waste. These included among others, use of organic waste as compost, reuse of bottles and plastic containers for purposes other than those for which they were originally manufactured and the facilitation of plastic recycling. Others included prevention of soil pollution through removing items such as plastics and used batteries before disposing the waste. Also the prevention of underground water pollution by obnoxious leachate was cited as an advantage; and that burning of mixed waste heavily pollutes the air as compared to sorted waste.

**5.5 Areas for further research**

This study is not comprehensive. The findings recorded and conclusions drawn cover a small section of Pallisa District. In addition, the response rate was less than 100%. For systematic information about the study variables, the study should be extended to the rest of other areas in Pallisa district as well as other regions in Uganda.
References


Environmental Resource Limited (ERL), (2008), Solid Waste Disposal–Kampala.


Ministry of local government and provincial councils, (2008), solid waste planning and disposal.

Accessed 25th April, 2009


Pallisa Town Council Development Plan (2010-15)


The National Environment Act (NEA), (1999), Kampala, Uganda.


Water Aid Uganda, (2011), Challenges of Urban Waste Management in Kampala City, Kampala Uganda,


Appendices

Appendix 1: STRUCTURED QUESTIONNAIRE FOR COUNCILORS AND STAFF OF PTC

Dear respondent,

I am a student at Makerere University pursuing a Master’s degree in Public Infrastructure Management. I am therefore carrying out a study of challenges and managerial process in solid waste management in Pallisa Town Council. I request you to allow me ask you some questions which you can answer as you feel. The information you will give will be treated confidentially and used for purposes of writing the research report,

Thank you very much in advance.

Galya Muhammad
Researcher

SECTION A: BIOGRAPHY/BACKGROUND INFORMATION

Please tick in the box against the answer that most suitably matches your response ✅

1. Type of Respondent.
   a) Staff □   b) Councilor □

4. Sex.
   a) Male □        b) Female □

5. Age
   a) 20-30 □       b) 31-40 □       41 and above □

6. Highest level of Education.
   a) Never went to school □   b) Primary level □   c) Secondary Level □
   d) Higher Institution/University level

7. Working Experience
   a) Less than One year □   b) 1-5 years □   c) 6-10 years □   d) 10 years and above □

Section B: Planning and Organizing for Waste Management;
For the following questions, please indicate (by ticking or circling). “The extent to which you agree or disagree with each of the statements below” using the following scale:

1 = I strongly Disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = I strongly Agree

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The organization modifies plans for waste management</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>PTC conducts research on better waste management practices</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>The organization conducts planning for waste recycling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Designated places have been planned for waste disposal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>The Town Council has a sufficient budget for waste management in a year</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>The Town Council has a sufficient staff for waste collection and management</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>The Town Council skips all over for waste collection</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8</td>
<td>The Town Council conducts trainings on waste management</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9</td>
<td>The organization has sufficient policies and regulations in managing solid waste</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>The Town Council has machinery and technology used in managing waste.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>The organization has sufficient policies and regulations in managing solid waste</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>The town council uses the legal or institutional frame work that are in place to address some of the waste management issues in your area</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Section C: Leading & Control for Waste Management**

For the following questions, please indicate (by ticking or circling). “The extent to which you agree or disagree with each of the statements below” using the following scale:

1 = I strongly Disagree
2 = Disagree
3 = Neutral  
4 = Agree  
5 = I strongly Agree

<table>
<thead>
<tr>
<th></th>
<th>Mechanism</th>
<th>Tick</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Town Council has the motivational and retention packages in waste management</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2</td>
<td>The Town Council involves NGOs and CBOs in waste management</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3</td>
<td>Follow up is made on compliance of residents with proper waste disposal</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4</td>
<td>Management of PTC keeps and inventory of land fills</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5</td>
<td>PTC management provides for the safety and health of waste collection crew.</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6</td>
<td>PTC has CCTV to monitor waste collection and disposal</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

**Section D: Mechanisms to improve Waste Management.**

For the following questions, please indicate (by ticking or circling). “The extent to which you agree or disagree with each of the statements below using . Tick more than one mechanism as per your opinion.

<table>
<thead>
<tr>
<th></th>
<th>Mechanism</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Increasing on the number of skips is important</td>
</tr>
<tr>
<td>2</td>
<td>Involvement of public participation is crucial</td>
</tr>
<tr>
<td>3</td>
<td>Allocation of more money on the budget could address the issues of waste management</td>
</tr>
<tr>
<td>4</td>
<td>Emphasizing research on the productive use of waste</td>
</tr>
<tr>
<td>5</td>
<td>Training local communities in productive waste recycling</td>
</tr>
<tr>
<td>6</td>
<td>Conducting regular trainings on waste management</td>
</tr>
<tr>
<td>7</td>
<td>Improving on policies and regulations in managing solid waste</td>
</tr>
</tbody>
</table>
Figure: 2 Map of Pallisa Town Council.