

**LOCAL COMMUNITY PARTICIPATION IN SOLID WASTE
MANAGEMENT IN URBAN WEST REGION-ZANZIBAR**

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REQUIREMENTS FOR THE DEGREE OF MASTER OF PROJECT
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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for the acceptance by the Open University of Tanzania, a dissertation entitled: “**Local Community Participation in Solid Waste Management in Urban West Region-Zanzibar**”, in partial fulfillment of the requirements for the degree of Master of Business Administration of the Open University of Tanzania.

.....

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DEDICATION

I dedicate this work to my beloved family for their support and encouragement towards accomplishment of this academic journey.

AKNOWLEDGEMENT

I give thanks to the Almighty for giving me health and the ability to accomplish this study successfully. I would like to express our sincere thanks and gratitude to all especially my family members. In addition, I express my sincerely thanks to the management of Zanzibar Urban regional commissioner's officer, Urban municipal council, Shehas and community members for their active participation in this study.

I also extend my appreciation and gratitude to my supervisor who has been an important source of guideline, advisor and encourager during the entire period of our study.

ABSTRACT

A study was conducted to assess the degree of community participation in solid waste management (SWM) in Urban West Region Zanzibar. The study used both the primary and secondary source data. The primary data were collected through questionnaires, interviews, observation and secondary data were collected through documentation from Zanzibar Municipal Council. Purposive sampling procedures were used to obtain representative wards; respondents were randomly selected from different households. The study involved both quantitative and qualitative approaches in data analysis. The study revealed that, 70.6 percent of respondents have waste storage facilities of different size and shapes, most of them dispose waste on the land, some areas have waste collection points, almost no separation between solid and organic waste, few people in community has awareness of solid waste management and almost 50 percent of respondents contribute cash and in kind for waste disposal. The study recommended that efforts should be directed towards training and awareness creation for purpose of enhancing community participation in SWM, also formation of Environment committees is crucial in order to increase the participation in SWM at lower level. For sustainable SWM emphasis should be directed towards composting and production of fertilizer for the growing subsector of urban agriculture as well as income generation. The study concluded that solid waste management is perceived to be a responsibility the municipal authority and the Zanzibar municipality can only collect and dispose off about 50% of the collected SW; also there is a need to educate and sensitize community on SWM.

Keywords: Solid Waste, Municipal Solid Waste and Community Participation

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LIST OF ABBREVIATIONS

CBOs	Community Based Organizations
MSW	Management of Solid Waste
MSWM	Municipal solid waste management
NSGRP	National Strategy for Growth and Reduction of Poverty
SPSS	Statistical Package for Social Sciences
SW	Solid Waste
SWMS	Solid Waste Management System
SWM	Solid Waste Management
TPHC	Tanzania Population House Census
UNDP	United Nations Development Program
URT	United Republic of Tanzania
US	United States
ZUM	Zanzibar Urban Municipal

CHAPTER ONE

INTRODUCTION

1.1 Background of the Problem

In developing countries, notably in Sub-Saharan Africa, the large extent of solid waste is materials such as foods, industrial waste and waste from markets (Troschinetz and Mihelcic (2009). In these areas, the increasing of solid waste is the result of increasing urbanization where more than 45% of the growing urbanized population lacks proper and unreliable sanitization infrastructure (USEPA (2011). The consequence of unplanned urbanization growth definitely leads to huge problems on governments especially for meeting the increasing demand for proper and healthy municipal services. This has resulted in increase the quantity and complexity of the generated wastes and overburdens, including solid wastes, and in particular municipal solid waste (MSW).

Traditionally, the municipalities have been in charge of providing solid waste management (SWM) services in developing countries (Al-Khatib et al., 2009). The municipal responsibility is to organize and manage the public sanitation system, including providing the infrastructure for the collection, transportation, treatment and disposal of wastes.

However, with ever increasing population and economic growth, many municipalities in developing countries are struggling to keep solid waste management system (SWMS) working in a sustainable manner. Oftentimes these systems either become ill managed or even cease to exist because of various social, institutional, and technical constraints.

The Community participation is perceived as a component that provides favored condition for effective solid waste management. Troschinetz (2009) see community participation as an active process by which the community influences or plays a role in a development project to enhance their wellbeing or other values that they hold dear such as sanitary living conditions as the case may be regarding waste management. Citizens ought to be involved in proper collection storage, and safe disposal of waste (Mongkolnchaiarunya, 2005).

In the solid waste management context, the term community participation means active and meaningful involvement of the beneficiaries in the management of solid waste. Participation of the community is generally limited to activities associated with primary collection of domestic refuse. Examples of some of the most common roles that communities could undertake are managing waste within the household and removing them from their premises, reducing waste production and facilitating recovery for the purpose of recycling and keeping public areas around the neighborhood clean (Squires & Squires 2006).

Also, as for the benefit of participatory approaches, if the people participate in kind they develop a sense of belonging towards the community activity; develop leadership in the village and the confidence of the people increases. Moreover, involvement of beneficiaries ensures that the activities design reflects the peoples' real priorities and the community activities itself reaches, and listens to the voice of the people. Peoples' participation further increases ownership, motivation and ultimately sustainability (Mugagga, 2006).

It is a proven fact that community participation ensures success, once people are engaged in a project as partners it gives them a sense of ownership of the project leading to more sustained attention, effort, and time on task and enhanced task mastery given rise to community success. Moreover, for anything to earn value it must be given a title of ownership.

Communities in developing countries often turn to waste disposal methods that have proven to be destructive to human health and the environment, such as open dumping and burning (or unregulated landfills) because they feel they have no other options to manage their solid waste (Mwanthi and Nyabola, 1997; Goett, 1998; AlaviMoghadam et al., 2009; Narayana, 2009; Al-Khatib et al., 2015; Hilburn, 2015). The consequences of solid waste in developing countries are obvious and observed clearly. Majority of the forms of solid waste are generated from residential and business sources. In different countries a huge collection of solid waste were observed with improper management and collection.

Globally, the production of waste has practically doubled over the past ten years and is expected to reach 2.5 billion tons per year in 2025 as a result of the combined effect of urban development and changes in consumption patterns (Périou, 2012). About ten times more spends in Japan for waste disposal than collection costs (mostly incineration costs). Total waste management costs in low income countries are usually more than 80 percent for collection costs. Lower cost land filling is usually a more practical waste disposal option than incineration Daniel (2012).

According to the World Bank (2007), high income developed countries with an approximation of 1.0 billion people produce an urban solid waste of approximately 1.4

million tons per day while middle income developing countries with approximately 3.3 billion people and low income developed countries with estimated 2.4 billion people produce 2.4 million tons per day and 1.4 million tons per day of urban solid waste respectively.

While the quantity of waste produced in cities continues to increase daily, the effectiveness of the means of handling waste in terms of collection and disposal in developing countries remains low. The evidence of this has been given by the World Bank (2007) which asserts that, middle income developing country collection of urban waste is 60 percent while its safe disposal is 30 percent and in low income developing countries the collection is 40 percent and safe disposal is 5 percent. Taking Egypt as an example, we are informed that approximately 10 to 15 million tons of solid wastes are generated annually; Cairo alone contributes more than 3 million tons. Waste collection and transportation efficiency ranges between 15 percent and 65 percent. Approximately one third of solid waste is not collected.

Solid waste management in Nigeria has emerged as one of the greatest challenges facing environmental protection agencies in developing countries characterized by inefficient collection methods, insufficient coverage of the collection system and improper disposal. The waste density ranged from 280 to 370 kg/m³ and the waste generation rates ranged from 0.44 to 0.66kg/capita/day (Iran J, 2009).

According to Liyala, (2011) Waste Management in urban Centre's of east Africa has for a long time been centralized with the use of imported refuse truck that collect waste from sources. This system in has changed from the colonial days in the 40s, 50s

and early 60s when it was efficient because of the lower urban population and adequate resources to the current status that display inefficiencies.

In Nairobi, the problem of solid waste has been aggravated by the fact that of the total tonnage of garbage generated daily, only 25 percent is collected while the areas generate with estimated 1500 tons of garbage daily. This amount has been increasing. For example, (Kasozi & VonBlottnitz, 2010) estimated that in 2009, the solid waste generated amounted to 5016 tons daily. While a small amount is collected, the remaining waste is left at the markets, bus stops, roadsides, and drains and it forms mountains of rotting, smelly and eye sore waste. Robust solid waste management approaches are therefore essential to solve the problem in the city.

Solid waste management problem in most cities and towns in Tanzania relates to handling at source, collection, transportation, disposal, financing as well as capacity of the City and other key players. At the household level there is no mechanism for waste sorting which make it difficult to minimize waste through recycling and safe disposal of waste including the hazardous ones (UN-HABITAT, 2006). Due to the threat posed by solid waste management in urban areas, Tanzania has set National Strategy for Growth and Reduction of Poverty (NSGRP) and health policy.

In the Zanzibar municipality, it is estimated that around 216 tons per day of waste is generated and only 25% of the Municipal waste in Zanzibar is collected and transported to the disposal site. The remaining 75% of the waste is left to be eaten by animals, burned, illegally dumped, or swept away by storm winds into the town where it accumulates in heaps Zanzibar Urban Municipal (2009).

Solid Waste management is the science that deals with the prevention and monitoring of wastes released into the environment. There are several mechanisms that both the governmental and Non-Governmental Institutions can use in the solid waste management activities. Examples include recycling solids, reducing and reusing them, recovering energy from the wastes and reducing the generation of the same from the sources.

Authorities, community and Non-governmental organizations can come up with strategies to ensure that the disposal and removal of wastes from the environment has been carried out properly (Mongkolnchaiarunya, 2005).

1.2 Statement of the Research Problem

The environment is largely exploited by changing life style, advancement of new technologies and scientific development. The most common problem faced by all the developing countries is the disposal of solid waste (Masheke, 2011). Challenge of solid waste management is caused by the lack of enforcement of the relevant law in place (Al-Khatib et al., 2010). Effective waste management must be fully embraced by local authorities and the public sphere, and must include all stakeholders in the entire waste management decision-making process.

According to Tekele (2004), the problems of solid waste management have been caused by low participation of households like in low community priority for solid waste management, low willingness to participate in collection and recycling, low willingness to keep public spaces clean, and low willingness to pay; management problems in the form of low willingness to manage, lack of accountability to the

community and unrepresentative management; social operation problems such as low salary of operators, low status and bad working conditions, unreliable service; financial problems like cost recovery problems, inadequate fee collection and low ability to pay; and failing cooperation with municipalities such as direct obstruction of community-based solid waste management and lack of assistance from the municipality.

The enacted of the Zanzibar Urban Municipal of solid waste management in 2014, which was necessitate and desire good maintain ace of solid waste for better health, safety and wellbeing of the Zanzibar dwellers. This By-Law 7 of 2014 was to arrange for collection, treatment and disposal of all domestic wastes and streets and other litter that is generated by city dwellers. Dumping anyhow is also prohibited under that sale laws but there is a provision regarding the dumping sites. Also Urban Municipal Council generating household, commercial or institutional solid waste to; practice zero-waste principles including “The Zanzibar Environmental Management Act No. 3of 2015:Ban on Plastic Bags Regulations”, hand over solid waste to the door to door collection services of the Council or deposit the waste at the collection points established by the Council.

Despite all these frameworks the public continues to illegally dump wastes in all places making the country surrounding dirty and messy. Zanzibar like other developing countries is facing with a serious challenge in Municipal solid waste management. Therefore, this study focused on assessing the effectiveness of local community participation on solid waste management.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of the research is to assess the effectiveness of local community participation on solid waste management in Urban-West Region Unguja.

1.3.2 Specific Objectives

The study has four objectives, which sought:

- (i) To explore the methods that local community use on handling solid waste.
- (ii) To assess the awareness of local community involvement in solid waste management.
- (iii) To examine the administrative and supervision system in solid waste management.
- (iv) To identify the challenges facing local community on handling solid waste operation.

1.4 Research Questions

1.4.1 General Research Question

The general research question is that how local community participates in solid waste management?

1.4.2 Specific Research Questions

- (i) What are the methods that local community uses on handling solid waste system?
- (ii) What is the level of awareness of community participation in solid waste management?

- (iii) To what extent the administrative system supported the solid waste management?
- (iv) What are the challenges does the local community face on handling solid waste management?

1.5 Significance of the Study

The study will be useful to the authorities and other stakeholders to monitor and control solid waste disposal into the landfill by designing an effective composting system for better quality compost.

The study will likely improve the livelihood of poor farmers to achieve a sustainable economic development and poverty alleviation by earning the money through selling their productivity and compost produced with a low costs as compared to chemical fertilizer.

The finding of this study will add more knowledge on the existing literature and will act as support for further research on household solid waste management through composting system.

1.6 Scope of the Study

The scope of this study was limited to Zanzibar Urban Municipality and more specific to Stone Town Areas, Mlandege Street and Saateni Street (Shaurimoyo ward). The study focused on how effective the community approach is in the management of solid waste at household and street levels. Specifically, this study wanted to know how the community involvement in solid waste, methods used on handling solid

waste, level of community awareness in solid waste management, supervision and administration in solid waste management and challenges facing stakeholders on improvement of solid waste management in the household and street levels in Zanzibar town areas.

1.7 Organization of the Study

This study involves five chapters, whereas chapter one covers various items including the background of the study on solid waste, the statement of the problem, research objectives, research questions, significance of the study, scope of the study and organization of the study.

Chapter two covers several aspects like conceptual definitions i.e. local community, management, solid waste, then theoretical literature review, next empirical literature review from different studies, research gap and lastly the conceptual and theoretical frameworks that guides study. Chapter three includes research design, area of study which is Zanzibar islands, population of the study, sampling design, sample size, methods of data collection, data collection tools, reliability and validity of data, data analysis and expected research findings. Chapter four consists of data finding, analysis, discussion and presentation. Lastly, chapter five covers summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents conceptual definitions, theoretical literature reviews, and empirical literature, research gap, conceptual framework and theoretical framework.

2.2 Conceptual Definitions

2.2.1 Solid Waste

Solid waste can be defined as unwanted product in solid state derived from various human activities. Such human activities are; domestic, commercial, industrial, agricultural and mineral extraction activities (APO, 2007). According to Watchers, (2004), solid waste is a variety of solid materials as well as contained liquids, which have discarded or rejected as being spoiled or in excess, including, garbage, refuse, yard thrash, lean debris, white goods, special waste, ashes, sludge or other discarded materials. For the purpose of this study solid waste is anything that has been discarded and leading to mis-comfort to community (Buenrostro, 2011, Schmitt, 2003, Hansen, 1998).

2.2.2 Municipal Solid Waste

The US Environmental protection Agency (2008) defines Municipal Solid Waste Management as; the materials traditionally managed by Municipalities, whether by burning, recycling or composting. Based on this study, municipal solid waste (MSW) are those residual materials which consists product packaging, yard trimmings, furniture, clothing, bottles and cans, food, newspapers, appliances, electronics and

batteries which are sources as residential waste (including waste from multi-family housing) and waste from commercial and institutional locations, such as businesses, schools and hospitals (UNHABITAT, 2009).

2.2.3 Community Participation

Njau and Mruma (2004) state that community participation means involving people; men and women in the development process as active participants and not as passive recipients at all levels. Community participation concerns the engagement of individuals and communities in decisions about things that affect their lives. As the term applied in this study, community participation is that way of community member involvement in decision making, but it is our view that everyone should have the opportunity to do so (Danny et al., 2004).

2.2.4 Management

For the purpose of this study, Management is the organizational process that includes strategic planning, setting objectives, managing resources, deploying the human and financial assets needed to achieve objectives, and measuring results (Knowledge Management Terms, 2009). However, Management also includes recording and storing facts and information. Management is a distinct process consisting of planning, organizing, activating and controlling to determine and accomplish the objectives by the use of people and resources (www.managementstudyguide.org).

2.2.5 Waste Management

University of West of England states that ‘waste management is broader than just the disposal of waste. It includes the generation, collection, processing, transport,

minimization of the production, the conceptualizing of waste as an economic resource, mobilizing the communities in the process, and protection of human health and environment (Nyachhyon, 2006). Demirbas (2011) describes waste management as a process by which wastes are gathered, transported and processed before disposal of any remaining residues. Similarly, Tchobanoglous et al. (1993) describe solid waste management as the effective supervision and handling, keeping, collection, conveying, treatment and disposal of waste in a manner that safeguard the environment and the public. In this study, solid waste management utilizes skills and knowledge from various discipline such as legal, financial, administration among others in the day to day running of waste management issues.

2.3 Theoretical Literature Review

In conducting this study various theories were applied and discussed on handling solid waste management like solid waste management theory, waste hierarchy theory and waste management theory.

2.3.1 Solid Waste Management (SWM) Theory

SWM has been identified as a priority area to be addressed as part of the sustainable development plan. Comprehensive SWM systems are being developed with an overall goal of pollution prevention and control and maximization of the waste as a resource (Claivair, 2006). Now SWM is considered as a major public health and environmental concern in urban areas of many developing countries. The situation in Africa is particularly in the capital cities is severe. The public sector in many countries is unable to deliver services effectively, regulation of the private sector is limited, and illegal dumping of domestic and industrial waste is common practice. In general

SWM is given a very low priority in these countries. As a result, very limited funds are provided to the SWM sector by the governments and the levels of services required for protections of public health and the environment are not attained. The problem is most acute at the local government level where the local taxation system is adequately developed and therefore, the financial basis for public services including solid waste management is weak (UNEP, 2005). Due to this SWM requires an integrated approach, and a number of African countries have been implementing integrated solid waste management (ISWM), which refer to the complementary use of a variety of practices to safety and effectively handling. It may include source reduction, recycling, composting, combustion, and land filling.

2.3.2 Waste Hierarchy Theory

The concept of the waste hierarchy is the basis for waste minimization strategies and refers to the 3Rs which are reducing, reuse and recycle. According to (Baud et al, 2004 cited in Gugssa, 2012) a more environmentally friendly and sustainable solid waste management strategies emphasizes on activities in relation to reduction, reuse and recycling. Reduction is aimed at reducing the amount of waste produced by adopting or optimizing the production process of manufacturers and industries.

As a result, natural resources will be saved. Reuse does not involve reprocessing or transforming from one type of material into another. Rather reuse occurs when one material served its original purpose and reused for another purpose rather than being thrown away. Recycling, is all about transforming, or reprocessing of materials that served the original function into new products. Otherwise, those products that served

the original function will be considered as waste. Recycling also involves organic materials for the production of compost (Zhu et al, 2007).

The government and the private sector are responsible for the minimization of wastes by reducing the amount of inputs resources used in production and consumption and recycling to make these inputs more efficient. Both the reuse and recycling of solid wastes can be carried out in the primary and secondary level. The primary level includes all the activities within the household, firms and an institution on the other hand the secondary level includes the materials that have entered the waste stream. At this point the extent of the source separation is an important aspect that determines the level where the recycling and reuse activities are carried out (Baud et al, 2004 cited in Gugssa, 2012).

2.3.3 Collective Action Theory

This theory assumes that, human beings are rational creatures. They can voluntarily participate in social development activities and share resources in order to achieve a common goal (Olson, 1965 in Kyessin, 2002). In reality, people's willingness to cooperate in provision and maintenance of a collective good is not the same. Human beings are rational. They can cooperate for a common interest or behave indifferently. It depends on multiple factors debatable between "cooperation optimists" and "cooperation pessimists" (Dietz et al, 2002). The word cooperation is synonymous to collective action. Collective action optimists refer to social scientists who assume that wherever cooperation is required for the mutual benefit of the group of people, it will naturally occur. Participation optimism originates from orthodox theories prevailing in political science in the 1950s. They postulated that existence of a collective interest

was a sufficient motive for people to take joint action or decision that affect their lives.

This study employed Collective Action Theory to examine the local community participation in solid waste management since the theory recognizes the need for effective provision of such service through organized collective efforts undertaken by local community.

2.3.4 Social Capital Theoretical Approach

This refers to the institutions, relationships, and norms that shape the quality and level of society's social interactions, which make societies or communities, work (Woolcock & Narayan, 2000). It is the just the sum of social institutions which underpin a society; it is the glue that holds them together. Social capital is more about the connections among individuals, social networks and the norms of mutuality and trustworthiness that arise from them (Ecclestone & Field, 2003). In the quest for solid waste management effectiveness, the whole discourse cannot be analyzed in isolation of community participation. Primacy should therefore not be given to the modern approaches, but also to what the community know, think and feel about the whole process. Knowledge, practices, and attitudes form part of their social worlds. Thomas-Hope (1998) postulates that community members are a social capital. Therefore, where a community has accumulated strong levels of social capital, it is possible with regards to environmental issue to reorganize the existing solid waste management system. This approach will bring about a transformation whereby there is a transfer from sole reliance on the public sector for solid waste management to a situation where the household also plays a crucial role.

2.4 Empirical Literature Review

Within the empirical literature review all variables in this study were expressed and discussed on how could handle solid waste management in the World, African and even Tanzania.

2.4.1 Empirical Literature Review Worldwide

International Declaration of the United Nations states that; Environmental Issue is best handled with the participation of all concerned citizens on the relevant level. On a natural basis, each individual should have appropriate access to information concerning the environment that is held by public materials and activities in their communities, and the opportunity to participate indecision making processes. States should facilitate and encourage public awareness and participation by making information widely available Squires. (2006).

Hoornweg and Giannelli (2007) researched on, in the developed world, technological advances included the use of garbage cans and creation of incinerators and sanitary landfills launched and the later replaced the practice of open dumping and has become a common practice. Waste systems took on a more organized approach to waste management, technology, industry, and new policies and regulations imposed on waste helped to dramatically improve the waste management industry. With the passage of the Clean Air Act in the United States in 1970, many early incinerators without air pollution controls were shut down and replaced by modern waste-to-energy plants (Tangri, 2003). Currently, the solid waste industry has employed other technologies, such as recycling and composting to combat our ever-growing waste

issue. Processes of SWM have affected human history in many ways, just as they will continue to do so in the future.

According to Tiwari (2008) mentioned that, in the world effective access to judicial and administrative system proceedings, including redress and remedy should be provided. This laid the basis for the participation planning of SWMPs in SIDS, including the Caribbean. However, public participation in SWM was not well planned or coordinated and at times was in conflict with good environmental management.

Similarly, there has not been a specific, systematic or comprehensive plan for urbanization in Nepal. Thus, it gives the information about preparation of the town plan, establishment of infrastructures, urban services and others but there is no national policy regarding urbanization and managing of the migrants to the urban areas.

Pokhrel and Viraraghavan, (2005) state that, along with rapid population and urban growth rates, problems connected to municipal solid waste are increasing. Burning piles of waste can be seen along roads and river side's. Furthermore, inaccurate depositing of waste occurs along the river banks and even in the rivers, causing hazardous health and environmental problems in-situ as well as downstream.

Therefore managing solid waste is one of the problems, which are the result of unorganized urbanization. Also Hoornweg (2012) took step; a considerable amount of money goes into managing huge volumes of solid waste. Asian countries alone spent

about US\$25 billion on solid waste management per year in the early 1900s. The figure is expected to grow to about US\$50 billion by 2025. These figures suggest that solid waste management (SWM) has become a large, complex and costly service.

Hazra and Goel, (2009). Have been reported that collection, transfer, and transport practices are affected by improper bin Collection Systems, poor route planning, lack of information about collection schedule. Lack of knowledge of treatment systems by Authorities is reported as one factor affecting the treatment of Waste (Chung and Lo, 2008).

2.4.2 Empirical literature Review in Africa

The participation of the community in the production and use of scientific knowledge is considered the best approach to environmental management of waste. Many studies have been conducted in the developed world to evaluate and apply strategies to reduce littering by means of behavioral interventions (Al-Khatib et al., 2009), but in developing countries little has been done.

In addition, the study was conducted to investigate the rate of participation in sustainable waste and environmental management activities in Abuja and study revealed that increase funding, provision of recycling collection points, enforcement of laws and policies, the development of effective policies and regulatory framework amongst others are some of the measures that can encourage public participation in sustainable waste management programs in Abuja (Chung and Lo, 2008).

Similarly, according to Mukisa (2009), there are plans for formal disposal facilities, use of the legal instrument and awareness-raising in Kira town council would be the future opportunities to manage solid waste by the public. Besides, Masheke (2011) identified that the availability of human resources and government-industry partnership are potentials for waste recycling and reuse.

Communities in developing countries often turn to waste disposal methods that have proven to be destructive to human health and the environment, such as open dumping and burning (or unregulated landfills) because they feel they have no other options to manage their solid waste (Mutamo (2005), Al-Khatib et al., 2015; Hilburn, 2015).

A case study conducted in various rural cities in India found that trash was frequently dumped or burned in unregulated areas (Narayana, 2009). Although burning trash is illegal, hundreds of thousands of people with no garbage pickup have no other choice for disposal of their waste. Households in these communities maintain localized trash pits, where waste is deposited daily and burned biweekly. Once the pits become full, the waste remnants are transported to larger pits on the edge of the town (Narayana, 2009).

In the majority of urban centers, solid waste is disposed of by depositing it in low-lying areas outside the city without following the principles of sanitary land filling such as leachate collection and monitoring that make this disposal method unsustainable. In both rural and urban areas, open burning of household waste has become commonplace in areas where collection is limited or non-existence (Narayana, 2009).

As the urban population in Nairobi and elsewhere in East Africa grows, so does the solid-waste management burden, a situation worsened by poor funding for urban sanitation departments and a lack of enforcement of sanitation regulations. At least 100 million people in East Africa lack access to improved sanitation (Troschinetz and Mihelcic, 2009). Without proper controls, solid waste is often dumped in abandoned quarries or similar sites. In Nairobi, for example, municipal waste is taken to the Dandora dumping site, a former quarry. Residents living close to the dumpsite are therefore exposed to environmental and disease risks. The disposal sites are, in most cases, located in environmentally sensitive, low-laying areas such as wetlands, forest edge or adjacent to bodies of water. They often do not have liners, fences, soil covers and compactors as is in most developing countries (Troschinetz and Mihelcic, 2009).

The study conducted in India found that when citizens were exposed to open dumping and burning of waste they developed increased health problems due to the release of dangerous toxins such as dioxins, which are known to cause cancer and other health challenges. Important considerations must be made about the ways we manage waste not just to ensure the health of the environment, but to ensure our own health as well (Narayana, 2009).

Other times people become accustomed to throwing their waste in streets and other inappropriate places, as there had been no formal system for sorting and disposal in their community, so when changes are implemented people are not changing their disposal behavior out of pure habit and custom (Yousif and Scott, 2007). Similarly, a range of socio-economic factors can affect public attitudes toward littering, frequency

of littering, and the effective approaches to impede the littering tendency within an individual (Al-Khatib et al., 2009). These factors are region and culture dependent, and it is very important to study them if an effective littering prevention program is to be designed.

For example, in a study conducted in Cuba looking at the relationship between social norms and pro-environmental behaviors, researchers found that a majority of citizens participated in recycling buybacks and non-littering initiatives, not only because the government supports these efforts for economic reasons, but also because of the social pressure created by the community. Citizens also possess internalized social norms and believe that if they do not adapt their behaviors accordingly, they become outsiders and are looked down on. Also Waste workers are associated to low social status (Vidanaarachchi et al, 2006). And the situation that gives a result low motivation among the Solid Waste employees. Politician's gives low priority to Solid Waste compared to other Municipal activities (Moghadam et al., 2009). Management of Municipal Solid Waste (MSW) presents a major challenge for numerous of Sub-Saharan African cities and towns where speedy growth, social and cultural changes, extensive spread poverty, scarce and weak local governance and limited financial resources every one contribute to upward pollution and waste disposal problems.

Boadi and Kuitunen (2005), observed that in Barbados, there are no containers designated by municipalities or collection companies to "set out" waste for collection. It is up to individual residences to designate some sort of collection containers. Largely, these are plastic barrels or discarded oil drums. Most of municipalities in developing countries typically lack financial and skills needed to cope with solid

waste management crisis. Several countries have realized that the way they manage their solid waste does not satisfy the objectives of sustainable development (Qdais, 2006). However, the majority of households simply place grocery bags full of waste on the street to await collection. Sanitary and efficient waste management must ensure that all and in some cases entire neighborhoods are sited on top of existing landfills. For example, the Smoky Mountain dump in Manila, Philippines had as many as 10 000 families living in shacks on or adjacent to the dump households use some form of corrosion-resistant container with lids in order to facilitate collection.

2.4.3 Empirical literature Review in Tanzania

In Tanzania, community participation has been introduced since 1960s, however much emphasis has been given in late 1990s. Therefore, community participation in development activities has been widespread in the country, yet very little is known on operational strategies, success and challenges of community participation in solid waste management (UN-HABITAT, 2006).

Indeed, the cost of managing solid wastes is quite high and significant proportion of the generated waste is left unattended. There is a need to involve communities in solid waste management. In any case, large proportion of solid waste is generated by communities. Therefore, if well organized and planned, communities can effectively and profitably manage solid waste. The most profitable and sustainable way is composting which can be used for urban agriculture and source of income.

According to Liyala, (2011) stated on the management that; in Tanzania solid waste management has been dealt with public health regulation which includes a joint

command and control approach. Particularly, human existence is dependent on the use of material resources which finally produces wastes. Increase in population and expansion of towns has increases production of solid wastes. Tanzania has experienced rapid expansion of cities which have been accompanied with an increase in economic activities and populations. For example of such cities DSM, Arusha, Mwanza and Mbeya, have adverse activities such as social activities like education, health, trade and business activities. All of these have jointly produced more solid wastes.

Similarly, solid waste management in Tanzania has been highly centralized, using special department which collects wastes using special trucks from the collection points to the dump sites. Yet due to increase in the amount of solid wastes produced, more efforts have been done to decentralize and more involvement of both private and community in the issues of solid waste management. These wastes have diverse sources such as households, commercial areas, industrial activities, hospitals etc. It is noted that the rural area where the poor lives are experiencing higher rates of poor solid waste management due inadequate knowledge and negligence by town health officials who involved in collections of solid wastes.

According to Urban Authorities Support Unit (2006) reported that, the issue of solid waste in Tanzania, especially in urban areas has received low priority during the years. The local authorities lack funds and do not have the necessary equipment and vehicles to carry out a proper service all the way to disposal sites. It is also a problem with unplanned settlements that lack infrastructure and are inaccessible to vehicles.

The lack of service makes residents rely on other methods to disposal their waste, often unethical and detrimental to the environment. In turn, the residents will not pay for the service, making a no service-no payment circle.

Solid waste management problem in most cities and towns in Tanzania relates to handling at source, collection, transportation, disposal, financing as well as capacity of the City and other key players. At the household level there is no mechanism for waste arrangement, which make it difficult to minimize waste through recycling and safe disposal of waste including the hazardous ones (UN-HABITAT, 2006).

Due to the threat posed by solid waste management in urban areas, Tanzania has set National Strategy for Growth and Reduction of Poverty (NSGRP) and health policy. Among many things addressed in NSGRP in urban areas is the target to improve solid waste management. The challenge which is facing most urban areas in Tanzania in solid waste management is the involvement of community and other stakeholders, sensitization of people on solid waste management, financing, and infrastructure for waste management.

2.5 Research Gap

The Literature reveals that, there is no similar kind of study that has been conducted in and outside Tanzania. One of the studies conducted by Boadi and Kuitunen (2005), points out that there has been limited containers designated by Municipalities to set out waste for collection in Urban. The studies conducted give some indications of the perceptions of Community participation in Solid waste management and how

stakeholders influenced by previous knowledge. In this study, Boadi(2005) did not address the issue of provision of collection containers used to store waste prior to pick up in Peri-Urban area to study. In the light of their viewed related literature, the following questions need to be addressed in the context of Solid waste management in Tanzania: Who are responsible in managing solid waste among Stakeholders? What is the importance of Community participation in SWM? To what extent does Community exercise Solid waste management? This study, therefore, attempted to answer these questions in Tanzanian context.

2.6 The Conceptual Framework

Independent variables

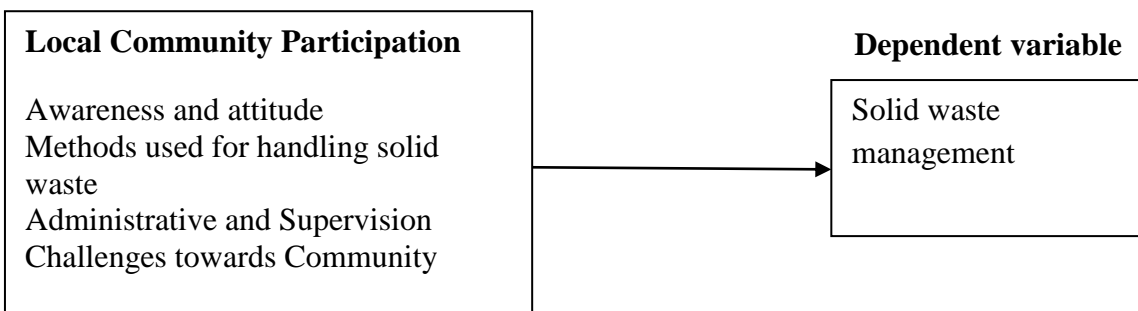


Figure 2.1: Conceptual Framework

Source: Researcher own constructs (2020)

2.7 Theoretical Framework

The conceptual framework is an assembled set of research concepts cum variables together with their logical relationships often represented in the form of diagrams, charts, graphs, pictographs, flowcharts, Organ gram, or mathematical equations (Ndunguru, 2007). It is assumed that if the community is aware on the problem of improper management of the solid waste and their attitude are positive then it will enhance effectiveness of solid waste management. Again, if community participate

effectively on proper methods of solid waste management including keep the solid waste in containers, paying for solid waste collection fee and sending of the solid waste to the collection points timely it will lead to effective solid waste management. Apart from that, if there are effective administration and leadership including good institutional framework, allocation of waste collection points, enforcement of bylaws, coordination, ability to define roles and responsibilities, transparency and conflict resolutions will lead to effective solid waste management.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methodologies to be used in this study. It includes the research design, area of the study, population of the study, sampling design and sample size and methods of data collection, reliability and validity issues, data analysis and expected research findings.

3.2 Research design

Research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. It constitutes the blueprint for the collection, measurements and analysis of data (Kothari, 2004: p 31). This study adopted case study research design, due to the fact that it offers the researcher with an opportunity of doing an in depth examination of the study of the student population as it covers a variety of characteristics ranging from individual to community level. It helped the researcher to get the detailed information and data about the problem of municipal solid waste management in Zanzibar. The case study design is also flexible in data collection and analysis.

3.3 Area of the Study

The area of the study was the Urban West Region of Zanzibar, which is situated in the Urban West Region of Zanzibar. It is located in the southern half of the Zanzibar Archipelago, in the Indian Ocean, about 59 kilometres (37 mi) south of the second

largest island of the archipelago, Pemba. Unguja and mainland Tanzania are separated by the Zanzibar Channel.

Unguja is surrounded by a number of smaller islands and islets, with only two of them, Tumbatu and Uzi, being inhabited. Other minor islands around Unguja include Bawe, Chapwani, Changuu, Chumbe, Kizingo, Kwale, Latham, Mautani, Miwi, Mnemba, MwanawaMwana, Nianembe, Popo, Pungume, and Ukanga.



Figure 3.1: Urban West Region – Geographical Location

Source: Department of Survey and Mapping - Zanzibar, 2017

The choice of this research area is based on two reasons. Firstly, the area is familiar to the researcher. Carrying out the study in this area was to reduce the financial constraints and time management of the researcher. The second reason is that Urban

West Region reported frequently on problem of solid waste. The area is characterized by large number of population compare to the other Regions. The economic activities of the area including tourism and business activities

3.4 Population of the Study

Population refers to a group of individuals who have one or more common characteristics (Kothari, 2004). The study was conducted at Urban West Region of Zanzibar. The region constitutes 45 shehias and covers an area of 1,600 m² with a population 223,033(URT, (2005) The study involved three (3) shehias which are Mlandege with total number 423 of households; Malindi constitutes 654 total numbers of households and Mkunazini ward composed with 649 total numbers of households. The total enrollments of households in three wards are 1,726 plus the number of local leaders is 45 for 45 shehias, market sellers 126 and permanent employee in municipal council is 98 in which the total enrollments is 1,995. The study respondent involved all three shehias which includes households, Local leaders, Market sellers, Municipal Officers and Managing Directors. This type of population has been chosen due to the fact that they gave relevant information concerning the study.

3.5 Sampling Design and Sample Size

3.5.1 Sampling Design

This study employed a descriptive cross- sectional design for the purpose of primary data collection; the respondents in the study were grouped into two categories as follows: (1) Zanzibar Municipal Council personnel with varying responsibilities within the municipal waste management system; (2) Stakeholders from local government such as market sellers, households and ward leaders. The respondents

recruited in this study were purposely selected based on their role and relevance on Municipal Solid Waste Management issues.

3.5.2 Sample Size

The sample of this research is calculated by using Taro Yamane (Yamane, 1993) formula with 95% confidence level.

$$\text{Yamane's formula } n = \frac{n}{1 + e(N)^2}$$

Where n = corrected sample size, N = population size and e = Margin of error(Moe), e 0.005 based on the research condition.

$$\text{Mathematically, } n = \frac{1992}{1 + 1992 (0.01)^2}$$

$$n = \frac{1992}{1 + 1992 \cdot 0.01}$$

$$n = \frac{1992}{1 + 19.92}$$

$$n = \frac{1992}{20.92}$$

$$n = 95$$

By using Yamane's formula, the sample size of this study was 95 respondents

Table 3.1: Sample Size

No	Sample Category	Frequency	Percentage	Sampling Design	Data Collection Tools
1	Managing Directors	3	3%	Purposive	Interviews
2	Households	43	45%	Cluster	Questionnaire
3	Market sellers	15	17%	Cluster	Questionnaire
4	Local Leaders	3	3%	Purposive	Questionnaire
5	Municipal Officials	31	32%	Purposive	Questionnaire
	Total	95	100%		

Source: Field Survey (2020)

3.6 Methods of Data Collection

Several methods were used for data collection, these included questionnaire, interview and physical observation. The aim was to verify information obtained through these instruments based on the objectives of the study.

3.6.1 Secondary Data

Secondary data consists of information that has already been collected for another purpose but which is available for others to use. Secondary source of data is an important source of data when there is limitation of resource, time money and which limits data collection for extensive areas. Secondary source of data can be used in comparison and they can provide the basis for analyses as well (Kothari, 2004). Here, the secondary information was collected through library sources, articles, magazines, published and unpublished research reports, databases, internet etc.

3.6.2 Primary Data

Primary sources are those items that are original to the problem under study' and the effectiveness of these data depends on how appropriate the researcher designs his/her research questions and how he or she interacts with them' (Mugagga, 2006). The primary data for my research was collected in three communities in Zanzibar Urban Municipality who are involved in solid waste management through different projects. The research tools like the observation, household survey, interviews have been used to obtain the information.

3.7 Data Collection Tools

The main instruments used for data collection were questionnaire, interview and direct observation.

3.7.1 Questionnaire

According to Kombo and Tromp (2006) questionnaire is a research tool that is used to collect data from a large number of respondents. This research used both open and closed ended questions in order to achieve the research objective. The logic behind the use of this method includes ensuring confidentiality of information and to save time. Also as a questionnaire is presented in the paper format, there is slight possibility of biasness (Kombo and Tromp, 2006). Most of the questions were closed-ended oriented to which respondents were asked to choose appropriate answers from the list. Moreover, some few questions were structured in open-ended format so as to make respondents flexible to provide their views. The researcher distributed a total number of 92 questionnaires to the households, market sellers, local leaders and municipal officers.

3.7.2 Interviews

Interview refers to oral method of asking questions, the forms of interviews are different from unstructured which is flexible oriented, semi structured which is also flexible and structured which ensures availability of reliable data (Kombo and Tromp, 2006). This method was used specifically for managing directors from the Municipal Council and the responses were clearly written in a note book. The three (3) Directors were interviewed for the purpose of obtaining more clarification and details of the collected data from the respondents.

3.7.3 Direct Observation

Direct observation is commonly used as an exploratory phase typically to seek out what is going on in a specific situation. Observation is also used as a supportive or

supplementary technique to collect data that may complement or set a perspective on data obtained by other means (Robson, 2002). The observation method was conducted to assess the existing types of solid waste generated and solid waste management practices. The participant observation was made where by researcher saw and noted down event of study interest while participating in the activities. The observation was centered on how roles and responsibilities of different stakeholders on solid waste management, sharing of solid waste related information in the local community, mobilization of resources and coordination on solid waste management. Field observation was handled in order to verify and supplement the information collected from the local community.

3.8 Reliability and Validity of Data

Reliability and Validity are two factors used during designing, analyzing and judging the quality of the instruments and data.

3.8.1 Reliability of Data

Reliability is concerned with the consistency of the measuring instrument. Reliability of data is often verified by finding out aspects like who collected data, data sources, methods used to collect data, time used to collect data, whether there is any bias and level of accuracy (Kothari, 2004). In order to ensure reliability, the researcher was employed multiple sources of evidences namely, interviews and questionnaires. Furthermore, prior to going to the field, the instruments were viewed by the researcher's supervisor for advice and recommendation. The suggestions and advices given were helped in improving and make improvements in the research.

3.8.2 Validity of Data

Validity refers to the degree to which the instrument measures what it is intended to measure (Burns & Groove, 2009). To ensure validity of a questionnaire and interview schedule and focus group discussion was guided to construct in such a way that the relevant and crucial themes were obtained. To enhance the validity of the instruments, a pilot study was conducted in order to assess the clarity of the items administered so that if the instruments were found to be inadequate, they were either modified or disregarded completely.

One main problem in Zanzibar town was the restriction of time and the few interviews made. More interviews would have given a broader picture of the waste situation in West Urban. It was also difficult to get official information in forms of documents, regulations and directives in Town areas.

3.9 Data Analysis

According to Kombo and Tromp (2006) data analysis entails an examination of information obtained through a survey or experiment method and making judgment and implication. However, data analysis can also be defined as transformation of raw data in order to obtain valuable information and conclusion.

After the researcher finished data collection process, the filled questionnaires, recorded interviews and observations were reviewed to identify errors and then the data analysis process was started. The content analysis was used to analyze data collected by using interview and observation instrument so as to uncover important themes. The attention was given to repeated themes from the interview. The

descriptive statistics was used to analyze qualitative data from Questionnaire by using Statistical Package for Social Sciences (SPSS), and then the findings were finally presented in the form of tables, charts and narrative statements.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

The purpose of the study was to examine the effectiveness of the community participation in solid waste management at household and street levels in Urban West Region-Zanzibar.

This chapter provides the study findings focusing on specific objectives including introduction, demographic profile of the respondents, methods that community use in handling solid waste awareness of community involvement in solid waste management, the administrative and supervision system in solid waste management and finally challenges that face community in handling solid waste management.

4.2 Characteristics of the Respondents

The data analysis under the characteristics of respondents based on gender, age, and marital status, level of education and residence of the respondents are presented in the table 4.1.

4.2.1 Gender of the Respondents

The researcher examined the views of the community members where a total number of 95 respondents gave their opinions through the questionnaires during the exercise of data collection. The researcher was interested to find out if gender aspect has any influence in solid waste management at household and street levels. The data indicates that majority (57%) of respondents in this study was female and (43%) were male.

This indicates that females are highly engaging in solid waste management in the household and in the street compared to males.

Table 4.1: Characteristics of the Respondents

Variables (n=95)		Frequency	Percent
Gender	Male	41	43%
	Female	54	57%
Total		95	100
Age category	18-30	14	14.7%
	31-40	30	31.6%
	41-50	38	40%
	51 and above	13	13.7%
Total		95	100
Marital status	Single	20	21%
	Married	60	63%
	Widow	6	6.3%
	Separate/ divorced	9	9.5%
Total		95	100
Education	Not attended school	6	6.3%
	Primary education	32	33.7%
	Secondary education	39	41%
	Higher education	18	18.9%
Total		95	100
Duration of Residence	Less than 1 year	4	4.2%
	1-3 years	15	15.8%
	4-6 years	14	14.7%
	More than 6 years	62	65.3%
Total		95	100

Source: Field Survey (2020)

4.2.2 Age Categories of the Respondents

Age is an important demographic variable and is a primary basis of demographic classification in vital statistics, censuses and surveys (URT, 2005). The study in this area seeks to know participation in community activities. The results show that majority of respondents in the study area were matured (adults) aged from 30 years and above and the mean age are 26 years. The result in table 4.1 shows that, 14

(14.7%) respondents were of age 18-30, 30 (31.6%) were of 30-40, 38(40.0%) were of age 40-50 and 13 (13.7%) were at the age of above 50. This reveals that country have more potential labor contribution in environmental conservation and other social communal activities such as solid waste management. These suggest that the study sample had people between 18 and 50 and above which means that both youth and adults were involved in the study.

4.2.3 Marital Status of the Respondents

The investigation under this area was considered to determine if marital status has any influence in community involvement in solid waste management. The data reveals that majority of the respondents (63.1) were married while (21.1%) were single respondents. Moreover, the data showed that (6.3%) of respondents were widow and the rest (9.5%) were separate. The result indicates that married ones exceeded the single nearly three times in influencing solid waste management in the study area. However, marital has nothing to do with solid waste management since that all people are generating waste. The results are further show that most of the female respondents who are married are housewives and are the ones who are handling solid waste at their household.

4.2.4 Education Level of the Respondents

Education is always valued as a means of deliverance from ignorance and enables one to perform effectively to any given task within a specified period (Kasanga, 2005). The study in this area wanted to find the respondents levels of education so as to know the understanding capacity in relation to the management of wastes. The results show that 32 (33.6%) respondents attained primary education, 39(41%) secondary

education, 18 (18.9%) respondents higher learning education and 6(6.3%) who did not go to school. This finding implies fact that 93.7% of respondents have basic primary education and above most of the respondents had gone to school.

This means that if education about solid waste management and the need to participate in managing them were provided to the effectively since that education is widely accepted as a room in social construction to form better community institutions and active participation in local initiatives.

4.2.5 Duration of Residence

The researcher in this area are interested to know if the residential stay period of the respondents gives the insight on the involving the community in solid waste management. The result shows that 62 (65.3%) respondents had stayed in their areas for more than six years, 14 (14.7%) had stayed for four to six years, 15(15.8%) respondents had stayed for one to three years 4(4.2%) had stayed less than one year. This indicates that the majority of the respondents 62 (65.3%) were those stayed in their residential areas for more than six years. These can provide the information on the community approach in the management of solid waste in comparison to the time when they were not directly involved.

4.3 Methods that Local Community use on Handling Solid Waste Management

4.3.1 Existence of Storage Facilities in the Households

The researcher asked the respondents on whether the households have storage facilities for solid waste, the response from questionnaires indicated that majority of

respondents 65 (70.6%) have storage facilities in their house while 27 (29.4%) respondents don't have the storage facilities in their house. This finding shows that community is interested to participate on solid waste management but the problem is low level of awareness and ineffective management by the municipal council. The data is illustrated in the Table 4.2.

Table 4.2: Existence of Storage Facilities in the Households

Storage facilities	Frequency	Percent
Yes	65	70.6
No	27	29.4
Total	92	100

Source: Field Data (2020)

4.3.2 Types of Storage facilities

The researcher intended to know the type of storage facilities used by respondents, the findings from questionnaire indicated that majority of respondents 35 (38%) use basket or carton container, the 27 (29.2%) respondents use metal or plastic container while respondents 18 (19.5%) use plastic bags and respondents 12 (13%) use concrete containers. This portrays that the high number of respondents are still use baskets for storing SW, this facility is environmental friendly but there is a need to enhance the usage of these storage facilities.

Table 4.3: Types of Storage Facilities

Types of Storage facilities	Frequency	Percent
Metal or plastic container	27	29.2
Concrete (immovable) container	12	13
Basket or carton container	35	38
Plastic bags	18	19.5
Total	92	100

Source: Field Data (2020)

4.3.3 Ways of Solid Waste Disposal

Researcher intended to identify ways for solid waste disposal because it was also crucial for proper solid management. The findings indicated that majority of respondents 60 (65.3%) were use land filling as a way of solid waste disposal, 20 (21.7%) respondents were re-use the solid waste, 12 (13%) respondents were practice separation and recycling and none of the respondents were using incineration method.

Table 4.4: Ways of Solid Waste Disposal

Ways of solid waste management	Frequency	Percentage
Land filling	60	65.2
Separation and recycling	12	13
Incineration	0	0
Re-use of solid waste	20	21.7
Total	92	100

Source: Field Data (2020)

4.3.3.1 Land Filling

Based on the response above, then researcher was interested to find out reason from respondents on using land filling for waste disposal. The study participants explained that they use land filling as a method of handling solid waste.

“This method is appropriate for maintaining land reclamation, since our disposal area has been characterized with degradation from sand excavators”.

Said one participant from Saateni village. This statement was also supported by interviewed Directors from Department of Environment that majority of the people

within community are aware of solid waste disposal since the government was strict on solid waste management.

“We have daily monitoring activities to look at disposal process made by some businessmen and households”. These activities enabled us to understand the extent of awareness that community have toward waste disposal in relation to environmental protection. Majority of people are now selective of the disposal methods and disposal area. They look on the area with holes and filling them with solid waste”. Director added.

However, findings indicated that these sites are not properly designed and there is the problem of the vicinity to the residence, which is significantly public concern due to environmental nuisance, bad odor, presence of flies and rodents, and stray animals. Surrounding residents claimed that dumping should not be located to nearby them as they are the most victims suffering from dirty brought by sites.

4.3.3.2 Separation and Recycling

The separation and recycling disposal methods was also selected by participants as proper ways for solid disposal. Although, based on the response indicated from above table, few people uses this method. The question however was why people use this method to dispose solid waste. One managing Director from ZMC said:

“This kind of method is worth. Many people use separation and recycling as a method of handling solid waste management for the purpose of getting their self-employment together with earning the income. For, example they sell 100 bottles by 3,000 Tsh. This is enough money for their day needs specifically for young with no family”.

However, the study revealed that, there is no source separation of waste done in the municipality at any step of the management process. Thus, the waste collected is a mixed waste of different characteristics and handled altogether to the final disposal at the open landfills/dumping sites. They also do not conduct any recycling activity, but

there are local recycling agencies existing in small scale dealers such as Zanrec plastics Ltd. The data in 2010 to 2011 indicated 8.8% of materials were recyclable specifically metals and plastic bottles (ZUM, 2013).

Due to limitations on penetration of markets to these agencies, the activity just goes up and down. Recovering activities is also hindered by the negative public attitude believing that scavenging of recyclables is condemned by poverty.

4.3.3.3 Incineration

This response was obtained through interview with directors from Mnazimmoja hospital. This question was interested to understand the common method used by Mnazimmoja hospital for solid waste disposal. The Director said that incineration is among the prominent methods that use on handling waste. Thus, the researcher observed that incineration does not practice totally in the hospital because incineration needs controlled conditions and usually take place in enclosed structure. This is why Mnazimmoja hospital rarely use this method.

The Directors commented:

“We keep special intention on solid waste disposal. Few times we use incinerator but mostly we use skip buckets in place for collecting waste one for domestic waste and other for hospital waste after the skip buckets full, we transport into the collection points that is the Municipality come to take domestic waste for thrown at Kibele and the remaining incinerate ourselves”.

This shows that burning of chemical waste in hospital need much attention and controlling with the assistance and supervision of hospital administration. This will bring into positive attitudes for community. In order to have a continuing burning

chemical waste in hospital the government should prepare a special building for generating incineration process so as to avoid the community affect with dangerous diseases from chemicals. Meidiana, (2010) insisted that, burning of wastes should be under controlled conditions, usually carried out in enclosed structure. Incineration may include energy recovery.

4.3.3.4 Re-use of Solid Waste

The participants in this study expressed that re-use as one of a method of handling solid waste. The participants explained that they use this method with the purpose of increase their income and employ themselves. Re-use of the products is done at individual level and mainly plastics. Recycling activity is low and operated informally and the scavengers are the main agency who salvages the valuable materials from waste either from collection containers or dumpsites.

The finding shows that there is no intensive recycling undertaken by these informal agencies, the only thing practiced is just shredding of the recyclable materials collected to reduce size, balled and shipped to Mainland for processing. Manually sorting of the recyclable is usually carried out by scavengers from collection points or by rag pickers at the dumping sites immediately after spreading of a layer of waste.

This work is done in unhygienic conditions and these sorters are vulnerable to pathogenic infections. Although these informal sectors are playing their role in waste management, their sustainability remains a question due to financial constraints, lack of support and motivation, fall of market from manufacturers and prevailing negative public attitude about scavenging of waste.

In low income peri-urban areas resource recovery begins with re-use of plastic bags, bottles, papers and cardboard products. This saves energy and water, reduces pollution and lessens society's consumption of natural resources compared to use of virgin materials. This shows that the re-use of products for community is a method of handling solid waste management in which the community can be benefited for earning their income and reduces the waste in open dumpsites. Thus, in order for youths to continue with such activities the government should support for given them loans and motivation.

4.3.4 Existence of Communal Collection Points

The communal collection points are one among the method of SWM; the researcher asked the respondents on whether they have communal collection points. The findings show that majority of community members 62 (67.3%) responded that there are communal collection points in their street, while respondents 30 (32.6%) said there are no communal collection points in their street. Thus, the findings indicated that the communal collection points are existing but the main concern is attitudes of community members on SWM. The data is illustrated in the Table 4.5.

Table 4.5: Existence of Communal Collection Points

Communal collection points	Frequency	Percent
Yes	62	67.3
No	30	32.6
Total	92	100

Source: Field Data (2020)

4.3.5 Separation of Solid and Organic

Separation of solid and organic waste is among the methods used in SWM, the researcher wanted to know if this method is practiced by community. The findings indicated that majority of respondents 85 (92.3%) don't separate solid waste, while respondents 7 (7.6%) said they separate solid and organic waste. From this finding there is a need of awareness for community on separation of solid and organic waste in order to effectively manage waste in the community. The data is illustrated in the Table 4.6.

Table 4.6: Separation of Solid and Organic

Separation of solid and organic	Frequency	Percent
Yes	7	7.6
No	85	92.3
Total	92	100

Source: Field Data (2020)

4.4 Awareness of Local Community Involvement in Solid Waste Management

Awareness is a key factor for effective participation and successful implementation of community activities. According to Taneja (2006) suggest that lack of awareness is one of the barriers to effective community participation. The results in Table 8 demonstrated that about 78% of the respondents is not aware on solid waste management. They are belief that SWM only implies collection and disposal of the wastes by municipal authorities. The results are reliable to the observations from the focus group discussions, which indicated that most members of the community see SWM to be the responsibility of Local government. A proportion of respondents

(21.7%) are aware of SWM simply understand SWM as disposal in open and undesignated places such as water streams, market places and roadsides. Unfortunately, most of the community members do not adequately aware and lowly participate in SWM due to reasons such as perception that it is largely a responsibility of local authorities and lack of appropriate by-laws enforcement and even enforcement of the existing by-laws. The data is illustrated on Table 4.7.

Table 4.7: Awareness on Solid Waste Management

Awareness	Frequency	Percent
Aware	72	78.2
Unaware	20	21.7
Total	92	100

Source: Field Data (2020)

4.4.1 Sources of Information to the Community on Solid Waste Management

Respondents were asked how they became aware of SWM. The findings indicate that the majority 63 (68.4%) of the respondents became aware through campaigns by Ward Development Committee, 20 (21.7%) respondents got awareness from fellow community members, 9 (9.7%) respondents familiarized themselves through their own initiatives and 3 (3.2%) respondents became aware through workshop, seminars, training and guidelines. The data is illustrated in the table 9. This implies that there are efforts to sensitize the community members about the importance of solid waste management in most of urban and peri-urban areas but the attitude of community is not favorable. It would appear that environmental issues such as SWM are largely left to Ward development committees.

Table 4.8: Sources of Awareness on Solid Waste Management

Means of awareness	Frequency	Percentage
Ward development committee campaigns	63	68.4
Fellow community members	20	21.7
Own initiatives	6	6.5
Workshop, seminars, training and guidelines	3	3.2
Total	92	100%

Source: Field Data (2020)

4.4.2 Community Participation on Solid Waste Management

The understanding of community participation in solid waste management by households is central in achieving sustainable solid waste management through collective action. The study examined household contribution on solid waste management. The findings indicated that majority of respondents 32 (34.7%) contributed cash during management of solid waste, respondents 28 (30%) provided cash and/or kind contributed, respondents 25 (27%) provided labour contribution and only 7 (7.6%) respondents provided material contribution. The data is illustrated in the Table 4.9.

Table 4.9: Types of Contribution During Management of Solid Waste

Types of contribution	Frequency	Percentage
Cash contribution	32	34.7
Labour contribution	25	27
Cash and in-kind contribution	28	30
Material contribution	7	7.6
Total	92	100%

Source: Field Data (2020)

4.4.3 Community Attitude towards Participation on Solid Waste Management

There is generally unfavourable attitude towards community participation in Solid waste management by (45.6%), these respondents pay little or no attention to how and where are solid waste are disposed. While 31.4% responds they had favourable attitude to solid waste management or when a community effort is going on. The (23%) respondents are neutral. This implies that to achieve effective community participation in solid waste management, efforts should be channelled at the attitudes of the community especially through vigorous awareness. the data is illustrated in the Table 4.10.

Table 4.10: Community Attitudes on SWM

Attitude on SWM	Frequency	Percent
Unfavorable	42	45.6
Neutral	21	23
Favorable	29	31.4
Total	92	100

Source: Field Data (2020)

4.4.4 Community Participation towards Solid Waste Management

Naturally, each individual has appropriate access to information concerning the environment that is held by public materials and activities in their communities, and the opportunity to participate in decision making processes. Thus, the municipal responsibility is to organize and manage the public sanitation system, including providing the infrastructure for the collection, transportation, treatment and disposal of wastes. The director commented:

“Usually communities have tendency of attending meetings to discuss environmental issues but those community members do not adequately participate in SWM due to the perception that it is largely a responsibility of local government authorities.”

4.4.5 Collection of Solid Waste

The researcher observed that the collection of solid waste is done by the community using plastic sacks in their residents out of stone town. Zanzibar Urban Municipal (ZUM) under Sewerage, Drainage and Solid Waste Division is a major player of the waste management in the municipality. However, in some other parts of residential areas such as Saateni, Mlandege and Kikwajuni, informal groups in the community are also engaged in collection process including waste pickers who find economic benefit from waste.

Municipality utilizes primary collection system through door to door and curbside collection where the waste is directly collected from the generator to the collection point mainly large skip, as well as secondary collection from shared communal containers (metal skips) and slabs to the final disposal points. MSW is collected by ZUM employees during morning by either door to door usually at household level and mostly in Stone town Zone or curbside collection operating at shops, markets, institutions where municipal collection workers walk around street alleys to empty the storage containers into pushcart and removed into large collection containers (metal skips) which finally unloaded by trucks to the dumping site.

The municipality use shared containers (communal bins) in most residential areas outside Stone Town. For residential areas, the collection frequency varies from daily in Stone Town (the main city in Zanzibar) to two times and once a week in other

residential areas such as Shangani and Malindi where the shared containers are used as a collection point.

In addition, uncontrolled proliferation of settlements and absence of paved roads in most parts of municipality is one of the factors that hinder this process because it reduces accessibility. As a result, some residential areas such as Amani Kwa Wazee are not reached by the collection services. Equipment used for primary collection include wheel barrow and handcarts/push carts.

The study also revealed that the problems of scavengers hamper the collection process in the containers as they are salvaging for recyclables and scattering the waste around the containers creating unaesthetic environment. Scavengers are mostly children between the age of 6 to 15 years, and drug abusers. It is normally practice to the waste pickers in residential areas where no particular collection service is provided such as Karakana, Chumbuni and Makadara, to place the collected waste at open piles or randomly dumping the waste within neighborhoods. This creates a potential to pathogenic organisms from accumulation of wastes in their localities.

These results are in line with many findings obtained in the previous studies where door to door services has been found convenient to the rich neighborhoods who afford to pay, otherwise the use of communal collection points was preferred. Whenever, services is missing, residence opt to dispose the waste in unauthorized places such as drains and gullies, burning of waste, burying in the yards which results breeding sites for disease vectors and flooding due to blockage of storm water channels which stands the public health risks.

4.4.6 Transportation of Solid Waste

The study revealed that transportation of MSW to the dumping sites is carried out by municipality using vehicles such as trucks, skips and compactors all of which are used to load the waste from secondary collection points, i.e. large skip containers and open slabs. Open trucks and compactor used for open slabs and skip trucks are the one used for loading skips.

However, the observation findings showed that the transportation capacity is still inadequate, with the exception to the compactors which have been purchased recently under World Bank support, many of these vehicles are more than 10 years of age and not in good condition where in some cases, they face frequent breakdown and makes the waste condition in collection point worse.

4.4.7 Final Disposal

The researcher investigated that, at present there is no permanent landfill operated in the municipality since the closure of the Jumbi central dumping site. The study showed that, the municipal waste is disposed in the open dumping by the community and municipality without any form of treatment after collection. Normally sand quarries areas are used as disposal site by municipal with the purpose of maintaining land reclamation.

Field observation showed that these sites are not properly designed and there is the problem of the vicinity to the residence, which is significantly public concern due to environmental nuisance, bad odor, presence of flies and rodents, and stray animals. Surrounding residents claimed that dumping should not be located to nearby them as they are the most victims suffering from dirty brought by sites.

4.4.8 Community Attitudes Towards Participation

The researcher assessed the community attitudes towards participation on solid waste; the following statements were developed to capture the attitude of community members. The data are illustrated in the Table 4.11.

Table 4.11: Community Attitude Towards Participation

Attitudinal statements	Strongly disagreed		Disagree		Undecided		Agree		Strongly agree		Total	
	F	P	F	P	F	P	F	P	F	P	F	P
Community awareness and education alone can't improve community participation	5	5.4	15	16.3	2	2	30	32.6	40	43.4	92	100
Participation through cash and/or in kind is necessary because city council has no enough funds	5	5.4	12	13	5	5.4	38	41.3	32	34.7	92	100
Solid waste management is not of immediate priority	40	43.4	30	32.6	3	3.2	10	10.8	9	9.7	92	100
Participation in solid waste management is not time consuming to the community	32	34.7	28	30.4	2	2	30	32.6	5	5.4	92	100
Usually communities have tendency of attending meetings to discuss environmental issues	50	54.3	30	32.6	2	2	8	8.6	2	2	92	100
Communities do participate fully in the contribution of cash and/or in kind for solid waste service	30	32.6	28	30.4	2	2	20	21.7	12	13	92	100
Community sometime don't contribute their views when meetings are conducted	13	14	37	40.2	20	21.7	10	10.8	2	2	92	100
Communities have adequate knowledge about solid waste collection, storage, separation and disposal	30	32.6	35	38	7	7.6	10	10.8	10	10.8	92	100
Solid waste service should not be paid for	2	2	20	21.7	0	0	30	32.6	40	43.4	92	100
Leaders don't influence residents to participate in solid waste management activities	2	2	10	10.8	10	10.8	28	30.4	42	45.6	92	100
Workload does not lead to poor community participation in development activities	15	16.3	15	16.3	2	2	33	35.8	27	29.3	92	100

Source: Field Data (2020)

4.4.9 Community Awareness and Education alone can't Improve Community Participation

The findings from questionnaire revealed that majority of respondents 40 (43.4%) are strongly agree that Community awareness and education alone can't improve community participation, followed by 30 (32.6%) respondents who agree, respondents 15 (16.3%) disagree, 5 (5.4%) respondents were strongly disagree and only 2 (2%) were undecided.

The results reveals that 76 percent of the respondents agreed that community awareness and education alone cannot improve community participation, this means education and awareness alone are not enough means to use in enforcement of solid waste management in west urban area, and there should be other methods in compliment with education and awareness.

4.4.10 Participation through Cash and/or in Kind Is Necessary because City Council has no Enough Funds

The findings from questionnaire revealed that majority of respondents 38 (41%) are strong agree that participation through cash and/or in kind is necessary because city council has no enough funds, followed by 32 (34.7%) respondents who agree, respondents 12 (13%) were disagree, 5 (5.4%) respondents were strongly disagree and only 5 (5.4%) respondents were undecided. Therefore, from this finding community have attitude that participation through cash and/or in kind is necessary. Since it sensitize the community towards participating and contributing to reduce the burden of managing solid waste.

The result shows that 75.7 percent of the respondents agree that participation through cash and/or in kind is necessary; this means that at least 75 of the community asked agreed to pay or to contribute in kind to help the Zanzibar Urban municipality in solid waste management.

4.4.11 Solid Waste Management is not of Immediate Priority

The findings from questionnaire revealed that majority of respondents 40 (43.4%) were strongly disagree that solid waste management is not of immediate priority, followed by 30 (32.6%) respondents who disagree, respondents 10 (10.8%) were agree, 9 (9.7%) respondents were strongly agree and only 3 (3.2%) respondents were undecided. Therefore, from this finding community have attitude that the issue of solid waste management is of immediate priority.

The result shows that, 76 percent of the respondents found solid waste management to be a priority to the municipality, while 20.5 percent of the respondents agree that solid waste management is not an immediate priority.

4.4.12 Participation in Solid Waste Management is not Time Consuming to the Community

The findings revealed that majority of respondents 32 (34.7%) were strongly disagree that participation in solid waste management is not consuming to the community, followed by 30 (32.6%) respondents who disagree, respondents 28 (30.4%) were agree, 5 (5.5%) respondents were strongly agree and only 2 (2%) respondents were undecided. Therefore, from this finding community have attitude that the issue of solid waste management is time consuming time.

The result shows that, majority 67.3 percent of the respondents found participation in solid waste management not to be time consuming to the community. They value participation in a solid waste management as a contribution to the community environment.

4.4.13 Usually Communities have Tendency of Attending Meetings to Discuss Environmental Issues

The findings revealed that majority of respondents 50 (54.3%) were strongly disagree that they have tendency of attending meetings to discuss environmental issues, followed by 30 (32.6%) respondents who disagree, respondents 8 (8.6%) were agree, 2 (2%) respondents were strongly agree and 2 (2%) respondents were undecided. Therefore, from this finding community don't have tendency of attending meetings to discuss environmental issues.

The result reveals that 10.6 percent of the respondents usually have tendency of attending meetings to discuss environmental issues, while 86.9 have no tendency of attending such meetings, this results means most of people in the West urban area in Zanzibar do not attend community meetings to discuss environmental issues.

4.4.14 Communities do Participate fully in the Contribution of Cash and/or in kind for Solid Waste Service

The findings revealed that majority of respondents 30 (32.6%) were strongly disagree that community do participate fully in the contribution of cash and/or in kind for solid waste service, followed by 28 (30.4%) respondents who are disagree, respondents 20

(21.7%) were agree, 12 (13%) respondents were strongly agree and 2 (2%) respondents were undecided.

This result revealed that 34.7 agreed that community participate fully in contribution of cash and/ or in kind for solid waste service, while 63 percent do not participate fully in contribution of cash and/ or in kind for solid waste service, this results means that more than 63 percent of the people in the community are not ready to participate fully in the contribution of cash and/or in kind for solid waste service.

4.4.15 Community Sometime don't Contribute their Views when Meetings are Conducted

The findings revealed that majority of respondents 37 (40.2%) were disagree that community sometime don't contribute their views when meetings are conducted, followed by 20 (21.7%) respondents were undecided, respondents 13 (14%) were strongly disagree, 10 (10.8%) respondents were agreed and only 2 (2%) respondents were strongly agree.

The result shows that 12.8 agreed that community sometimes do not contribute their views when meeting are conducted, while 54.2 percent disagreed. This means that more than 54 percent of the people in the urban area contribute their views when the meeting are conducted.

4.4.16 Communities have Adequate Knowledge about Solid Waste Collection, Storage, Separation and Disposal

The findings revealed that majority of respondents 35 (38%) disagree that communities have adequate knowledge about solid waste collection, storage,

separation and disposal, followed by 30 (32.6%) respondents who strongly disagree, respondents 10 (10.8%) were agree, 10 (10.8%) respondents were strongly agree and only 7 (7.6%) respondents were undecided.

The result 70.6 percent of the respondents do not agree to have adequate knowledge about solid waste collection, storage, separation and disposal while 21.6 agreed to have knowledge. Therefore, more than 70 percent of the communities do not have adequate knowledge about solid waste collection, storage, separation and disposal.

4.4.17 Solid Waste Service should not be Paid for

The findings revealed that majority of respondents 40 (43.4%) were strongly agree that solid waste service should not be paid for, followed by 30 (32.6%) respondents who agree, respondents 20 (21.7%) were disagree, 2 (2%) respondents were strongly disagree and none of respondents were undecided.

The data reveals that 76 percent of the respondents want solid waste services to offer for free of charge, while 23.7 percent wants the solid waste service to be paid. Therefore, from this majority of community declared that solid waste service should not be paid for.

4.4.18 Leaders Don't Influence Residents to Participate in Solid Waste Management Activities

The findings revealed that majority of respondents 42 (45.6%) were strongly agree that leaders don't influence residents to participate in solid waste management activities, followed by 28 (30.4%) respondents who agree, respondents 10 (10.8%)

were disagree, 10 (10.8%) respondents were undecided and only 2 (2%) respondents were strongly disagree. Therefore, from these findings leaders don't influence residents to participate in solid waste management activities.

The results shows that 76 percent of the respondents agree that leaders do not influence residents to participate in solid waste management activities while 12.8 shows that the leaders influence residents to participate. Therefore more than 76 percents of the leaders in urban west do not influence their residents in the management of solid waste activities.

4.4.19 Workload does not lead to Poor Community Participation in Development Activities

The findings revealed that majority of respondents 33 (35.8%) were agree workload does not lead to poor community participation in development activities, followed by 27 (29.3%) respondents who strongly agree, respondents 15 (16.3%) were disagree, 15 (16.3%) respondents were strongly disagree and only 2 (2%) respondents were undecided.

Therefore, from this finding community have attitude that workload does not lead to poor community participation in development activities. The result indicate that 65.1 of the respondents believed that workload does not lead to poor community participation in development activities, while 32.6 of the respondents agreed that workload lead to poor community participation in development activities. Therefore more than 65 percent of the people in urban west agree that workload does not lead to poor community participation in development activities

4.5 Administrative and Supervision System in Solid Waste Management

The municipal authority has to supervise and reinforce municipal solid waste management activities according to existing policy and public health laws. It has to communicate with ward leadership as part of the municipal Government. Moreover, the municipal authority has to collect and transfer solid waste from Secondary collective points to the municipal dumpsite for final disposal. The assumption is that if the Community and Municipality do extremely well their responsibilities efficiently sustainable solid waste management can be realized.

4.5.1 Organization of Different Containers for Solid Waste Storage

This study investigated various issues related to solid municipal waste container organization in community areas of sampled wards. It requires different types of solid waste to be collected and temporarily stored in standardized containers of verifying sizes for primary and secondary storages. Alternatively, special waste collection plastic sacks of verifying capacities between 71 and 92 litres are used. Otherwise, paper sacks of similar capacity designed with an open top and cover can serve the same purpose.

Secondary solid waste containers offer are large containers. They are different standardized facilities usually located at transfer stations. Their heavy load and bulkiness necessitate being located at the transfer station for ease of transferring and emptying as the dumpsite, they are hauled by special vehicles. The need, simplicity and location of large containers are hereby emphasized. Where a large number of residents use communal containers, mechanical means of emptying should be provided. They should be put at a central place which is not too far near or too near to

the residential houses. Returning to solid waste storage in the study area, findings based on perceptions and practices in this respect are hereby presented. They were accompanied by respondents' explanations and observations made during the fieldwork.

4.5.2 Distribution of Skip Buckets in the Community Areas

The researcher interviewed a municipal official on availability and distribution of skip buckets to community areas. He stated that there was a shortage of skip buckets caused by financial strains' facing the ZUM. In addition, he said that the Zanzibar Urban Municipality had only 1 working skip bucket carrying facility hence, poor planning on the first place.

Municipal financial situation worsened when CBO's contracted in solid waste collection service failed to pay the ZUM for using its skip buckets. The Municipal authority retaliated by not issuing skip buckets to community, which failed to pay the charge. As a result, much solid wastes remained uncollected polluting the urban environment. This case was observed in the street of Miembeni, Shaurimoyo , Amani kwaWazee and Michenzani.

The failure of CBO's to pay the skip bucket charges had two consequences. Firstly, the Zanzibar Urban Municipal withdrew the skip buckets from hundreds of households. In fact, the Zanzibar Urban Municipal punished itself, it often returned as intervener carrying out costly anti - epidemic diseases crisis campaigns due to the dirty environment.

Secondly, by withdrawing skip buckets from communities which failed to pay the charge, the Zanzibar Urban Municipality severed one of its potential resource /

revenue sources. This weakened the municipality's purchasing power to more skip buckets to meet the growing demand. Skip buckets were conditionally distributed by the Zanzibar Urban Municipal (ZUM) to community areas.

4.5.3 Solid Waste Collection Schedule

This study examined the Zanzibar Urban Municipal (ZUM) organization of solid waste transportation and accompanied solid waste collection schedule in the study area. This finding was delivered from interview with Director of Zanzibar Municipality Council. The findings from Director show that ZUM drew its solid waste collection schedule alone. It prepared the schedule according to its limited resources. The implementation of the solid waste schedule became difficult to enforce due to various technical and social economic problems.

“Technically lack of a joint waste collection schedule broke the link with households and the solid waste collectors (CBO's). This was resulted in overstayed uncollected piles of solid waste at secondary collection points”. Said ZUM Director.



Figure 4.1: Overstayed Uncollected Piles of Solid Waste at Secondary Collection Point

Source: Field Data (2020)

This was Zanzibar Urban Municipal (ZUM) failure to cope with its own municipal solid waste collection schedule (see figure 3). The study observed further, the ZUM's solid waste collection schedules was a symbol of poor coordination among solid waste collectors ending in uncollected solid wastes crisis at secondary collection points.

4.5.4 Bylaws for the CBOs Engaged in Solid Waste Management

The researcher observed that the Zanzibar Urban Municipal enacted a bylaw effecting the formation of Community Based Organization (CBOs) in wards. Registered Community groups acquired a legal recognition to propose for municipal contracts for solid waste service provision in wards. They were empowered to collect solid waste services user's charges directly from households. Ward executive officers were directed to recognize the CBOs role and oversee their selection and performance in the streets. During the interview with CBOs members on the recognition of the Organization the members said that:

“Residents in the various areas especially out of town center were disvalue and regret them by not participate with solid waste management in their wards”.

Good example in stone town areas there are some residents were not willing to pay solid waste service charges towards CBOs and say the collection of service charge is a duty of municipality and not otherwise. Mutano (2005) commented that as organizational guideline for community involvement in solid waste management required legal mandate to make its function.

4.5.5 Carelessness in legal Action against Defaulters of Solid Waste

Management Legislation

According to researcher observation, the Zanzibar Urban Municipal (ZUM) fixed different solid waste management services rates using by laws in a non-participatory

manner, the rates did not consider the income differentiation across residents as a result, many of CBOs failed to pay the charge due to the financial constraints facing them.

It placed the ZUM in a tight financial position however, it failed to enforce it's by law against outlaws. It breached its own by law which states "to take legal measures against those who default the set arrangement for the sustainable environmental cleanliness strategy" MUTAMO (2005).

Therefore, the ZUM had to receive partial or no payment from skip bucket service users. This delayed the process of purchasing new skip bucket until gradual accumulation of revenue. Rapid generation of solid wastes by the fast increasing population in urban settlements continued to shock. It reached a stage where the limited skip buckets were overtaxed giving way to illegal dumping practices in the community area.

Negligence to take legal measures against widespread disgusting mismanaged solid wastes at secondary waste collection stations. For example in the areas of Michenzani and Kiponda , the author noted with concerned a municipal warning notice surrounded by a pile of solid wastes near an overtaxed skip buckets it read.

"Weka mjimkongwesafi(Keep stone town clean) also Usitupe taka hapa (Don't throw refuse here)"

This strong worded notice in the middle of solid waste crisis didn't make sense. It raised the question" the municipal authority punish itself for flouting its role of emptying solid waste filled up skip bucket timely? It epitomized elite's failure to

enforce their own by laws. As an impact, it taught households and other stakeholders to disobey public health regulations. Perhaps it contributed to municipal authority's failure to punish widespread illegal dumping practices done by its residents.

4.5.6 Supervision of Sustainable Environmental Cleanliness in all Wards

During observation, the researcher observed that in various settlements skip buckets are full with solid wastes that endanger the human lives as figure 3 shows. The Zanzibar Urban Municipal supposed to empty them at the municipal solid waste dumpsites according to Mutano (2005). But they were not emptied for several weeks in the sampled wards.

The study sought explanations on the matters from the municipal officials. It didn't get a satisfactory explanation why the municipal skip buckets were emptied as scheduled. Failure of the municipality to empty filled skip buckets timely contributed to haphazard throwing of solid waste on the ground is shown by figure 3. It shows a mountain of solid waste, which pollutes the environment in a resident neighborhood. The seriousness of disposable plastic water containers problem to the environment is reflected.

4.5.7 Sorting of Solid Waste

The study observed that solid wastes were not separated throughout the primary and secondary collection points. It sought explanations from Municipal official on why mix different types solid wastes (Figure4). The study sampled Municipal official that said the Zanzibar Urban Municipal did not inform household members the importance of sorting solid wastes at the source. Sorting wastes being as essential technical solid

waste management issue, the study sought explanations from municipal authorities. They said the ZUM prohibited sorting at primary and secondary solid waste collection points for two reasons. One, it argued that sorting solid wastes at the source was a public health risk especially to densely populated settlements. It was designed to check scavengers from crowded back contaminants to households thus infesting them with health.

Instead, the municipal authority contracted an individual to sort mixed solid wastes at its official's dumpsite. Two, there was no space in the settlements for extra containers for sorting solid wastes. The author presented the municipal authority's explanations to focus group discussion for consideration. The reflection challenged the municipal explanations with view there was enough space for solid waste sorting containers.



Figure 4.2: Mixing of Solid Wastes along Kilimani Surrounding Residential Areas

Source: Field Data (2020)

Participants challenged reasons raised by the Municipal authority by saying “If the ZUM managed to place skip buckets at different communal location for secondary municipal solid waste collection, why then not use the same space for putting in place of cost effective waste sorting containers”

This study expressed with the view that municipal authority’s responsibility to inform its residents the importance of sorting on health ground opened. According to WHO (1971) solid waste sorting be done at the source and not otherwise.

4.6 Challenges Associated with Community Solid Waste Management

Zanzibar Urban Municipal (ZUM) as a responsible authority for management of municipal waste is facing many challenges, which hamper its effort for service improvement. Provision of services by the municipal authority is hindered by limited budget, inadequate technical capacity, absence of policy, lack of comprehensive legal and regulatory framework, weak enforcement of by -laws, inadequate data on generation rate and waste characteristics, poor urban planning and infrastructures and socio-cultural patterns.

4.6.1 Absence of Limited Budget

The researcher noted that the absence of limited budget is among the challenge facing Municipality, the inefficient collection system and disposal problem is mainly attributed by the shortage of funds to operate the waste management sector. Waste minimization through reuse, reduce and recycling options are very important for effective waste management. However, due to limited budget, there are no any allocations planned for the development of these alternative waste management options such as composting and recycling in the Municipality.

4.6.2 Inadequate Technical Capacity

The municipal council depends mainly on central government and supporters grant to get the fund for operation of waste management is among the problem hindering Municipality as the researcher indicated. This results to inadequate technical MSWM capacity to suit the operational requirements. In mean time, the municipal is receiving foreign aid from World Bank to support the solid waste management in its jurisdiction under Zanzibar Urban Services Project (ZUSP).

However, this portion is targeted on improving facilities such as increasing the number of collection points in residential communities, plastic bins for commercial waste storage and purchase of trucks to facilitate transportation. With this support, the municipal is expecting to improve its services and hence upgrade the coverage.

4.6.3 Lack of Skilled Personnel for MSWM Service

Lack of skilled personnel for MSWM service also a challenge to ZMC. The author noticed that it is only 7% of skilled professionals, the majority are laborers who engage in street sweepings, grass cutting, collection of waste to collection points, containers cleaners, supervisors and drivers transporting the waste to dumping site and big gap of technical staffs. Training of the staff was available but not in regular basis. Lack of skills contributed to low capacity building on various solid waste management activities. To clarify explanation of this problem, one leader of the Ward said:

“Many of us (ward leaders) and residents do not understand properly the community participation concept in municipal solid waste management. Yet the municipal authorities direct us to mobilize community participation in solid waste management. Still we lack close supervision from the top on technical public health matters related to solid waste management. It seems the municipal official have left the

role of public awareness raising and community mobilization to the untrained grassroots leaders.

However, the researcher challenged the above comment by saying, each ward has a public health officer, why not consult her /him on solid waste management matters? They said many of the health officers rarely visited the site. Many of them frequently visiting mitaa during epidemic disease outbreak threat and when a top official was visiting street. They said to have often reported such cases to high authority through the established channels so far, there was no permanent solution to the problem.

4.6.4 Lack of Comprehensive Legal and Regulatory Framework

In order to ensure proper control of waste management practices, countries need national strategies, which provide a legislative and regulatory framework within which enforcement procedures can be carried out. However, the Revolutionary Government of Zanzibar does not have an overall national policy regarding waste management.

The researcher investigated that ZMC depends on the environmental policy (2013) where waste management issues are not fully addressed. There are few acts dealing with the problem regarding waste management including Public Health act (2009) and environmental regulations such as Environmental Impact assessment of 2002 and the Banning of plastics bags of 2011.

The study also showed that at the Municipal level, there is only ZMC (sewerage, Drainage and Solid waste), By Laws 2006, dealing specifically with waste management to help it to control and regulate activities taking place in its jurisdiction.

Nevertheless, it has been observed that there is lack of enforcement of these laws and regulations.

Mutamo (2005) carried a slogan saying: “Every household is required by law to contribute to municipal solid waste collection service charges” It underlined the employment of a privatization strategy for municipal solid waste management aimed at “keeping wards aesthetically clean for prevention of environmental associated diseases, income generation and to keep the sub wards solid waste free”.

4.6.5 Inadequate Data on Generation Rate and Waste Characteristics

Lack of adequate and up to date waste statistics data and information regarding municipal solid waste management is also a problem. Thus, the researcher showed that existing data for waste generation covers only Zanzibar Municipality and the analysis of waste characteristics is only known for Stone Town which has small population compared to other outskirts zones comprising Zanzibar Municipality which are more densely populated areas. The future forecasts and development plans are incomplete.

4.6.6 Poor Urban Planning and Infrastructures

Waste minimization through reuse, reduce and recycling options are very important for effective waste management in the Municipality. However, due to limited budget, there are no any allocations planned for the development of these alternative waste management options such as composting and recycling in the Municipality. The researcher revealed that, Reuse of the products is done at individual level and mainly plastics. Also, Recycling activity is low and operated informally and the scavengers

are the main agency who salvage the valuable materials from waste either from collection containers or dumpsites. There is no intensive recycling undertaken by these informal agencies, the only thing practiced is just shredding of the recyclable materials collected to reduce size, balled and shipped to Mainland for processing.

Manually sorting of the recyclable is usually carried out by scavengers from collection points or by rag pickers at the dumping sites immediately after spreading of a layer of waste. This work is done in unhygienic conditions and these sorters are vulnerable to pathogenic infections. Although these informal sectors are playing their role in waste management, their sustainability remains a question due to financial constraints, lack of support and motivation, fall of market from manufacturers and prevailing negative public attitude about scavenging of waste.

4.6.7 Socio-cultural Patterns

During the field observation the researcher noted that public attitude has very positive impact on effective waste management system when the public fully realizes its significant role on garbage management as the main generator. Local residents' willingness to source separate recyclable materials, willingness to pay for the service and their capacity to move waste to communal collection points all have an impact on the overall waste management system.

However, negative public attitude is noticed which reflect their low level of willingness to participate in waste management programs. Waste is not seen as problem and this is evidenced by littering, burning of refuse and indiscriminate

discharge of garbage, within residential areas which ends up in drains causing blockage.

This creates a multitude of public health concerns and environmental hazards. It is a customary of the people to drop plastics bottles and cans, throwing papers and plastic films after use on the streets and roadsides. One of the local leaders challenged by asking “How can I effectively supervise CBOs in municipal solid waste management in my street: If I do not have skills in project management and participatory public awareness building in local communities yet I am systematically excluded from training?”

4.6.8 Absence of Policy

The researcher saw that Zanzibar Urban Municipality (ZUM) depends on the environmental policy (2013) where waste management issues are not fully addressed. There are few acts dealing with the problem regarding waste management including Public Health act (2009) and environmental regulations. The study also showed that at the Municipal level, there is only By Laws dealing with waste management to help it to control and regulate activities taking place in its jurisdiction.

A part from problem related to community participation strategy there are those linked to the Tanzania National Environment Policy which was established in 1997, the policy has not specified how community participation awareness can be raised a part from one of its objective stating.

“To raise public awareness and understanding of the essential linkages between environment and development and promote individual participation in environmental action (National Environmental Policy Implication Report” 1993:41-42).

This policy objective does not specify, for example, how community participation in municipal solid waste management can be conducted under the market oriented economy. There is an ambiguity for different players to interpret the policy differently but also leads to chaotic coordination and action in a disorganized manner.

4.7 Discussion of Findings

This section present the discussion of the main findings concerns with solid waste management, this includes the participation of community in handling solid waste activities. The finding indicates that, in Zanzibar majority of respondents 65 (70.6%) have storage facilities in their house while 27 (29.4%) respondents don't have the storage facilities in their house where as community is interested to participate on solid waste management in urban municipality of Zanzibar but the Community problem is low level of awareness and ineffective management by the municipal council. Meanwhile in developed nations, each individual should have appropriate access to information concerning the environment that is held by public materials and activities in their communities, and the opportunity to participate indecision making processes Squires. (2006).

Similarly, the rate of participation in sustainable waste and environmental management activities in Abuja and the study revealed that increase funding, provision of recycling collection points, enforcement of laws and policies, the development of effective policies and regulatory frameworks amongst others are some of the measures that can encourage public participation in sustainable waste management programs in Abuja (Chung and Lo, 2008). Also, the issue of administrative and supervision on solid waste are not emphasize by the leaders, that is

to say leaders do not influence residents to participate in solid waste management activities.

The results show that 76 percent of the respondents agree that leaders do not influence residents to participate in solid waste management activities while 12.8 shows that the leaders influence residents to participate. While in the world, effective access to judicial and administrative system proceedings, including redress and remedy should be provided. This laid the basis for the participation planning of SWMPs in SIDS, including the Caribbean.

Tiwari, (2008) Foremost, the disposal activities on solid waste vary from country to country depend on the nature of its environment, in Zanzibar the sites where disposal activities are not properly designed and there is the problem of the vicinity to the residence which is significantly public concern due to environmental nuisance, bad odor, presence of flies and rodents, and stray animals. Surrounding residents claimed that dumping should not be located to nearby them as they are the most victims suffering from dirty brought by sites. While the disposal facilities in Kira town council planned formal in which the council use of the legal instrument and awareness-raising town would be the future opportunities to manage solid waste by the public Mukisa (2009).

In the developed world, technological advances included the use of garbage cans and creation of incinerators and sanitary landfills launched and the later replaced the practice of open dumping and has become a common practice. Communities in developing countries often turn to waste disposal methods that have proven to be

destructive to human health and the environment, such as open dumping and burning (or unregulated landfills) because they feel they have no other options to manage their solid waste (Mutamo (2005), Al-Khatib et al., 2015; Hilburn, 2015). Solid waste management problem in most cities and towns in Tanzania relates to handling at source, collection, transportation, disposal, financing as well as capacity of the City and other key players. At the household level there is no mechanism for waste arrangement, which make it difficult to minimize waste through recycling and safe disposal of waste including the hazardous ones (UN-HABITAT, 2006).

Simply, the environmental policy differ from nation to nation depend on how to handle solid waste, the Revolutionary Government of Zanzibar does not have an overall national policy regarding waste management. The finding shows that ZMC depends on the environmental policy (2013) where waste management issues are not fully addressed. There are few acts dealing with the problem regarding waste management including Public Health act (2009) and environmental regulations such as Environmental Impact assessment of 2002 and the Banning of plastics bags of 2011. Also, in Tanzania solid waste management has been dealt with public health regulation, which includes a joint command and control approach. , Liyala, (2011).

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

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the main findings, implication of the study, conclusion, recommendations, limitations and suggested areas for further studies.

5.2 Summary of the main findings

This chapter is the body of the paper and it gives some insights of community participation in waste management. People have their own perceptions of the waste that is generated in their homes. The summary of the main findings can be explained in term of methods, community participation, awareness and attitude, administrative and supervision and lastly come into challenges faced community on handling solid waste management.

In this study the main methods that are used in the Municipality includes land filling as a method used on handling solid waste with the purpose of maintaining land reclamation, separation and recycling used for the purpose of getting their self-employment together with earning the income, incineration also used for burning of chemical waste in hospital and re-use of product also as a method that is used for the purpose of increase their income and employ themselves.

Community participation in most areas of Zanzibar relates to handling at source, collection, transportation, disposal, financing as well as capacity of the City and other

key players. In administrative system and supervision, the municipal authority has to supervise and reinforce municipal solid waste management activities such as Organization of different containers for solid waste storage, Distribution of skip Buckets in the community Areas, Solid Waste collection schedule and Supervision of Sustainable Environmental Cleanliness in all Wards according to existing policy and public health laws. It has to communicate with ward leadership as part of the municipal Government.

Provision of services by the municipal authority is hindered by limited budget, inadequate technical capacity, absence of policy, lack of comprehensive legal and regulatory framework, weak enforcement of by -laws, inadequate data on generation rate and waste characteristics, poor urban planning and infrastructures and socio-cultural patterns.

5.3 Implications of the Findings

To achieve sustainable and effective waste management system, the municipal authority has to consider political, institutional, social, financial, economic and technical aspects of MSWM.

The government should be providing sustainable training of personnel to improve efficiency in the services. Direct handling of waste can result in various types of infections and chronic diseases to the workers, therefore, Municipal authority must ensure occupational health and safety measures are taken such as providing safeguard equipment to waste handlers and routine examination to check their health condition.

The Municipal should be established community waste management fund for purposes of meeting some of the SWM costs such as the provision of basic facilities for collection and storage.

Additionally, public education and awareness. Awareness and attitude can have impact to the people willingness to participate in MSWM issues and follow appropriate waste management practices. Therefore, to get public on the train, educational programs and awareness campaigns needs to be undertaken to educate the public about their roles, upgrade their practices and shapes public behavior towards sustainable waste management.

Also national policy should be formulated, comprehensive legal and institutional framework and may strengthen enforcement mechanisms of laws and regulations governing various aspects of MSWM. Periodically review of existing by-laws and development of new regulations; guidelines and standards are also important. The community environmental committees should be created for purposes of enhancing participation at lower levels. This will insist of the community to do their work with power and confidence in solid waste activities.

5.4 Conclusion

The objective of this study was to assess the extent of community involvement in solid waste management in collection, storage, transportation and final disposal. Thus the municipal authority can only collect and dispose off about 50% of the collected SW. The rest is not properly managed pointing to a possibility of environmental and health

problems. It indicated that at household and community levels, lack of collection and disposal facilities is a major problem.

Solid waste management is largely perceived to be a responsibility of local government authorities. Most members are not aware of their role in SWM and their attitude towards participating in SWM is quite unfavorable. Results further suggest that since the traditional SWM practices cannot be sustained; there is a need to educate and sensitize the community if meaningful and sustainable SWM is to be achieved.

5.5 Recommendations

Based on the study findings the following are recommendations to the Zanzibar Urban Municipal Council:

- (i) Efforts should be directed towards educating and sensitizing community members about their role in SWM activities. This will enhance their participation in SWM matters.
- (ii) The Municipal administration should advocate recycling technology by attracting investors.
- (iii) The city administration should use community conversation and incentives mechanism (rewarding or paying for those who are managing their wastes or their surroundings properly) for better participation of the community in solid waste management.
- (iv) Active and empowered environmental committees should be created for purposes of enhancing participation at lower levels.

- (v) Community waste management fund should be established for purposes of meeting some of the SWM costs such as the provision of basic facilities for collection and storage.
- (vi) A strong link /liaison between the community and local government authorities should be encouraged for purposes of enhancing community participation in SWM.

5.6 Limitation of the Study

Beside accuracy of the findings, however, researcher faced by some limitations which have been described hereunder:

Lack of enough budget which could enable researcher to have proper follow up of the research issues. Majority of respondents were not available in their working areas, hence researcher should be able to contact and follow them wherever they were. Here transport cost was a great challenge. However, researcher asked some financial aids from relatives to cover the existing cost. Some respondents were hardly providing required information. Researcher has to spend a lot of time to stay with them to request their time and consent to provide information.

On the other hand official request was also a challenge. Researcher was supposed to pass through many channels in order to officially obtain research permit and consent. However, the permit was obtained and research to be conducted.

5.7 Areas for Further Studies

Since the study aimed at assessing the effectiveness of local community participation on solid waste management in Urban-West Region Unguja, it will be crucial if other

researchers will assess the strength of solid waste management policy toward improvement of local community awareness on solid waste management in Zanzibar.

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APPENDICES

Appendix I: Questionnaires for Respondents

Dear respondent, my name is Haji KhamisUssi, pursuing Master degree of Project Management of the Open University of Tanzania. I am doing research on Local Community Participation in Zanzibar, case study of Urban West Region-Zanzibar". The purpose of the study is to assess the effectiveness of local community participation on solid waste management.

You are kindly requested to give your responses for each question to the best of your knowledge. Your answers will be treated strictly confidential and for academic purposes only.

SECTION A: Personal and Demographic Questions

1. Gender: A. Male B. Female
2. Age A under 5 years B.5-18 years C.19-35 D. 35and above
3. Education level
 - A. None B. Primary
 - C. Secondary D. Higher level
4. Work experiences

A. None 2-5 years C. 6-10 D. 10 and above

5. What is the size of your household?

1. 1 < 2 persons 2). 3-5 persons 3). 6-8 persons 4). 9-11 persons

5). > 12

Section B: Methods that local community use on handling solid waste management

1. Does your household have a storage facility for storing household solid waste?

1. Yes 2. No

2. What type of storage facility does your household (or establishment) have for waste storage on your household?

1). Metal or plastic container 2). Concrete (immovable) container

3). Basket or carton container 4). Plastic bags

3. How do you dispose wastes after collection/storage?

1). Incineration 2). Communal centre/collection points

3). Refuse pits 4). Open dumpsites

4. Do you have a communal collection centre/ point in your area?

1). Yes 2). No

5. Has Municipal Council provided the right methods of collecting SW from the sources?

1) Landfill 2) burning 3) buried waste

6. Do you have a problem of waste collection in this area?

1. Yes 2. No

7. What is your opinion about the communal containers in your neighborhood?

They are too far away from the house []

They are too small to contain all solid waste []

They produce unpleasant outdoor

Nothing is wrong with the communal containers No opinion []

8. Do you separate solid waste into organic and inorganic components before disposal?

1) Yes 2) No

9. Do you think there is any other way to be used, so as to make the waste reused? If yes,

a) Which way?

.....
.....

Section C: Challenges associated to solid waste management

1. What is the distance from your home to your collection point?

1). Less than 100 meters 2). 100 to 300 meters []

3). 300 to 500 meters [] 4). More than 500 meters [

5). Do not know []

2. Who has provided the collection facility?

1). Community itself [] 2). City council []

3). Others []

3. How do you transport solid waste from the household to the communal collection centre?

a) By wheelbarrow [] b) On head []

c) By bicycle [] d) Others (specify) []

4. What is your opinion about the communal containers in your neighborhood?

1. They are too far away from the house [] 2. They are too small to contain all solid waste

3. They produce unpleasant odors 4. Nothing is wrong with the communal containers

5. No opinion []

5. Do you separate solid waste into organic and inorganic components before disposal?

1. Yes, do separate [] 2. No, do not separate

6. If yes in Qn. 20, what is the use of the separated solid waste components?

a) Not applicable (do not re-use/recycle) b) Soil conditioner (composting)

c) Source of energy d) Direct re-use []

7. Are there any by-Laws, rules and regulations which govern community participation in SWM?

1. Yes [] 2. No []

8. Do you have a communal collection centre/ point in your area?

1). Yes [] 2). No []

9. Who has primary responsibility for collecting solid waste once it is brought to the transfer point?

- 1) Municipal Council [] 2) Private company [] 3) Neighborhood group []
 4).Don't know []

Section D: Community awareness on solid waste management

10. Do you know whether other people in the ward are aware about solid waste management?

- 1).Yes [] (If yes, go to Qn 34) 2). No

11. How did they know? (Tick one)

- 1). By using variety of media including meetings, radio and television
 2). By use of village assembly meetings only
 3). Through group discussions, poetry, storytelling, debate, street theatre, soapoperas
 4). Others (specify)

Section E: Community attitude towards participation in solid waste management

1. Please, rank the following statements to determine attitude and extent of communities'

participation towards solid waste management by ticking in appropriate box by using the scale provided: 1 = Strongly disagree (SD), 2=Disagree (D), 3 = Undecided (U), 4 = Agree (A) and 5 = Strongly agree (SA)

S/ No	Attitudinal statements	SD (1)	D (2)	U (3)	A (4)	SA (5)
1.	Community awareness and education alone cannot improve community participation					
2.	Participation through cash and/or in kind is necessary because City Council has no enough funds to cater for the whole cost of solid waste management					
3.	Solid waste management is not of immediate priority					
4.	Participation in solid waste management is not time consuming to the community					
5.	Usually communities have tendency of attending meetings to discuss environmental issues					
6.	Communities do participate fully in the contribution of cash and/or in kind for solid waste services					
7.	Community's sometimes do not contribute their views when meetings are conducted as Ward chairman and few influential individuals have a tendency of dominating the discussion					
8.	Communities have adequate knowledge about solid waste collection, storage, separation and disposal					
9.	Solid waste services should not be paid for					
10.	Leaders do not influence residents to participate in solid waste management activities					
11.	Workload does not lead to poor community participation in development activities					

Appendix II: Questionnaires for Municipal Officials

Dear respondent, my name is Haji KhamisUssi, pursuing Master degree of Project Management of the Open University of Tanzania. I am doing research on Local Community Participation in Zanzibar, case study of Urban West Region-Zanzibar". The purpose of the study is to assess the effectiveness of local community participation on solid waste management.

You are kindly requested to give your responses for each question to the best of your knowledge. Your answers will be treated strictly confidential and for academic purposes only.

SECTION A: Personal and Demographic Questions

5. Gender: A. Male B. Female
6. Age A.30-40 B.40-50 C.50 and above
7. Education level
 A. Certificate B. Diploma C. Graduate
 D. Postgraduate E. Others
8. Work experience
 A. 5-10 years 10-15 years D. 15 and above

Section B: The administrative system on handling solid waste management

1. Does the Municipality manage to provide its residents especially those in urban area with MSW facilities If Yes to Q1, which ones?

(1). Collection facilities eg shovel, racks, wheelbarrows and equipments?

(1) Yes[] (2) No []

(2). Storage facilities like large steel containers []

(3). Others, Specify.....

2. If No to Q2, why? Because

(1). The Municipality cannot manage to provide this service as it limited financial resources is overwhelmed by the unprecedented urban population

(2). Urban communities are supposed to contribute by buying such equipment for MSW collection

(3) Other Reason, explain

.....
.....
.....

Open ended questions

4. On the average, what is the current municipal generation rate of MSW per day and its composition by percentage?

5. How do you mobilize communities particularly those living in urban west region so that they participate in collecting the MSW, which they generate?

6. Have you encountered any problems related community participation in MSW collection from community settlements?

If yes describe them and explain briefly how you are trying to solve the problem

.....
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.....
.....
.....

7. Suggest how transportation of MSW can be organized and coordinated to improve collection service in the community settlements.....

.....
.....

7. Do you manage to collect, transport MSW from community settlements to authorized crude dumpsite for disposal?

(1). Yes, the Municipality manages to do so alone []

(2). No, the Municipality manages to execute these duties in collaboration with contracted local private enterprise []

Thanks for your co-operation

Appendix III: Questionnaires for Ward Leader

The purpose of this Questionnaire is to collect information from Local Leader that will help in the research question: Case of West Urban Region-Zanzibar.

Dear respondent, my name is Haji KhamisUssi, pursuing Master degree of Project Management of the Open University of Tanzania. I am doing research on Local Community Participation in Zanzibar, case study of Urban West Region-Zanzibar". The purpose of the study is to assess the effectiveness of local community participation on solid waste management.

You are kindly requested to give your responses for each question to the best of your knowledge. Your answers will be treated strictly confidential and for academic purposes only.

SECTION A: Personal and Demographic Questions

9. Gender: A. Male B. Female
10. Age A.30-40 B.40-50 C.50 and above
11. Education level
- A. Certificate B. Diploma C. Graduate
- D. Postgraduate E. Others
12. Work experiences
- A. 5-10 years B 10-15 years D. 15 and above

B: The administrative and supervision on handling solid waste management

1. What was the situation of solid waste management in your ward/street before community involvement?

.....
.....

2. What are your roles and responsibilities in promoting community participation in solving MSW collection in your shehia?

.....
.....

3. According to your knowledge and experience, what is needed to become effective and sustainable in MSW collection in urban areas for the social economic benefits of the community and the environment in general?

.....
.....

4. Are there any changes you observed in the management of the solid waste after been directly involved in it?

.....
.....
.....

2. Are there any by- law, rules and regulations which govern Community participation in solid waste management? 1) Yes 2) No

Thanks for your co-operation

Appendix IV: Interview for Managing Directors (MD)

1. When did municipality start community waste management?
2. Is there any training concerning solid waste management?
3. How long does the training/assistance exist?
4. What about the reuse and recycle?
5. What is the responsibility of municipality is it only collecting waste in the street side?
6. What about the door-to-door collection?
7. Has the municipality worked in its own or with others?
8. Municipality has power, why does it not use it to manage the waste?
9. Is community participation about segregating the waste? -
10. Why did you choose the particular area for community participation?
11. What are the problems that make people to participate in the waste management?
12. How does the municipality help you/your project?

Thanks for your co-operation

Appendix V: Research Clearance Letter

THE OPEN UNIVERSITY OF TANZANIA
DIRECTORATE OF POSTGRADUATE STUDIES

P.O. Box 23409
 Dar es Salaam, Tanzania
<http://www.openuniversity.ac.tz>



Tel: 255-22-2668992/2668445 ext.2101
 Fax: 255-22-2668759
 E-mail: dpgs@out.ac.tz

Our Ref: PG2017992344

Date: 11th December 2019

The Director
 Ministry of Education and Vocational Training
 Zanzibar

RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an act of Parliament No. 17 of 1992, which became operational on the 1st March 1993 by public notice No. 55 in the official Gazette. The act was however replaced by the Open University of Tanzania charter of 2005, which became operational on 1st January 2007. In line with the later, the Open University mission is to generate and apply knowledge through research.

To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you **Haji Khamis Ussi, Reg No: PG 2017992344** pursuing **Master Degree of Project Management**. We hereby grant this clearance to conduct a research titled: **“Local Community Participation in Solid Waste Management in Urban West Region-Zanzibar”**, he will collect his data in Zanzibar Tanzania from 11th December 2019 to 7th February 2020.

In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O. Box 23409, Dar es Salaam. Tel: 022-2-2668820. We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

Prof. Hossea Rwegoshora
For: VICE CHANCELLOR
THE OPEN UNIVERSITY OF TANZANIA