ASSESSMENT OF NATURAL RESOURCES MANAGEMENT IN ZANZIBAR: A CASE OF FOREST RESOURCES IN NORTH PEMBA

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A DESSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN NATURAL RESOURCE ASSESSMENT AND MANAGEMENT OF THE OPEN UNIVERSITY OF TANZANIA

2016

CERTIFICATION

The undersigned certify that she has read and hereby recommends for acceptance by The Open University of Tanzania a dissertation entitled *"Assessment of Natural Resources Management in Zanzibar: A Case of Forest Resource in North Pemba"* in fulfilment of the requirements for the Degree of Masters of Natural Resource Assessment and Management of The Open University of Tanzania.

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Date

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DECLARATION

I, **Nassor Ali Omar**, do hereby declare to the Senate of the Open University of Tanzania that this dissertation for the Master degree in Natural Resource Assessment and Management is my own original work and it has never been submitted and will not be presented to any other universities for a similar or any other degree award.

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Nassor Ali Omar

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Tarehe

DEDICATION

This dissertation is dedicated to my beloved father the late Sh. Ali Omar Bakar and my mother Sharifa, my beloved wife Hasina and my daughter Amina.I also dedicate this work to my beloved brothers Omar, Haji, Mbwana, Moh'd, Hosein and my sister Fatma who spend their time to encouraged me as to ensure the goals of accomplishing my study is achieved.

ACKNOWLEDGEMENT

ABSTRACT

The study focus was to investigate the factors contributing to the mismanagement of forest resources in North Pemba as relating to Zanzibar Environmental Policy. This study was conducted in Micheweni, Kiuyu Maziwang'ombe, Konde and Mapofu wards in Micheweni district and Mchangamdogo, Mtambwe, Kojani and Shenge juu wards from Wete district in North Pemba Region. With the use of multi stage sampling procedure, researcher adopted a purposive sampling technique to select the government officers who are responsible in forest management. Simple random sampling was opted to select the community members while stratified sampling were used to choose elders from the selected villages. The study applies both qualitative and quantitative approaches of data collection and analysis. The study findings illustrate that, mismanagement of forest resources increases gradually due to the weaknesses of Zanzibar Environmental Policy. The major factors for these were said to be the absence of forest policy statement in Zanzibar Environmental Policy, considering forest as a common property resource, incomplete and unmanageable forest projects, forest resource management being a cross cutting issue, lack of Environmental Impact Assessment, improper coordination between law enforcing bodies and Ministry of Agriculture, natural resources policies and budgetary support were also mentioned to be another factor for the failure of managing forest resources. It was then recommended that, Government have to adopt a specific forest statements in Zanzibar Environmental Policy, providing restrictions for endangered plant species, reviewing investment policy and re-amend agreements for companies operating in Zanzibar, delegating powers to Shehias with the establishment of village leaders and to form frequent assessment of forest resources by the government.

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LIST OF ABBREVIATIONS

CFP   Community Forest Pemba

DCCFF   Department Of Commercial Crops, Fruit and Forestry

EIA   Environmental Impact Assessment

LPG   Liquid Petroleum Gas

KMKM   Kikosi Maalum cha Kuzuia Magendo

KOICA   Korea International Cooperation Agency

MAN   Ministry of Agriculture and Natural Resources

MANRAM   Master of Arts in Natural Resource Assessment and Management

MKUKUTA Mpango wa Kuondoa Umaskini na Kukuza Uchumi Tanzania

MECCO   Mwananchi Engineering and Constructing Company

MKUZA   Mradi wa Kupunguza Umasikini Zanzibar

NEP   National Environmental Action Plan

NGO   Non Governmental Organisation

NSGRP   National Strategy for Growth and Reduction of Poverty

PEAE   Eastern Pemba Agricultural and Environmental Development

PRA   Participatory Rural Appraisal

SHEHA   Lowest Administrative Leader in Zanzibar

SHEHIA   Area governed by Sheha (Three to five villages)

SPSS   Statistical Package for Social Science

SUA   Sokoine University for Agriculture

ZIPA   Zanzibar Investment Promotion Agency

ZSGRP   Zanzibar Strategy for Growth and Reduction of Poverty

CHAPTER ONE

INTRODUCTION

1.1   Background of the Research Problem

The management of forest resource in Zanzibar currently brought a serious debate among people discussing the causes of the mismanagement of forest resources in Zanzibar. Some feels that mismanagement is influenced by the social economic reasons such as poverty and low family income. Others think it is due to the country policy, but there are other people who think that it is caused by the traditional cultures, beliefs and customs (Aunty, 2003).

 (Aunty, 2003, Barik, 2006 and Tanzania Natural Resource Forum with Traffic, 2009), identify that, there are abundance of resources in many African countries including Tanzania, but poor environmental policies, poor governance, lack of transparency, corruption and low enforcement of laws are the major challenges for the management of natural resources. In Zanzibar Environmental Policy (2003) the weakness of the government is stated clearly that "In general, there is a weak enforcement of regulations and legislations related to Environment and natural resources in Zanzibar. (Zanzibar Environmental Policy 2013:8-9).

In Haiti the overlapping mandates and competencies, competition, and the occasional disinterest of the government institutions are significant obstacles to government involvement in environmental projects. Since the environment is a cross-cutting issue in many African countries, responsibilities for its protection and rehabilitation

are divided among several government ministries (Jensen and Lonergan, 2013 and Moshi, 2003).

According to Nabutola, (2010), Kenya Government on its own has severe weaknesses and in any case has not yet known. Thus the government needs to change the status quos without being intervened and being under the direct supervision of the government that most of the forest resource was taken away by them.

In Tanzania, the changes of human activities resulted to soil degradation, deforestation, ecosystem destruction, poaching, diseases to wild animals and plants, environmental pollution (water, soil and air) that tend to affect the management of natural resources. Zanzibar likewise has undergone a dramatic change in land use such as the conversion of grazing land, natural forest and bush lands into small scale farming areas. This has led to illegal harvesting and resulted to increased demands of natural resources thus led to resources depletion, violence and instability over the resources (Gichuki *et al*. 1998 and Legwaila, 2006).

It was discovered that there is an intense land degradation especially in the Northern part of Zanzibar including Micheweni district in Pemba. Though Micheweni and Wete districts have a relatively small population, they are said to be the main source of construction materials such as gravels and sands and they are also said to meet the needs of the large population of the rest of North Pemba and the nearby region for construction purposes which resulted to extensive land degradation.

Some areas like Wingwi and other wards experience little deprivation of land due to the fact that the area is not flat for sand extraction processes. In coastal areas, the condition is said to be worse from seaweed farming which lead to deforestation of mangrove trees and loss of biodiversity. Such condition is even worse in Micheweni and Kiuyu due to quarrying activities that lead land to be abandoned without efforts to remedies very big holes formed which provide favorable conditions for mosquito breeding that interfere the well being of the Pemba residents. Such conditions is also worse as may results to very high cost that may be incurred by the government as well as individual plot owners to rehabilitate the land for further construction.

In order to reverse the situation, some efforts have to be done, including afforestation and banning of chain saws which are no longer successful as the deforestation is still proceeding at a very high rate with low community involvement. Each action which has to be taken must be linked to a specific policy, for example poor enforcement of laws, irresponsible government and population growth are closely linked to the country policy (Zanzibar Environmental Policy, 2013).

1.2   Statement of the Research Problem

North Pemba has continued to experience a huge land degradation particularly deforestation and loss of biodiversity. Zanzibar Environmental policy being a guide for management of natural resources is said to contain only statements which directs the way to improve the coordination between the government and private institutions on utilization, protection of forest resources and even having integrated land use planning at national and local level. Despite of having such policy with statements regarding to environmental management the condition is said to be extremely worse

to the extent that endangering peoples' lives and there is no sign that the mismanagement of natural resources may be stopped soon. This brought a debate among stakeholders to think on the causes for mismanagement of forest resources in Pemba as leading to depletion of forest resources.

Evidences of actions and practices which results to mismanagement of forest resources in Pemba worries the community if the situation could one day change as to ensure management of forest resources as it was assumed to exist some irresponsible NGO's dealing with environmental issues, uncontrolled (unauthorized) settlements, lack of rehabilitation after extraction, destruction of coastal habitat, illegal harvesting and clearing of forests, a problem which remains to be a challenge to the community to find out the solution with no clear solution as it is assumed that may be people are not yet understood the root cause of mismanagement of forest resources especially in Zanzibar. This study therefore, designed to assess the factors for mismanagement of forest resources in Zanzibar, taking North Pemba region being a case of this study.

1.3   Research Objectives

1.3.1 General Objectives

The main objective of the study is to investigate factors contributing to mismanagement of forest resources.

1.3.2 Specific Objectives

The specific objectives of this study were:

(i)   To assess socio economic factors which contribute to forest resource mismanagement in Pemba North Region?

(ii)   To examine the strategies used by the government to manage forest resources.

(iii)   To evaluate the support of Zanzibar Environmental Policy on the management of forest resources.

1.3.3   Research Questions

The following research questions were formulated to guide the study:

(i)   What are the socio economic factors which contribute to forest resource mismanagement?

(ii)   What are the strategies employed by the government to manage forest resources?

(iii)   How did Zanzibar Environmental policy help to the management of forest resources?

1.4   Conceptual Framework of the Study

On examining issues pertaining to natural resource problems, there are many approaches that one can opt to adopt, however this work use the two of them those are ''etic'' and ''emic'' approaches. With ''etic'' approach a scientists can determine the problem and suggest its solutions. In this approach, it may be assumed that local people are not aware on the problems and thus need to be supported by scientists.

Another approach is ''emic'' or the local indigenous view on environmental problems. With this kind of approach it is assumed that local people are aware with the problems and are taking some measures to address the problems. (Schechambo et.al, 1999). Based on this study, the mismanagement of forest resources in Zanzibar

is due to several factors which contributed by policy makers and some are due to households activities. The framework of this study is shown in Figure 1.1.
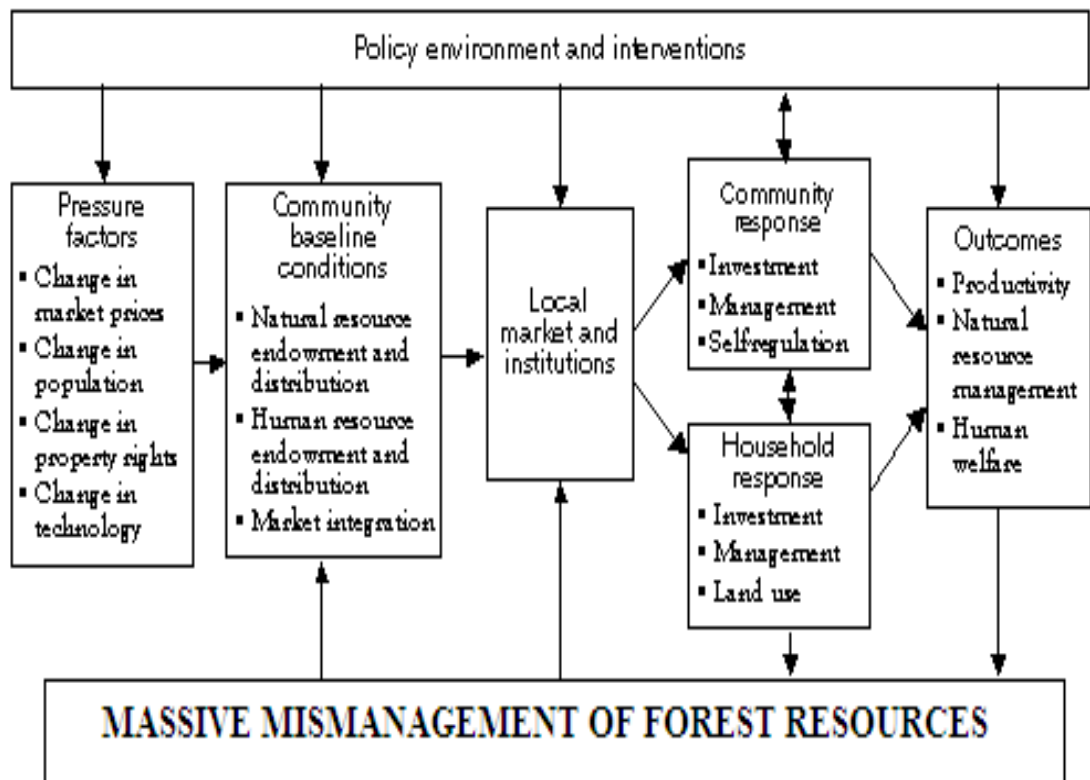
Figure 1.1: Conceptual Framework to Identify Natural Resource Management Processes
Source: Scherr et al. 1996 (modified)

From the figure above, pressure factors at a national or regional level like population growth, changes in market prices, technology development and changes in property rights are assumed to induce, within individual communities, shifts in local market structure, prices and/or local institutions such as local labour and land tenure arrangements. These factors are directly linked to environmental policy. The nature of these shifts may be conditioned by community characteristics, which help to determine local comparative advantage and natural resource endowments, market linkages and local knowledge of natural resource management.

This implies that, shifts of the community, encourage responses in natural resource management at both household and community levels. At the household level, responses may take the form of changes in land use, product choice, and investment and/or land management. At the community level, responses may take the form of collective land investments, collective self-regulation of private resource use, changes in management of communal resources, or changes in formal and informal rules of access to natural resources.

The net results of these changes in resource management are natural resource conditions, productivity and human welfare. Both the responses themselves and changes in the outcome variables can have feedback effects to the community conditions, local markets and institutions, thus contributing to further changes and innovation at the local level. Government policies may influence this temporal process at various levels through the pressure factors such as agricultural policies, investment policies, and population (settlement) policies by directly influencing community conditions as restrictions on natural resource use and chain saw banning. Also it may influence the household or community responses through a technical assistance to the outcome variables such as direct land management by the government.

1.5   Significance of the Study

Most of the North Pemba areas are threatened by deforestation as the use firewood as a source of energy. The failure of introducing an alternative source of energy has direct impacts to the community as well as to forest resource due to massive exploitation of forest resources. This study therefore is useful as can provide a

baseline point to the government to come with policies, rules and regulations to control deforest and massive exploitation of natural resource mismanagement.

Also the study provides a room for nongovernmental organizations (institutions) to plan and initiate project as to overcome the negative impacts of mismanagement of forest resources. Besides that, the study is important as it provides the information about the environmental changes in relation to human activities as to provide awareness to the society especially the villages, conservationist groups and many others on the role of each citizen on preserving and sustainable utilization of the forest resources for the benefits of today's and future generation. Furthermore the findings also can be used as a reference material for those who need to conduct research on management of forest resources as well as to help geographers in different areas of specialization.

1.6   Scope of the Study

This study focuses on the management of natural resources in Zanzibar. It speculates the weakness of Zanzibar Environmental Policy, the government and community strategies and activities, which contribute to management of forest resources in North Pemba Region. The study involved two districts Wete and Micheweni where eight wards were selected. The findings of this study therefore, are relevant to Pemba Island and other places with the same nature.

1.7 Limitation of the Study

This study focused on looking the factors for mismanagement of forest resources in Zanzibar forest. There following were considered to be the limitation face the researcher in conducting this study.

(i) Limited time: The time was too limited for the government officials to meet and provide the required data to the researcher as a result only they were communicating through mobile phones and e-mails.

(ii) Poor perception of the respondents towards the study. Some respondents were not open to answer the questions particularly those questions involving the use of banned chainsaw, though they were assured for their security and confidentiality.

(iii) Insufficient fund. The researcher selects few areas as to accomplish the study due to limited budget. However, there were a need to broaden the area of research as to obtain a very actual information.

(iv) Responsibilities: Some respondents were tied up with other responsibilities, a condition which lead the researcher to contacts and meet with them at their residences especially government officials.

(v) Lack of willingness: A number of respondents were unwilling to spend their time being interviewed as they were busy from the national election campaign. This problem was solved by Sheha's and a well-experienced extension staff.

1.8   The Structure of the Study

This study has five chapters. Chapter one contains background of the study problem, statement of the problem, objective of the study, conceptual framework, scope and limitation of the study. Chapter two provides the review of different literatures,

which is related to the study on the factors contributing to environmental degradation, government strategies on management of forest resources and policy strategies to be implemented by the community. Chapter three restrain study description, research design, population, sample size and sampling procedure, data collection methods, data analysis, data presentation, validity and reliability and ethical considerations. Findings and its discussions are outlined in chapter four. While is that in other chapters, chapter five is for conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1   Overview

This chapter reviews the literature relating management of forest resources in Zanzibar. It contains subchapters relating to factors contributing to environmental degradation, government strategies in managing the forest resources and policy strategies to be implemented by local community. Assessment of policy weakness in management of forest resources is the main target where people's awareness and attitude, community involvement and others are going to be discussed.

2.2   Factors Contributing to Environmental Degradation

Many factors can lead to environmental changes. These factors can be either Natural factors like drought, floods caused by elnino (heavy rains) and lanino (heavy drought) occurred in 2002 or human factors including deforestation, fire incidences and pollution. The impact of both natural and human factors may differ from one place to another and from one country to another based on the factors like size of agricultural land, the nature and extent of population growth, the changes of physical environment, nature of economy, level of education, and technology attainment. The population density and technological development are said to have more impacts on natural resource management in developing countries including Tanzania and Pemba in particular (Eger and Smith, 2000).

The studies of Schechambo (1999), Lodhi (2010), Krogsund (2012), indicated that, the major causes of environmental degradation are population growth and poverty.

Population growth for instance result to an increase of demand for food hence the increase in the total demands of the area for cultivation and demand for firewood for cooking fuel which leading to the decrease of forest and woodland.

Currently, it is assumed that, fuel wood, charcoal and agricultural residues accounts 97 percent to be used for domestic purposes and thus its consumption resulted to biodiversity loss. It is believed that, most of poor families in rural areas are involved in small scale agriculture and small scale fishing. This is due to inability of investing on the same area for productivity due to low level of technology, poor infrastructure and total depending on rainfall which is unpredictable (Barik, 2006). In many areas the commercial companies and state agencies resulted to environmental damage especially during land clearing, agrochemical use, water and air pollution and many others (Hagos, 2009).

For example, firewood is used for bakeries, small scale factories, lime making and used in building construction which are not controlled. Massoud, (1991) identify that; wood and kerosene are the main source of energy to most of poor families followed by charcoal. This leads to over dependency of forest as a source of fuel especially in rural area due to lack of electricity and other alternative sources of energy.

Environmental Impact Assessment (EIA) broadly is defined as a process concerning with identifying, predicting and evaluating the foreseeable impacts, both beneficial and adverse of proposed development activities by providing alternatives and mitigation measures and aims to eliminate or minimize negative impacts. The

purpose of EIA is to identify potential environmental impacts from proposals, such as projects and programs, and to propose means to avoid or reduce the significant impacts. Thus means EIA is a tool for assisting environmental management and for contributing to sustainable development.

Most of fishermen with poor source of income are experienced to use poor fishing practices which annihilate the aquatic life circle. The decline of fishing has been observed recently where most of fishermen experience low productivity due to massive use of bad fishing practices by using dynamite, chemicals, poison, small nets, spears and many others as well as seaweed farming. This deplete the forest resource, as well as resulted to soil erosion which considered also to play a major role in destroying marine animals both fauna and flora (Millennium Development Goals, 2010).

The principal source of water in Zanzibar is ground water, which is found in different aquifer widespread under the Island with unknown and presumably limited quantity. This amount of water is said to serves for 80% in urban and 60% in rural area a total demand of water. It is estimated that 50% of extracted water are used for domestic purposes and the rest for commercial, institutional and industrial activities. Despite to the importance of water to human, it is now days observed that, its sources to be affected by the growing number of uncontrolled settlements (informal settlements) population, tourism and agriculture put pressure of limited water resources. The state of water infrastructure is worse and unsatisfactory as there is a leakage of water pipes, none functioning of pumping facilities, drying up of water

sources during the dry season and high salt content in some areas. (Zanzibar Environmental Policy, 2013).

The Millenium Development Goals Report,(2007) identifies that the river discharge is reduced drastically during the dry season. Over pumping of groundwater leads to falling of water tables, seasonally drying up of springs and river beds. The low water have much impacts in terms of crop production, sea level rise and stagnation of grasslands and forests. However, during the rain season all these rivers floods rapidly and discharge several times while its water rapidly drains to the Indian Ocean or percolate down into the coral limestones.

2.3   Government Strategies in Management of Natural Resources

According Zanzibar laws, everybody has the right to use natural resources. Despite such permission, government set some regulations as to enable one to exploit natural resources as to get a government permit like licence. For example every individual can fish anywhere after fulfilling conditions that have been stipulated (getting a fishing license). Government also set another strategy include prohibiting the use of destructive gears, like the use of small mesh sized nets, catching under sized fish in all areas, cutting trees after getting the prescribed permit, directing special areas for extracting building materials etc. (MANR, 2011).

Furthermore the government introduced several legislations being as a strategy to control the use and exploitation of natural resource such as Environmental Impact Assessment of 2002, the banning of plastic bags in 2011, the Sustainable Utilization of Non Renewable Natural Resources of 2011, the Draft of Integrated Coastal Zone

Management of 2011, and the Waste Electrical and Electronics Equipment (Management and Handling) of 2011 (Zanzibar Environmental Policy, 2013:8). Governments provide oversight for resource management, regulate trade and development, establish licensing protocols, levy taxes on resource industries, and engage in natural resource extraction directly or by selling extraction rights.

According to United States Institute of Peace, (2007), the Governments that receive substantial income from natural resources may have less incentive to enter into power-sharing arrangements or promote democracy building efforts because they have the means to buy off or intimidate their opponents.

However, in those there is little government accountability or financial transparency, out dated laws, government officials are more likely to take bribes, funnel public funds to private accounts and ignore environmental degradation, resource-related violence, and human rights violations. Often in developing countries with weak state institutions, powerful groups are able to use force to gain improper access to natural resources.

Tanzania is a considered to be among the resource rich nation in the world although, key policy and legislative decisions adopted have not always supported the objective of using natural resources to reduce poverty in rural areas. For resources such as wildlife, to benefits citizens effectively, there is a need for continuing to subsidize national agencies and private investors by bearing the costs of living with wildlife without receiving a significant share of economic benefits (Tanzania Natural Resource Forum with Traffic, 2009).

Most people of Zanzibar claimed that there is no restriction in the use of forest resources although the laws that govern environment in Zanzibar drawn in 1992 and 1996, respectively followed by several meetings, workshops and seminars make the community aware of those laws (Department of Environment Zanzibar, 2009).

2.4   Policy Strategies to be Implemented by the Community

In Tanzania and specifically in Zanzibar, environmental Policy is said to concentrate on educating the local community about the environmental challenges and insisting on the integration of all challenges in educational levels, establish environmental clubs, NGOs, provision of information through brochures, magazine and regular conversation manual.

Community participation is a very effective means of controling and managing development among the people. Scientists and environmental groups should concentrate much on these potentials to increase the community awareness and support community participation in developments taking place in their areas. Some women and men are aware of their rights and responsibilities with regard to forest resources management as well as the roles of other stakeholders including governments. This is manifested through adaptation, mitigation and cross country issue. Strategies and plans such as National Strategy for Growth and Reduction of Poverty (NSGRP - *MKUKUTA*) (2010-2015), The Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP - *MKUZA*)(2010-2015), the Tanzania Development Vision 2025 and Zanzibar Development Vision 2020, the National Environment Action Plan (NEAP), and currently, the National Five Year Development Plan

(2011-2015) insisted on the importance of concentrating on familiarizing community about the issues of management of natural resources including forest resources. Integrated planning, needs to be undertaken within the national context and in accordance with national policies (United Nations Conference on Sustainable Development, Rio, 2012).

2.5   Research Gaps

Many studies have been conducted to investigate on the issues relating to the management of natural resources (Suza, 2012, Department of environment Zanzibar, 2009 and Haji, 2013). The governments from different regions are in struggle to and some have already developed comprehensive environmental laws that can support the management of resources as to resist against the mismanagement of forest resources. Despite that efforts, it is not yet clear if there is any country succeeded over the management of natural resource for all percent a problem which also observed in Zanzibar. This study therefore, intents to fill the gap by providing the insight factors leads to mismanage of natural resource especially forest resources in Zanzibar taking North Pemba region as a case of the study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Chapter Overview

This chapter describes the research methodology to describe the factors for mismanagement of forest resources in Pemba. It also contains the description on study area, the explanation regarding to study design, Population, sample and sampling procedures, data collection techniques and the methods used for processing and analyzing data.

3.2   Study Area Description

This study was conducted in two districts known as Wete and Micheweni in Northen Pemba Region. Geographically, Pemba is divided into four administrative districts namely Wete, Micheweni, Chake Chake and Mkoani. The location of Wete and Micheweni districts are shown on Figure 3.1.

3.2.1   Wete District

Wete district has a population of about 107916 peoples. The district comprises a total of 17 wards, 33 Shehias. The area has a total 295.03 square kilometers with a density of 365.8 peoples per square kilometer and it lies between Latitude 05˚ 03'24'' south and Longitude 39˚ 43'41'' East. Wete District is bordered by the sea (Pemba/ Tanga channel) in the west. North side is bordered with Micheweni district, in the East by Indian Ocean and Chakechake district in the South. More than 90% of its land is suitable for agriculture and her people rely on these resources for their livelihood.
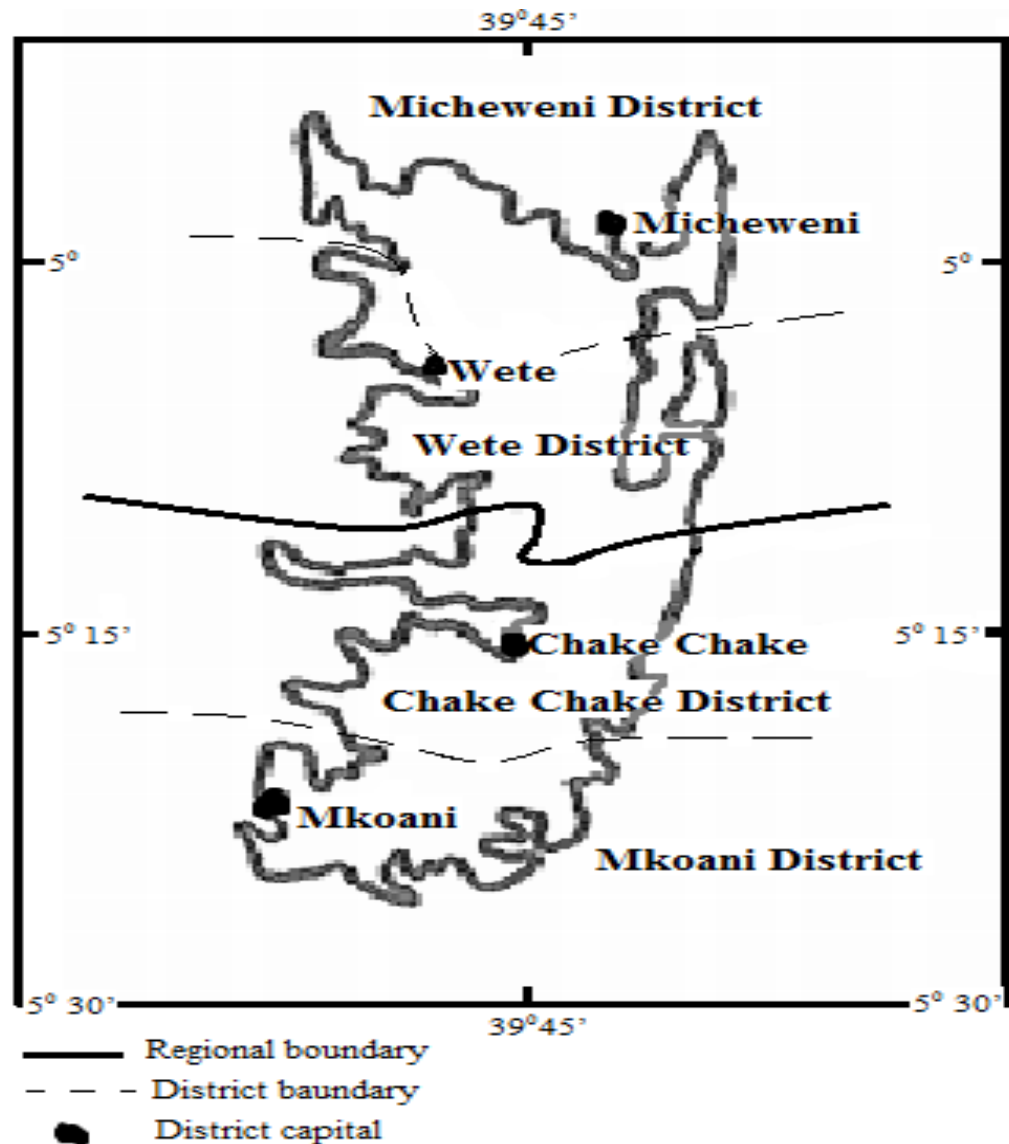
Map 3.1: A M**ap to show** Pemba R**egion as to show the** L**ocation of Wete and Micheweni** D**istricts**

Source: *www.google.com*

The main economic activities of the district include farming, fishing and livestock keeping. Seaweed farming is being practiced mostly by women who live along the coast and it takes a second position for being cultivated (Massoud, 1991). Major crops produced in the areas are including rice, cassava, banana and vegetables. Other clops produced includes cloves which is the only cash crop grown by most of the

people. Livestock farming is practiced by some of the people in household scale for the average of 2 animals per household.
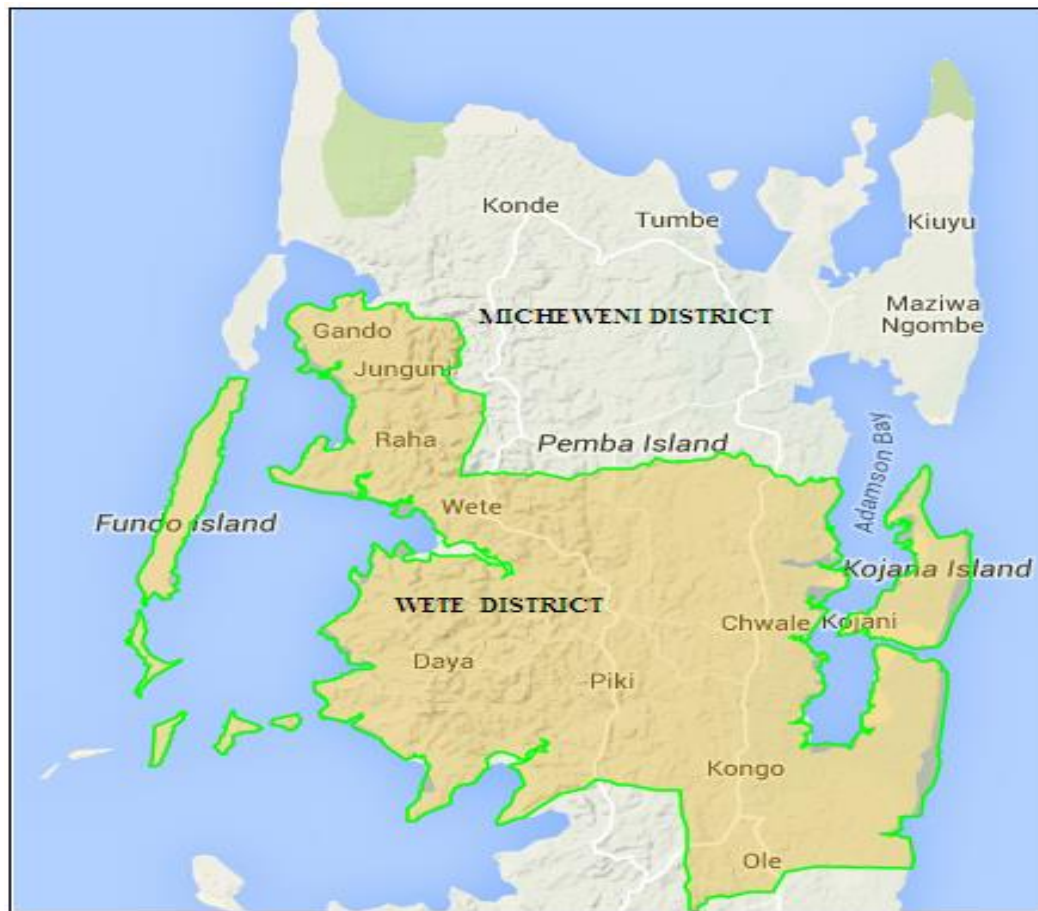
Map 3.2: Location of Wete and Micheweni Districts in Pemba Zanzibar
Source: www.google.com

Massoud (1991) pointed out that wood (biomass) and charcoal are the main source of energy used in households for cooking. It is the substitute of coconut husks, coconut fronds, coconut flower stalks, coconut shells and burnable biomass as most of the people cooks in an open space with three stones flexible for any biomass (traditional method of cooking). Sawdust is used by those with small restaurants and a few people use kerosene rarely for emergence in cooking but mostly for lighting. Electricity and bio gas are used by a very few people with high income. The

deforestation trend for fuel wood has caused an enormous destruction of forests resources leading to fuel wood scarcity.

There is natural and manmade forest, which comprises different species of trees. Despite of such presence, people are conducting illegal harvesting, bad agricultural practices, bush fires, introduction of vegetable farming and seaweed farming. Some community has risen on preserving forest resources, the practice which has come too late. For example Sengenya Mtambwe area which is boarded by Kikosi Maalum cha Kuzuia Magendo force is under such practice after being severely exploited, (Field data, 2015).

Water supply is no longer a problem in Wete district. Although the problem of shortage of water rose frequently due to either lack of electricity or by spillage as the main system, which is too old as it was installed since 1964 (Wete District report, 2014). Generally, the sanitation system is too worse due to lack of clear plans, lack of effective policy and budget for managing waste, in absence of formal categorization of health waste, lack of standardized safe ways of collecting waste and poor incineration system (Ministry of health and social welfare,2009-2015:7).

3.2.2 Micheweni District

Micheweni is the poorest district in Zanzibar with a population of 103,816. The area has about 231.07 kilometer square, having a population density of 449.3 inhabitants per square kilometer. Micheweni is located between 05^00'S and 39^0 45' E and it has bordered by Indian Ocean to the North and East, Wete district to the South and

Pemba and Tanga channel to the West (National Bureau of Statistics and Office of Chief Government Statistician in Zanzibar, 2013).

Micheweni unlike Wete district, it usually experiences drought due to the nature of their land. The northern part covering Micheweni, Kiuyu and Maziwa ng'ombe, part of Wingwi and part of Tumbe wards which experiences arid condition. The economic activities of the district mainly farming, fishing and livestock keeping where seaweed farming is being practiced mostly by women living in coastal areas. Major crops produced in the areas are the same as that grown in Wete district including rice, cassava, yams, banana and vegetables. Sorghum, millet, pumpkins and vegetables are grown in arid area. Micheweni have a large number of livestock's compared to Wete district.

As Wete district, firewood is the only source of energy for the majority of residents. This is substituted by coconut husks, coconut fronds, coconut flower stalks, coconut shells and any burnable biomass as most of the people cooks in an open space with three figures flexible for any biomass. Coconut trees were used for firewood due to scarcity of fuel wood but have been invaded by chain saw to make building and construction material.

Kerosene is frequently used for lighting where electricity and bio gas is used by a very few high income people. The use of animal dung as a source of fuel is not accepted as it is prohibited due to the Islamic taboos. The area experiences serious environmental destruction and it contains small bushes, extraction activities and stone or brick making activities (Massoud, 1991).

The Micheweni district is extremely rocky (coral), light soil, drought prone area with bush or thicket type, which is spreading in northern part. The Ngezi protected forest is in Micheweni district. The excessive use of fuel wood and a large number of animals has contributes to deforestation in the district. Most of the people in Micheweni are reluctant to plant trees due to the fact that livestock destroy them at early stage, single species of plant which is used only for building (casuarinas cunninghamiana) and long lasting drought, which hinder development of trees. Companies and individuals engaging in extraction of building materials (Stones, Bricks and gravels) clear a number of vegetations without replacing them. (*www.en.climate-data/location/787018*).

Water conditions are no longer satisfactory although most part of the areas have access to piped water. Bore holes present in different localities are mainly used by a large proportion of the population (Micheweni District Report, 2014)

Wete and Micheweni differ on number of factors. Micheweni is the poorest district where their land is not productive enough and they depending on other districts to get food. Their land is mainly covered by rocks, thus experiencing semi arid condition favorable for drought resistance crops. Unlike Micheweni, Wete district is more productive except few areas (islands) which experience almost the condition like that of Micheweni. Western part of Wete district is covered by clove tree with food crops which are transported to other areas like Micheweni.

3.3   Selection of the Study Area

The choices of the study area were based on some factors. These includes selecting the following:

(i)   Scarcity of fuel wood in eastern part of Wete and almost all areas of Micheweni district which experiences semiarid conditions with no enough forest trees.

(ii)   The introductions of alternative agricultural practices including seaweed farming and salt farming plants have given rise to deforestation practice and fuel wood demand.

(iii)   There are many irresponsible government officials who allow illegal use of banned chain saw, which increases deforestation to an alarming rate.

3.4   Research Design

A research design is an arrangement of conditions for collection and analysis of data in a manner that combine relevance of research purpose with economic procedures (Selltiz, 1965). For the purpose of this study both qualitative and quantitative approach were employed. According to Creswell (2005) mixed design requires the researcher to gather qualitative data at the first stage so as to explore the phenomenon under study, and then collect quantify them to explain the relationship found in the qualitative data.

Therefore in the first stage, qualitative data on factors for mismanagement of forest resource were being collected by the researcher while in the second stage quantitative data with the support of ratios and percentage were computed and presented in tables, charts and graphs to simplify the analysis of the findings about the study, were analyzed as to explain the relationship found in the qualitative data.

3.5   Targeted Population

According to Sowell (2001) a target population consists of all the people or objects with common characteristics to whom investigators interested in generalizing their results. It is a group of units with common characteristics in which a researcher is interested to study (Mugo, 2002). Therefore, the targeted population for this study includes all North Pemba population which according to the 2012 census, it consists of 211,732 people where as 103,222 were males and 108,510 were females (Tanzania Bureau of Statistics, 2012). Researcher chose the two district ,Wete and Micheweni and from each district, four wards were selected, in which from each ward two villages were chosen to make a total of 16 villages from which 139 household with 3 to 10 people on each household were involved in the study. Table 3.1 summarises the number of population choosen.

Table 3.1: Villages selected for study in Wete and Micheweni Districts

District	Ward	Villages	Estimated household
Wete	Mchangamdogo	Mwane Kiwani	69
	Mtambwe	Chanjaani Mpakanjia	
	Shengejuu	Shengejuu Masota	
	Kojani	Mashindeni Makaani	
Micheweni	Micheweni	Kwale Chupwe	68
	Kiuyu Maziwang'ombe	Mbokoni Malindi	
	Konde	Pogwa Chanjaani	
	Mapofu	Kinazini Kilindini	
Total	**8**	**16**	**139**

Source: Field survey (2015)

3.6   Sample and Sampling Procedures

Kothari, (2004) defines sample as a small group of respondents drawn from a population about which a researcher is interested in getting the information so as to arrive at a conclusion. A total of 139 respondents were adopted to be the samples of this study therefore obtained from four different level of authorities to depict the national picture. The study employed both probability and non-probability sampling techniques, in which with probability sampling, cluster and purposive sampling method was adopted. A purposive sampling method were used obtain forest government officials. With the use of probability sampling, respondents form the house hold of the choosen area were selected and 10% of the selected wards population was taken to be sample of this study which. The table 3.2 summarizes the description choosen samples of the study.

Table 3.2: Sample Description

Sample	Respondents	Percentage
Ward Leaders	18	12.95
Local residents	105	75.54
Government officials	16	11.51
Total	139	100

Source: Field Study (2015)

3.7 Data Collection Methods

According to Creswell (2005) there is no single technique or instrument may itself in collecting valid and reliable data. Therefore, the study apply a combination of data collection techniques. These are observations, structural questionnaires, interviews, Focus Group Discussions and documents reviews.

Face to face interview and focus group discussion were employed to government officials from different ministries including the Ministry of Natural Resources, environmental department, company managers and nongovernmental organizations dealing with forest resource management. Where by questionnaires were administered to other remained respondents to obtain primary data.

3.7.1 Primary Data Collection

Primary data collection involved physical acquisition of data in the field. This involved the use of Participatory Rural Appraisal (PRA) techniques, structured questionnaires with closed and open ended questions (Appendix 1), checklists (Appendix 2) and participantory as well as naturalistic observation.

3.7.1.1 Participatory Rural Appraisal (PRA)

PRA techniques were used during the focused group discussion. A well designed checklist was used as a guide to guide the group discussion with respodents whom were believed to have knowledge on the issues conserning management of forest resources.

3.7.1.2 Questionnaires

A structured questionnaires with closed and open ended questions was used to collect data from government officials, local people and ward leaders in collecting of data on forest resources management.This provides an oputunity to a wide geographical areas as the respondents were scattered .The method were choosen as it is considered to be more economical and time manager.

3.7.1.3 Participantory Observation

Participative Observation method as the name implies, is distinguished from other methods by the fact that the observer become a part of the situation being studied (Enon, 1998). This method facilitated the collection of information from local communities' on attitudes towards management of forest resources in the study area. On this, the researcher was part of the community being studied. His presence did not interfere with the natural course of events. Among of the benefits of this method is to provide a chance for a researcher to observe what is goes on, what respondents say and what they are doing.

A Field observation gives an opportunity to a researcher to discuss with the respondents about the problem. The method primarily used to tie together the more discrete elements of data gathered by other methods. Thus an interactive process between participant observation and other research methods were evolved. With the support of this technique, researcher got a chance to see minning holes left after extraction of bricks and sand as it is observed in Plate 4.6 and 4.9 respectively.

3.7.1.4 Interview

Interview is a face to face conversation that allows any information related to the phenomena at hand to be recorded. The method is very useful as it allowed face-to-face interaction with respondents and give the researcher chance to restructure the question or give clarification to questions where necessary. The method also was appropriate and brought an opportunity to a researcher to gather information and captures some controversial issues between different groups of people during the study.

3.7.2 Secondary Data

Secondary data was collected through literature search from libraries and offices. These included textbooks, journals, pamphlets and various reports e.g. monthly and annual progress reports. Data were also collected from previous studies and through internet sources.

3.8 Data Processing and Analysis

3.8.1 Data Analysis

The study were generated both qualitatively and quantitatively. Qualitative data collected through interviews, focus group discussions and questionnaires were subjected to content analysis. According to Cohen et al, (2007) content analysis is a research technique for making replicable and valid inferences from the meaningful matter to the contexts of their use. Therefore, its use enabled the researcher to summarize data from the field and report them as findings. This was done by coding the obtained data and categorizing them into themes for the purpose of creating meaningful units of analysis that was appeared in terms of words, phrases and sentences.

Quantitative data which were derived from documents and questionnaires was first summarized in tabular form showing frequencies, sums, percentages and rank orders. In the second stage the summarized data from tables, bar graphs and pie charts were analyzed and interpreted as findings. This was managed with the support of both Microsoft excels software and IBM Statistical Package for Social Science (SPSS) which were applied to obtain sum, mean and frequency distributions which then

computed and data was tabulated to summary the raw data in compact form before it was to be displayed diagrammatically to depict the result easily.

3.8.2 Data Presentation

Tables and figures were used to present data collected from the field. Mathematical functions and Microsoft excel software were also used where inferences led to better discussion, conclusion and recommendations.

3.9 Validity and Reliability of Data and Methods

Best and Kahn (2006) define validity as the quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. Reliability, on the other hand, is the degree of consistency that the instrument or procedure demonstrates (Best and Kahn, 2006). In order for a research instrument to be reliable, it must demonstrate that if it had to be used on a different group of respondents in different context, then similar results would be found.

The researcher assured the validity and reliability of instruments through choice of the right instrument for harnessing the required data from relevant respondent with specific attention to key issues that relate to the study, proper wording of instructions and questions as well as logical arrangement of the questions that to be asked. Then the researcher discusses the instruments with his colleagues' students and discussed with his supervisors. Comments provided by colleagues and supervisors considered to make adjustment of the instruments for harnessing information required for the study.

3.10   Ethical Consideration

The consent of the respondents was corresponded physically to discuss verbally before involving them in the research. It was included briefing of the respondents about the research objectives and how they are going to benefit from the research. The respondents were assured about the confidentiality in the information, which may be obtained from them. The interview with respondents were set to be in privacy way. Recorded information, photos and narrations from respondents were used only for the purpose of this study.

All respondents were free to withdraw from the study and the chance to be replaced by another person. Respective all local government authorities where the study was conducted were consulted for permission of to conduct this study. The following were things that prove that ethical issues were kept under consideration during the research process:

(i)   Permission letter and any other written approval were provided when needed by the respondent and other local authorities.

(ii)   The purpose of study was to obtain and give comprehensive information from and to the respondents in order to make them understood all the aspects, objectives and outcomes of this research.

(iii)   The privacy of the participants was well thought-out to the maximum with regard to the laws.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1   Chapter Overview

This chapter provides and discusses the results after data collection and data analysis. It involves social demographic characteristics (age, sex, marital status and educational level), social economic activities and factors contributing to mismanagement of forest resources. It also provides a suitable ground for better conclusion and recommendation of the results.

4.2   Presentation of Findings

4.2.1 Social Demographic Characteristics

Social demographic characteristics of the respondents involve the description of age, gender, educational level, marital status, residential status and socio-economic activities.

4.2.1.1 Age Distribution

Most of respondents involved in this study for about 58% were aged between 35 - 54 years compared to those with age of 15 - 24 years (23%). This makes a group of labour force participated in this study to be 92% (those with age of 25 - 54 years). This age is assumed to be capable to produce and exploit the forest resources as to get building and construction materials, firewood and lumbering. The age group below and above the indicated above which was only 08% (above 55) was considered less exploitative of forest resources. The table 4.1 summaries the age distribution of respondents consulted.

Table 4.1: Ages of Respondents

Age category (years)	Respondents	Percentage
15 – 24	32	23
25 – 34	15	11
35 - 44	28	20
45 - 54	53	38
55 - 64	03	2.2
65 and above	08	5.8
Total	**139**	**100**

Source: Field Data, (2015)

4.2.1.2 Sex

Sex of the head of households who participated in the study is shown in Table 4.2.

Table 4.2: Sex of Respondents

Sex	Respondents	Percentage
Males	87	62.6
Females	52	37.4
Total	**139**	**100**

Source: Field Data, (2015)

Data shows that, among the people interviewed in the study, 62.6% of them were males compared to 37.4% females. Based on traditional practices of most of North Pemba residents, the work of fetching firewood or charcoal is lived on the hands of men due to the distance, scarcity and even religious teachings to most of people.

4.2.1.3 Marital Status

The majority communities interviewed was married (52.5%) compared to (33.8%) unmarried individuals as well as divorced and widowed as outlined in a table 4.3.

Table 4.3: Marital Status of Respondents

Marital status	Frequency	Percentage
Married	73	52.5
Unmarried	47	33.8
Divorced	11	7.9
Widowed	08	5.8
Total	**139**	**100**

Source: Field Data, (2015)

From the table above, 52.5% of people interviewed were married, while unmarried 33.8% divorced were 7.9% and widowed were 5.8 respectively. Such compositions indicated to have enough understanding regarding the management of forest resources due to the demand of fuel wood and housing (marriage responsibilities) and therefore, they have to use forest resources in a way they want. Some of them claimed against the government freeness over the use of forest resources.

4.2.1.4 Educational Level

Educational characteristics of selected members in local areas (Sheha's) are presented in Table 4.4. Most of Individuals for about 32% were possessing secondary education compared to those with tertiary level (i.e. college) of education which were only 12% and those with informal education (Quran class) whom were

17%, adult education for 19% and those with primary education level whom were 20%.

Table 4.4: Level of Education of Respondents

Educational level	Frequency	Percentage
Informal education	23	17
Primary education	28	20
Secondary education	45	32
Adult education	27	19
Tertiary education	16	12
Total	**139**	**100**

Source: Field Data, (2015)

The educated respondents in this study show to be aware with the issues of forest management and can adhere to laws and regulations of the country. Though, all groups with different education levels adhere to have prior education on forest resource management. This means that even those with informal education (Quran class) have had enough knowledge on resource management as one respondent from Kojani Island said: "*Twajua fika lazima tuhifadhi mazingira na twajitahidi lakini Serikali haitupi muelekeo mzuri, tizama mwani na matufali itutiavo ulitima, msitu ule Alhamdulillah ni kwa jitihada zetu tu.*"

Meaning, "We know exactly the importance of conserving the environment and everyone plays his /her role in managing it but we miss the government directions, look at seaweed farming and brick making which have nourished poverty to the

people, God should be praised for that forest, is our own community effort (meaning the reserved community forest which act as wind barriers for the island)"

Their educational level determines their awareness and decision on environmental management. Data explained the raw materials requirements (fuel wood and poles for building and construction) which lies on the hands of both having formal and informal education. Farming and livestock keeping are the activities of all people with and with no formal education.

4.3 Social Economic Patterns Contributing to Forest Resource Exploitation

4.3.1 Main Economic Activities

The main economic activities of the most respondents and others in a study area are crops farming, fishing, livestock farming, seaweed farming and petty trade. The findings also indicate that, the majority of crop farmers and livestock farmers are most groups involving in the mismanagement of forest resources including.

Table 4.5: Social Economic Activities

Economic activities	Respondents	Percentage
Crop farming	51	37
Livestock farming	15	11
Seaweed farming	39	28
Petty trade	06	04
Mining (Quarrying)	28	20
Total	**139**	**100**

Source: Field Data, (2015)

These groups include wage earning employees and businessmen who also engaging on farming practices. The crop farming, livestock farming, and quarrying have contributed much on the loss of terrestrial flora and fauna while seaweed farming in aquatic flora and fauna. The Table 4.5 outlined the activities of most of respondents.

4.3.2 Fuel use patterns by Household Incomes and Costs

Most of North Pemba household differs from the use of energy patterns. The major determinants of the quantities of energy used are the size and income of household. For most households uses more than one fuel as kerosene fuel to supplement, substitute or complement the fuel wood. Firewood, coconut residues (husks, flower stalk, shells and fronds) and charcoal are the principal cooking fuel used by most of low and middle income households, while few people with high income households uses it. The pots are usually balanced on three stones or bricks flexible for any burnable biomass. Unlike, the low income earners, families with well income use charcoal and other kinds of modern energy sources like gas and electricity for their daily activities. Fuel consumers are said to involve costs on either cash or time spent in gathering them.

Those living in town area mostly are buying fuel wood but those situated in rural areas are gathering for their own from their surroundings or nearby. The fuel gatherers are mainly low-income households including men, women and children and are transported by head load, bicycle, hired bullock cart and bus. Plate 4.1 clarifies the cost, quality and mode of transport of fuel wood used in house hold and as analysed in the Table 4.6.

Plate 4.1: Shows the Low Quality Fuel Wood
Source: Field Data, (2015)

Table 4.6: Plant Species Utilized by Local People in the Study Area

S/N	Botanic name	Common name	Swahili vernacular name
1.	Aterocarpus heterophyllus	Jack fruit tree	Mfenesi
2.	Atrocarpus altilis	Bread fruit tree	Mshelisheli
3.	Coco nucifera	Coconut tree	Mnazi
4.	Eugenia capensis novum	Clove tree	Mkarafuu
5.	Mangifera indica	Mango tree	Muembe
6.	Hevea Brasiliensis	Rubber plants	Mpira
7.	Milicia excels	African Teak tree	Mvule
8.	Erythrophloeum Suaveolens	Sasswood Tree	Mwavi
9.	Vitex doniana	Black Plum tree	Mfuu
10.	Uapaca guineensis	Sugar Plum tree	Mchenza msitu
11.	Syzygium cuminii	Java plum tree	Mzambarau
12.	Parinari excels	Guinea Plum tree	Mbura

Source: Beentje, 1987 modified

The Table 4.6 shows the shortage of important tree species in North Pemba. Most of the furniture is made by using a less quality timber (coconuts and mango trees). The valuable timbers are imported from outside the Islands. The Table shown 4.6 describes the plant species as utilized by most people in study areas as one carpenter says, "*Weye mwalimu huoni? Fanicha zote ni za muembe au Mnazi hakuna Mvule, hakuna Mwavi, hakuna Mzambarau na uo n-nazi na muembe wesha.*" Meaning, "Teacher don't you see? All furniture's are made by mango and coconut tree no Milicia excels, Erythrophloeum Suaveolens, no Java plum and even coconut and mango trees are nearly to diminish".

4.4 Strategies Used by the Government to Manage Forest Resources

The Revolutionary Government of Zanzibar through the Ministry of Agriculture has assisted much in tree planting campaigns. Also a large number of trees and mostly cloves seedling are free supplied to the people for about 500,000 seedlings every year. Pemba Community Forest played a big role in collaboration with the government. They succeeded to establish nurseries of native tree in eighteen Shehias including eleven from North Pemba Region (Gando, Fundo, Uvinje, Kokota, Mtambwe Mkuu, Njau, Mihogoni, Maziwani, Shumba Mjini, Mapofu and Kambini (Hindi).

The central Government offers policy directives, title deeds and mobilization to this organization as explained by CFP officials as it was said by Non Governmental Organisations officials during the interview. From their responses they outlined that, three aspects, that for about 30% said government help them to give policy directives, 30% said to have title deeds from the government and 40% supported for mobilization of the community as elaborated in Table 4:7.

Table 4.7: Support Offered by the Government to NGO's (CFP)

Kind of Support	Respondents	Percentage
Policy directives	3	30
Measures (Title deeds)	3	30
Community Mobilization	4	40
TOTAL	**10**	**100**

Source: Field Data, (2015)

4.5   Factors Contributing to Mismanagement of Forest Resources

4.5.1   Absence of Policy Statement Regarding Forest Resources

In Zanzibar, environmental policy and specifically the forest issues have been only

attached within other policy statement '6', like under biodiversity which states that:

> ''*The government will ensure sustainable management of flora and fauna and the associated ecosystems in marine and terrestrial environment''.*

It is also observed under in the land use planning policy where farming, livestock

production, quarrying, tourism and forestry have been identified. The policy clarifies

the increased demand of land that is associated with the improper land use and

environmental problems (Zanzibar Environmental Policy, 2013). Lack of a clear

policy statements regarding forest resources have been identified to be the main

factor contributing to mismanagement of forest resources in Zanzibar.

The above explanations are clarified by one forest stakeholder from CFP who says:

"*Kweli Sera ya Mazingira haina kifungu mahsusi kinayohusiana na misitu ila sisi*

tunapata miongozo ya kisera kutoka kwao, na suala la kutunga sera hawatuhusishi

kabisa." Meaning that, "It's true that Zanzibar environmental policy haven't had

policy statement regarding forest resources but they just give us policy directives and

we are no longer involved in policy making.

Section 19 (a) to (q) of the Zanzibar Environmental Management for Sustainable

Development Act, 1996 indicates the functions of the institution responsible for

environment, section 19 (e) say,   *"In collaboration with other institutions, evaluate*

existing and proposed policies and legislation and recommend measures to ensure

that those policies and legislation take adequate account of effects on the environment".

This is to say, the forest resource as among others resource needs to be separately stated in Zanzibar Environmental Policy and not generalized in other resource statements. It is therefore assumed that, the failure to draw the policy statement dealing with forest issues resulted to absence of clear implementation strategies to mismanagement of forest resources. This indicates a policy weakness despite that policy is a primary document which gives directives and influence over the activities related to a particular resource.

4.5.2 Forest as a Common Property Resources

Economists believe that if everybody shares ownership in the resource, there is a strong tendency to overexploit it and misuse them. Table 4.8 outline peoples attitude towards forest resource consumption, where, 71% of respondents believe on the free use of forest resources compared to 13% who says the use of forests is somehow restricted and 8% who don't know whether there is restriction or not. Only 10% of respondents mainly the government officials from forest department say that there is restriction on exploitation of forest resources. The Table 4.8 summarizes the results.

Table 4.8: Peoples Attitude on Forest Resources Consumption

Forest Consumption		
Opinions	**Households**	**Percentage**
Free resource	99	71
Restricted	14	10
Somehow restricted	18	13
Don't know	08	06
Total	**139**	**100**

Source: Field Data, (2015)

In Zanzibar, Pemba in particular the forest resource is regarded as common property resource whereby everyone has to use such resource in the way he or she wants. Restriction of using such resource is too minimal and the community seems to be benefited directly and disadvantageous at the same time to the resource itself.

There is no legislation, which controls the massive cutting of tree in a small island of Pemba and even replacing them. This is witnessed in Zanzibar Environmental Policy itself page 8-9 which noted that "There is a weak enforcement of regulations and legislations related to environment and natural resources in Zanzibar.

Furthermore, the legislation is no longer committed on rights and conservation of forest resource. This is witnessed by saying " The unplanned (illegal) harvesting and clearing observed all over the islands, particularly in coral rag areas (Zanzibar Environmental Policy, 2013:16) About 500 hectares of coral rag forestry are cleared or destroyed annually and the deforestation rate is estimated to be at least 1% per annum (Zanzibar Environmental Policy, 2013:16).

The forest resource is taken as a common property resource that everyone has mandate to use as he or she wants unlike Malawi where there is a strictness in using and cutting some species like Borassus aethiopum (Mvumo) which grows to about 80 feet height and 6 ft girth. The tree has a characteristic of swelling at the top after several years of existence. Older wood of Borassus aethiopum is dark in colour, with the outer base being the hardest (Ayarkwa,1997). It has a very strong fibrous structure, its age ranges from 150 to 200 years.They grow naturally and no one has planted such type of tree. In Pemba North region Borassus Aethiopum are over

threatened because they are used for building and constructions. The shift from normal trees to the artifiacial as named as man planted tree type is due to lack of strict legislations of forest resource on growing and harvesting. Plate 4.2 shows a number of *Borassus Aethiopum* which have been cleared for building and construction as it shows the weakness of enviromental policy for mismanagent of forest resources.The red circles show positions where the plants have been cutted off.

Plate 4.2: Showing Borassus Aethiopum in a Single Place (Mwane)
Source: Field Data, (2015)

4.5.3 Incomplete and Unmanaged Projects
The study have identified a number of projects which had not completed yet or were not well managed. The H-Young Company which was in contract with North Pemba to build a roads under Millennium Challenge Account has left out the large holes having the height ranging from 3 to 8.3 meters high at Micheweni as indicated by

Plate 4:3. Moreover, North Pemba Region depends on Micheweni district for almost 100% for its building materials (rocks, bricks and gravels). They left out three holes having lengthened to about 0.86, 0.52 and 0.38 kilometers. Some holes dominated by natives especially for brick making and has gone beyond the above height to 9.6 meters as can be observed in Plate 4:3. Unbinding contract made between the Ministry of Infrastructure and Communication and the companies leads to failure of rehabilitating the land.

The demand for these non-renewable natural resources is increasing however rehabilitation is generally not done after the extraction of resources and the situation is clearly unsustainable. From the Plate 4:4, the top fertile soil is taken and left with unproductive land. Absence of rehabilitation leading to massive destruction of the nature of the land, increase deforestation, increase poverty to the people and climatic change.

Plate 4.3: Height Measurement of a Block Left by the Local People (Stone Mining)
Source: Field Data, (2015)

Plate 4.4: Showing a Large Hole Left Un-rehabilitated by the H-Young
Company

Source: Field Data, (2015)

The study also observed the failure of the building, which started in 2008 and intended to be completed by December 2010. The building was no longer completed and the contractor disappeared. Building was constructed under collaboration of KOICA, SUA and Ministry of Agriculture Zanzibar. At the end the government was given title deed and equipments where some of the equipments were destroyed. The incomplete and unmanaged projects lead to mismanagement of forest resources in Zanzibar caused by the weakness of Zanzibar Environmental Policy. The policy itself says "There are number of legislations and regulations related to environmental

and natural resource management and conservation in the areas of forestry, fisheries, and land use agriculture and water resources that are inadequately enforced (Zanzibar Environmental Policy, 2013:8).

4.5.4   Management of Forest Resources is a Cross Cutting Issue

The Figure 4.4 shows the description of the utilization of forest resource in Pemba North Region. 38% of the forest resource in the study population is used for fuel wood in both domestic and bakeries, 44% is used for building and construction and cutting of trees for power distribution, 14% for timber and 28% for pegs used in seaweed farming.
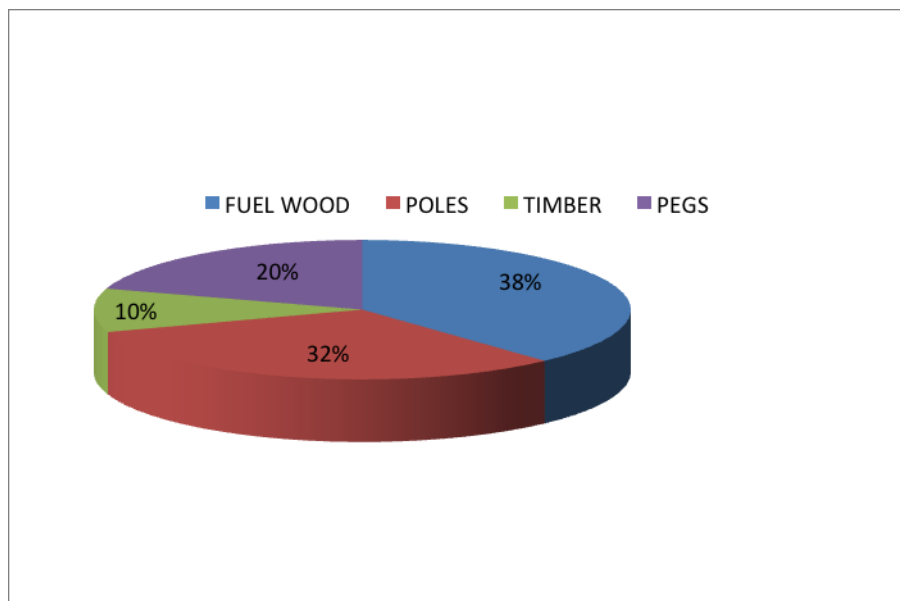
Figure 4.1: Forest Resource Utilization

Source: Field Data, (2015)

The island is prone to the problem of firewood, charcoal and other biomass for cooking. The problem to this is caused by illegal and unplanned harvesting and clearing of forest, the increased demand for fuel wood, seaweed farming, population

pressure, high demand for construction and building materials and others. In the utilization of forest resources there is no single institution responsible in management of forest resources. The Ministry of Agriculture and Natural Resources under forestry department (is responsible in policy making and directives of forest resources), Zanzibar Environmental Department (responsible for all environmental issues and drawing different policies), Ministry of Infrastructure and Communication (clearing of forest resources for extraction non renewable resources and distribution of transmission wires /infrastructure), Ministry of Livestock and Fisheries (mangrove destruction for seaweed farming) and Ministry of Constitution and Law (making or enforcement of laws). For example at Micheweni the Ministry of Infrastructure and Communication has cleared a large area of land for excavation of non renewable natural resources and the degraded land haven't rehabilitated as shown in a Plate 4.4.

Plate 4.5: Uncontrolled Brick Making done by Individual People
Source: Field Data, (2015)

Moreover, there is no enforcing body that can enforce and supervising the use of forest resource in the accordance with law and because of un functioning policy people of Kiuyu Maziwang'ombe and Kojani have made several pits for making bricks and the area is no longer managed as it is observed in a Plate 4.5.

Promotion of effective management and conservation of the environmentally sensitive areas and promoting awareness on environmental issues related to land use, planning and biodiversity are some of the implementation strategies in ensuring the goals are achieved. Micheweni and Kojani are among the environmental sensitive areas as they experience arid condition and they are in coastal areas. So the uncontrolled activities with less accountability in replacing forest may lead to adverse effects near future.

Table 4.9: Hospital Waste Dumped Along the Coast

S/N	Name	Capacity	Quantity/ bottles
1.	Measles vaccine live	0.5 ml	28
2.	Rotavirus vaccine (Rotarix)	1.5 ml	42
3.	Measles and Rubella vaccine	0.5 ml S/C	87
4.	Diphrtheria Toxoid,Tatanus toxoid	0.5 ml	54
5.	Pneumococcal Polysaccharide conjugate vaccine	-	68
6.	Tetanus toxoid vaccine	0.5 ml	71
7.	Vitamin A (Retinol)	500 capsule	12
TOTAL			**362**

Source: Field Data, (2015)

Also study has identified several hospital wastes being dumped along the coast about 3.4 meters from Micheweni Cottage Hospital. This is against the National Health

Policy of 2011 which tend to improve health services and social welfare of the people of Zanzibar (clean environment, chemical and electronic waste inadequate management of hospital (both solid and waste water) and others are constraints to better health communities in Zanzibar. The number of medicines has been identified as summarized in Table 4.9.

Plate 4.6: Hospital Waste Dumped Along the Coast
Source: Field Data, (2015)

The hospital wastes need to be incinerated instead of dumped along the coast. It may lead to disappearance of coastal plants and animals (lead to ecological imbalance in the areas). Hospital management knows well the effects of these drugs but they ignore only because management of forest resources are not tied on their hands. Therefore policy should be strictly enforced for sustainable development (see Plate 4.7).

4.5.5 Lack of Conducting EIA

In Pemba Island the EIA is focusing to a specific area of building and construction especially tourism sector where other activities lack such an important issue. Many national and international companies operate large and complex activities with adverse effects to the community H-Young, Mwananchi Engineering and Constructing Company, Zanzibar Electricity Company to mention few, unfortunately, they run their activities without conducting EIA. Table 4.10 clarifies the above statements.

Table 4. 10: EIA Certificated Issued in Pemba Since 2011

Year	Activity
2011	Makangale Muyuni Resort and SPA Hotel
	Tumbe Fish Market
2012	Office for development of fisheries building –Weni
	Hydrological seismic survey Projects-All districts
	Princes Salme Beach Resort & SPA LTD-Makangale
2013	Kijiwe Beach Resort –Makangale
	Sultan Ruins Resort –Makangale
	Pemba Misali sunset beach Resort Project

Source: Field Data (2015)

Figure 4.8 shows that 62% were on tourism sector, 25% in fisheries and 13% in others (Hydrological seismic survey Projects-All districts). One respondent from the Environmental Department Zanzibar says": *"Sisi tunatoa vyeti ila si miradi yote inayoombewa na miradi yote iliyoombewa ni hii (akionesha daftari la kumbukumbu)"* Meaning, "We offer EIA certificates for developmental projects but not all projects apply for EIA its only this one outlined here (showing reference book) ".

So if rural electrification projects, water distribution projects, road construction, brick making, large buildings and many others are done without EIA certificates the forest resource mismanagement would continue to an alarming rate. In proportion, the data is presented in following Figure 4.8 on **EIA certificates**.
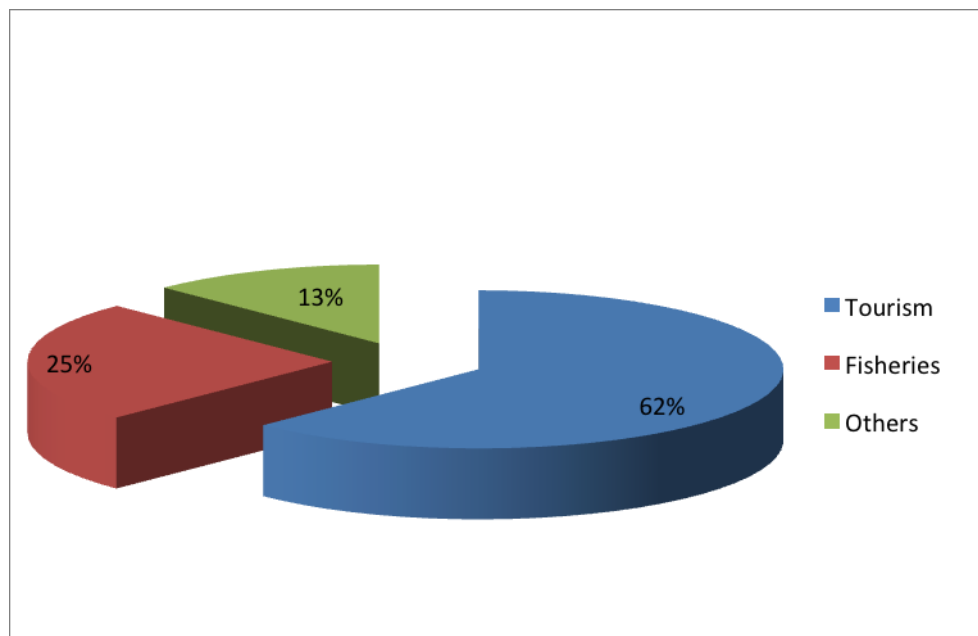
Figure 4.2: EIA Certificates
Source: Field Data, (2015)

There is poor awareness of making EIA in Zanzibar. The table 4.10 and schedule No.1 and 2 of the environmental management for sustainable development act, 1996 clarifies. This suggests that, the lack of EIA in developmental projects in Zanzibar has a greater influence in mismanagement of forest resources.

4.5.6 Lack of Coordination between Law Enforcing Organ and Ministry of Agriculture and Natural Resources

The banning of chain saw seems to be advantageous of the local community as well as the Ministry of Natural Resources in Pemba. Worse enough there is gradual use of

chain saw under supervision of police force and other officials from the ministry responsible for forest resources. One of the users confidentially says. *"Watu wa misitu na polisi mbona twapambia pamoja,na popote usikiapo wanguruma jua wote hao wako standby"* Meaning, "The forest officers and police eat with us and when you heard chain operates is strictly under their supervision ".

The others reasons are lack of confidentiality in work, ignorance, lack of patriotism and bribes. They operate day and night depending on the situation, determining factor are the availability of the officers concerned, availability of large government officials in the island and some were reluctant or showed no interest on forest management.

Table 4. 11: Table Showing the Operation of Chainsaw Observed at Mwane Village

Date	Place	Time
04.08.2015	Ngomani (Mwane)	10.13 pm
08.08.2015	Kitambuu	06.16 pm
11.08.2015	Kitambuu	09.08 to midnight
14.08.2015	Ndige (Mwane)	05.01 pm
15.08.2015	Ndige (Mwane)	12.07 pm to 03.41 pm
21.08.2015	Kinyasini (Mwane)	03.08 pm
23.08.2015	Kwamgongo (Mwane)	03.34 pm
24.08.2015	Kwamgongo (Mwane)	05.39 pm
26.08.2015	Kigope (Mwane)	04.43 pm
27.08.2015	Kigope (Mwane)	06.31 pm
30.08.2015	Madungu (Mwane)	07.03 pm
31.08.2015	Ngomani (Mwane)	06.17 pm

Source: Field Data, (2015)

One man during an interview confidently showed a receipt and says. *"Risiti hii na kwa serikali hii wakubwa wote tunao hapa, (akionesha kiganja chake) na sikwambii twafanyaje lakini weye u-mtu mzima utaona, Buru alifanyaje?……………(alitishia maisha ya askari hadharani kwa msumeno na haikua lolote* "Meaning, "This is permission receipt and bear in mind that government top leaders are with us, I don't tell you the technique but you are mature and you know what Buru did?…………………..he threatened the life of policeman with chain saw but nothing happened" Table 4.11 shows the frequency of chainsaw operations.

Map 4.1: Location of Operating Chain Saw

Source: Field Data, (2015)
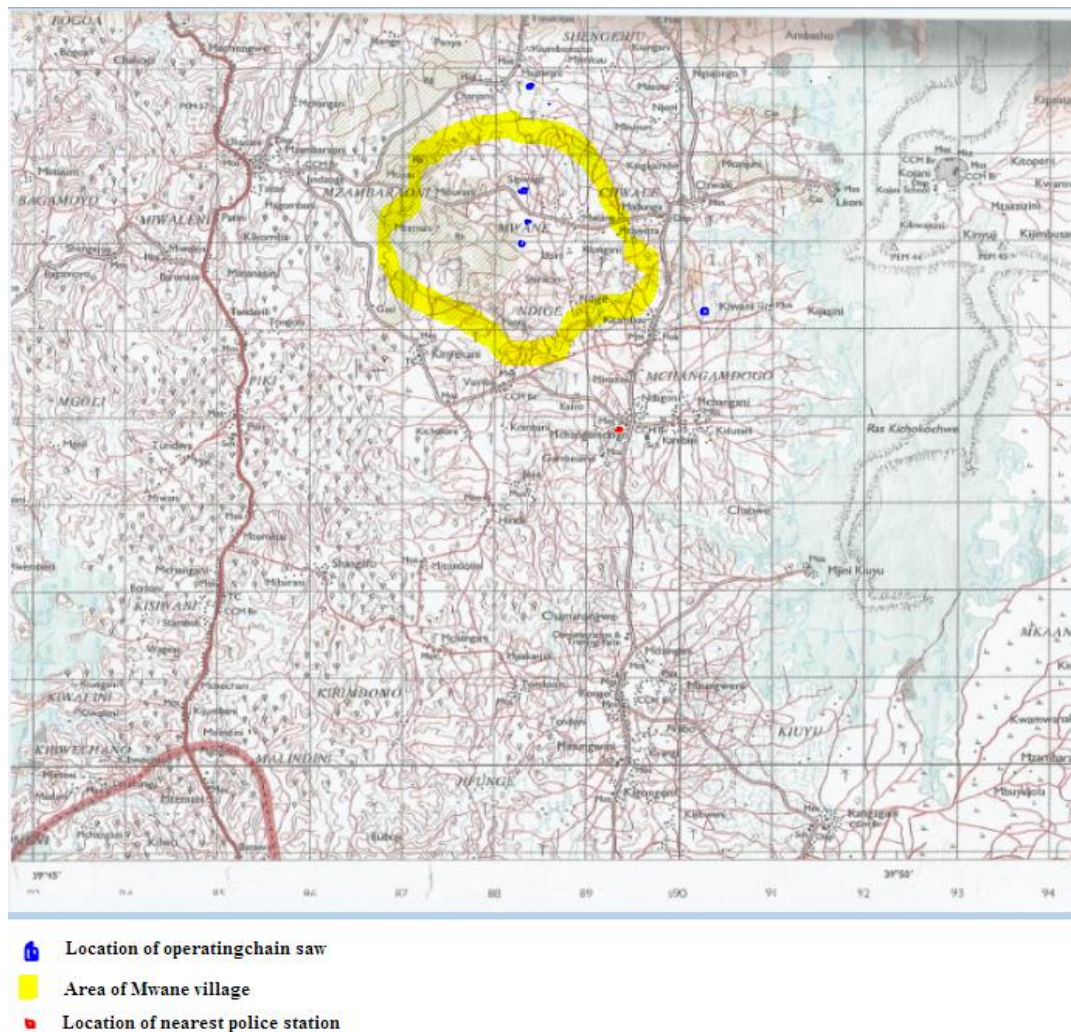
Lack of coordination has been observed among the government organs. Map 4.1 shows the location of Mwane village where there are three operating chains and another one at Kiwani neighboring village. The distance from Mchangamdogo Police Station (5° 7' 0" South, 39° 48' 0" East) to Mwane (5° 4' 25" South, 40° 1' 29" East) is 2.6 kilometers and Kiwani (5° 4' 25" South, 40° 1' 29" East) is 1.4 kilometers respectively where during operation is heard clearly. The forest officers and policemen work together; Mwane, Mchangamdogo and Kiwani villages lie along the main road running from Chakechake to Wete. They can be easily caught if they are willing to do so. Therefore lack of coordination is among the factors for mismanagement of forest resources in Pemba North region.

4.5.7   Policies and Budgetary Support

The assessment of the environmental has much potential to a country. Lack of scientific analysis of environmental resources including forest resources has contributed to the risk of mismanaging forest resources. The ministry, forest department, NGOs and Shehias are mainly dominated by politics. The research department at Kizimbani responsible in agricultural research, according to house of representative 2012/2013 budget was obliged to get 400 million Tsh. for the developmental projects but to the end of the year they were given only 40 million Tsh. equivalents to 10%.

Also on year, 2013/2014 was supposed to get 146 million Tsh. but they got nothing till half a year (December 2013). They just give a figure in National budget to strengthen their political status. For example the Banning of Plastic Bags of 2011 has fallen in the scripts and plastic bags are used in shops as usual thing.mm In Sub

office of Matangatuani in North Pemba region the situation is too worse as there is no enough and competent staffs as it was identified by one of the staff from Matangatuani say: "*Tuna wafanyakazi wachache na ni hao uwaonao na haohao ndio walinzi bosi yeye ametoka kwenda kufuata sampuli za udongo*". Meaning, "There are few workers as you saw outside, among them are watchmen the head is out looking for soil samples".

Because most of the government officials change policies to political statements where different environmental aspects are not reached as is done to benefit themselves politically and not for the welfare of the country. Members of the House of Representatives are not fully accountable and seem to defend their politics.

4.5.8 The Projects for Academic Prestige

The innovation of new seeds and tree in the study area are influenced by academic prestige. The results illustrate that the academic prestige is interwoven with both gender and academic performance and produce different working conditions and requirements for senior managers at universities and university colleges. Introduction of Nerica in Pemba were no longer productive. Nerica (New Rice for Africa) is a variety of rice seeds which is project dissemination; it grows well under different conditions low to high altitude areas. Agricultural experts should not look on their academic prestige for raising their degrees instead they should come up with seeds which cope with climatic change. The high breed 11648 of maize grows well in Shinyanga, Mtwara and Kahama but in Pemba seem to be stagnant with low production.

Most of our institutions (government institutions) directly contribute on degradation of forest resources including Ministry of Infrastructure and Communication with City council who actively rely on income collection (prestige). Zanzibar Investment Promotion Agency is much more on their personal interest in permit production for different company without making EIA as prescribed by the law.

Plate 4.7: Showing Sand Mining at Pembeni Village where Cashew Nut Trees are Cut Down Unreasonably

Source: Field Data, (2015)

Plate 4.7 shows the massive land degradation accompanied with deforestation. At the background of the picture large and old cashew nut trees are being cut down for sand mining (red circles). This is done by the normal residents in collaboration with city council and Ministry of Agriculture and Natural Resources who knows well the impact of doing so. The Shengejuu ward includes three Shehias; Shengejuu,

Kiungoni and Maziwani which have sufficient bare land suitable for sand extraction. This is witnessed by policy itself which says, "Limited application of integrated land use planning can be a precursor to increased deforestation, land degradation and environmental pollution" (Zanzibar Environmental Policy, 2013).

4.6 Efforts Taken by the Community to Combat Land and Resource Depletion

4.6.1 Land Reclamation

People awareness on the forest resource management has increased. Micheweni Secondary School currently is in front to rehabilitate the stone extracted areas which were severely affected. They have a plot of about 1500 casuarinas cunninghamiana (Mvinje) at a harvesting stage. Local people also plant trees before Micheweni Secondary but they complain over the government. One of the respondent says; "*Kazi yenu n-kutupumbaza na kila ajae ana mikaratasi kyemvu, iyo miche iwa? Tizama ile, tokea siku izo sijapata mengine.* " Meaning, "You always make jokes, everyone comes with lump of papers, where could we find plants? Look at that plants, I couldn't find another since then".

The Plate 4.8 indicates the efforts taken by various groups to rehabilitate the area affected in North Pemba region.

From a Plate 4.8, the left side of the people wearing a green T-Shirt (only thirty seven plants) and his right hand side are plants owned by Micheweni Secondary School. Due to lack of sufficient land for agriculture the people have decided to plant along the deteriorated areas. (Stone mining holes) the Plate 4.3 clarifies by showing millet residues at the middle ground.

Plate 4.8: Shows The Quoted Respondents' Plants
Source: Field Data (2015)

4.6.2   The Establishment of NGO's

NGO′s are essential partners in development as they play an important role
in the provision of knowledge and mobilization of resources. A number of
Non Governmental Organisations has been established in different localities for the
purpose of mobilizing community. Community Forest Pemba, Juhudi na Maarifa
Youth Centre, Eastern Pemba Agricultural and Environmental Development, Kojani
Youth Mobilization Care Centre are among NGO's which have assisted on forest
resource management. Community Forest Pemba have played a big role as it

provides assistance to other NGO's in terms of consultancy, utensils, seeds for establishment of nurseries especially for native plant species, knowledge and even finance.

4.6.3 Tree Planting Campaign

The national campaign on planting trees has also supported much the forest resource management programme. The numbers of trees are planted each year by the community. Secondary as well as primary school students are involved in the campaign. These have assisted for schools to have their own plots of trees. Chwale primary school has about 1856 mangrove trees along the coast; Micheweni Secondary also has about 1500 casuarinas cunninghamiana, Kojani have 728 mangroves along the coast.

4.6.4 Shifting From Subsistence Agriculture to Fruit Agriculture

Currently in Zanzibar, community is insisted to change and transform their mode of agriculture from normal agriculture practice to fruit crops. Small farmers has participated in the market and transform agriculture from a subsistence activity to a profitable fruit agriculture. This is done trough small organisations (grass-root organizations), which are important for development and change in the rural areas.

They provide services such as credit, extension, input supplies and market channel for agricultural produce. They also encouraged to support the increase of production, processing, marketing and credit mobilization. The involvement of communities and

their organizations is essential to ensure success in the implementation of the agricultural policy.

4.7 Discussion of the Findings

The main objective of this study was to investigate factors contributing to the mismanagement of forest resources, which is linked to the weakness of Zanzibar Environment Policy. The study was conducted in North Pemba Region in Wete and Micheweni Districts where the deterioration of forest resources increases to an alarming rate while the conservation measures are at minimal level. The study employed a multi-stage sampling procedure involving purposive selection of the study villages which are much more affected. The study adopted both qualitative and quantitative approaches for data analysis concerning mismanagement of forest resources.

The study was guided by three specific objectives; the first objective was to assess social economic factors which contribute to forest resource exploitation. The study findings revealed there are scarcity of fuel wood and the diminishing of forest resources in most areas of North Pemba Region. Firewood and charcoal are the major source of energy for domestic use which is now being substituted by coconut residues (coconut flower stalks, coconut fronds, coconut husks and coconut shells). Unavailability of effective technical services was identified and revolution towards the use of electricity, bio fuel or LPG in cooking will take long. The cost followed by irresponsibility, imitations, selfishness and others are among the factors for inconsistence or sustainability of forest resources.

The second objective was to assess strategies used by the government to manage

forest resources. From the findings of the study the majority of the respondents 64% acknowledged the tree planting campaign as a major strategy, where every year a large number of trees are planted but no one looks after them. Community forest Pemba played a big role in collaboration with the government. They succeeded to establish native tree nurseries in eighteen Shehias in Pemba including eleven from North Pemba Region. However, the analysis on the respondent's knowledge of managing forest resources revealed that the majority of them had insufficient knowledge. Also even those working in responsible offices were not willing to show effective cooperation may be because of little knowledge, poor performance, politics or low awareness.

Also there were management strategies adopted by the communities as a result of resource depletion in the area. The study findings have shown that, the numbers of people around North Pemba Region have changed their status although exploitation of forest resource exceed rehabilitation rate. The individual people and the small groups have shown awareness and strictness on tree planting. The rehabilitation by the local people is done direct or indirect due to scarcity of agricultural land. Micheweni people have changed the holes left by H-Young Company for planting millet and maize. The areas which are not productive are covered by casuarinas cunninghamiana and acacia.

The third objective of this study was to evaluate weakness of Zanzibar environmental policy which contributes to mismanagement of forest resources. The rate of mismanagement of forest resource in the study areas is increasing. Micheweni district is among the poorest district in Zanzibar and their small land has been

changed to non renewable natural resource extraction area. Micheweni provides about 100% of the building materials in North Pemba Region (stones and bricks) where extracted areas were not yet rehabilitated. The findings have also identified number of factors including: The absence of policy statements regarding forest management in Zanzibar environmental policy, forest being a common property resource, incomplete and unmanaged projects, management of forest resource is a cross cutting issue, lack of EIA for many projects, lack of coordination between law enforcing body and ministry of agriculture, domination of politics and academic prestige. Lack of policy directives has negatively influenced implementation of various activities and enforcement of laws. Also findings have shown that rehabilitation activities have been left to Non-governmental organizations without a clear policy and support from the responsible Ministry. The non seriousness of the government institutions in forest resource management is evidenced by the silence of local government leaders and politicians.

The findings have shown that, although a large number of trees are planted each year as a national campaign, the ministry responsible do not make any evaluation whether is it satisfactory or not. Community perceived negatively as most of the trees are for sale (not fruit trees) and being selective as only few people are informed during distribution. For clove trees are distributed by the local people after government officials are satisfied. In general this chapter shows the findings and discussion of the study where we may conclude that the mismanagement of forest resources in Pemba is largely contributed by the weakness of Zanzibar Environmental Policy. The government has not shown full accountability over the forest resources.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

The weakness of Zanzibar Environmental Policy can be observed on the absence of specific policy statements for forest resource management. Despite that Zanzibar to have environmental policy many other fifteen policy statements, only forest has been generally stated under biodiversity and land use planning (statement no. 6 and 9).

The findings have identified some unmanaged and incomplete development projects regarding to forest projects. Lack of coordination between central and local governments, governments ministries, domination of politics, lack of budgetary support, are said to be the main constrains towards effective forest managements as they negatively affect the people and the area related to forest resources management. A conclusion which might be made from this study therefore is that, the mismanagement of forest resources is largely contributed by the weakness of Zanzibar environmental policy.

5.2   Recommendations

From the major findings and conclusions of the study, the following recommendations to be taken into accounts in order to minimize the effects of mismanagement of forest resources in Zanzibar.

5.2.1 Adoption of Specific Forest Policy Statement

There is a need for government to adopt a new and effective forest policy which can state and address clearly the challenges regarding to forest management and initiate the statement in Zanzibar environmental policy that can be used as a directive towards forest management. Currently, the forest issues have been only attached under biodiversity and land use planning policies. So there should be a specific forest policy statement bearing that forest is among the threatened resources.

5.2.2   Providing Restriction for Endangered Plant Species

There is a need for providing as much information to the communities on the effects of over exploitation of forest resources. Forestry department should also make strict laws pertaining to harvesting, use and managing forest resources. Restriction that cans safe guide species and replanting of native species could reduce the impacts. For example, barassus aethiopum for example is nearly to be diminished as from early stage of development to harvesting it about 150 -200 years.

5.2.3   Reviewing Policy for Investors and Companies Operating in Zanzibar

All offices and institutions working on offering the permit to the foreign companies to extract non-renewable resources should ensure that the holes/pits are filled up before the investors leave.

5.2.4   Delegate Power to Shehias and Village Leaders

Political leaders have more influence to the people. Village leaders and Sheha's should be given power to work closely and have a mandate and power to charge and

penalize al people who committing any mistake which relate to mismanagement of forest resource.

5.2.5 Conducting EIA for Developmental Projects
The government through Environmental department should strongly focus to assess on Environmental Impact for developmental projects. Frequent EIA could minimize or eradicate possibilities for mismanagement of forest resources while ensures the sustainability of the people and their resources.

5.2.6 Frequent Assessment of Forest Resources by the Government

Due to climatic change or adaptive crops, departments of forest in collaboration with Ministry of agriculture (the institute of agricultural research) should make an assessment of crops and trees to be planted. The assessment should focus on providing seeds, advice, technical support and even funds for the sustainability of the of forest resources.

5.3 Suggestions for Further Studies

Other research can be done on the following as:

(i) To investigate on environmental friendly techniques for rehabilitation of the land. There is a need for land compensation practices for building the welfare of the people especially Micheweni area.

(ii) To study on alternative new hybrid of forest species this can supplement the need for the growing fuel wood demand.

(iii) Carrying out a study to assess socio- economic roles which affects forest and its associations to the effects of livelihood in Pemba Island.

(iv) To over check on the Integrated farming practices and rain water harvesting as to ensure the effective management of water resource for the benefits of both human and other aquatic resources.

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APPENDICES

Appendix 1: Questionnaire for Assessing the use of Forest Resources

TOPIC: The Assessment of Natural Resources Management in Zanzibar. A Case of Forest Resource in North Pemba

PLACE NAME/VILLAGE…………………………………………………

Please tick (√) the appropriate answer.

1. Your Age……….……………………Sex………..………………..

2. Educational level:

    a. Primary   ( )

    b. Secondary   ( )

    c. College/University   ( )

3. Professional activity……………………………………………………...

4. Residence area:

    a. Rural   ( )

    b. Urban   ( )

5. Duration in residence

   a. Below 5 years   ( )

   b. Above 5 years   ( )

6. Marital status: Married

   a. Single   ( )

   b. Married   ( )

   c. Widow   ( )

   d. Divorced   ( )

7. Type of house you live on

   a. Mud with leave roofed   ( )

   b. Mud with iron roofed   ( )

   c. Stone with leave roofed   ( )

   d. Stone with iron roofed   ( )

   e. Stone bricks   ( )

   f. Others (specify)……………………………………………………………

8. Major economic activity(s)

   a. Farming: Size……………Distance from residential area…………………

   b. Livestock: Type …………..…….Their number……………………………

   c. Others (specify)……………………For how long……………………..…..

9. What kind of environmental activity is commonly taking place at your area?

   a. Fishing

b. Quarrying   ( )

c. Seaweed farming   ( )

d. Building and constructions   ( )

e. Deforestation   ( )

f. Other specify………………………………………………..

10. At what time does it take place?

a. Day time   ( )

b. Night time   ( )

Give reason (s) for your answer………………………………….

12. In which season of the year the forest harvesting is highest?

a. Rain season   ( )

b. Dry season   ( )

c. Both   ( )

13. Specify kinds of people involved in forest harvesting activities at your area?

a. Individuals   ( )

b. Companies   ( )

14. Do they stay within your community?

a. Yes   ( )

b. No   ( )

15. Mention strategies used by the government in management of forest resources.

………………………………………………………………………

………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

16. Do you think government strategies have succeeded enough?

   b. Yes   ( )

   c. No   ( )

   Give reasons…………………………………………………………………

   ………………………………………………………………………………

17. Is there a need for free use of forest resources?

   a. Yes   ( )

   b. No   ( )

Give reasons………………………………………………………………………

………………………………………………………………………………………

Mention the negative impacts for mismanagement of forest resources to the community living around.

(i)   Decline in the quality of the farms   ( )

(ii) Lack of building places   ( )

(iii) Loss of biodiversity   ( )

(iv) Destruction of coastal beaches   ( )

(v) Open holes that are not filled   ( )

(vi) Other (specify)………………………………………………………

18. What does the local community do to ensure sustainable use of their forest resources?

…………………………………………………………………………………

…………………………………………………………………………………

19. What is your opinion about environmental conservation in your area?

…………………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

20. Any comments…………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

…………………………………………………………………………………

Appendix 2: An Interview Guide for NGO's

TOPIC: The Assessment of Natural Resources Management in Zanzibar. A Case of Forest Resource in North Pemba

Please give an appropriate answer.

1. Name of Organisation ………………………..………………

2. Please name other organisations responsible in forest conservation in North Pemba.

3. What motivated you to establish such organisation?

4. What are the objectives of your organisation?

5. What is your target population?

7. To what extent have you reached (succeeded) your objectives?

9. Are there any constraints you faced in implementing your objectives?

10. How you overcome them?

11. Did your organisation give any support to the people?

12. If yes what kind of support and at what level?

Kind of support   Level of contribution (%)

(i) …………………………………   …….…………….............…

(ii)…………………………………   ………………….……………

(iii)…………………………………   …………………………………

13. Did your organisation have supported by the government or other organisation?

14. If yes what kind of support and at what level?

15   Kind of support Level of contribution (%)

(i) …………………………………   …….……...…………………

(ii)…………………………………   …………………….……………

(iii)…………………………………   …………………………………

15. What is your opinion to the Government?

16. Please name roles played by the following in forest management?

An organization	Role to be played	Level participation (%)
Ministry responsible		
Professionals		
Non Governmental Organisations		
Shehias		
Politicians		
Normal people		

Appendix 3: Checklist for Administrators

TOPIC: The Assessment of Natural Resources Management in Zanzibar. A Case of Forest Resource in North Pemba

PLEASE FILL THE CORRECT ANSWER.

1. Name of institution……………………………………………………………

2. Have you had revised the policy of your institution?   Yes   (   )   No (   )

3. If Yes, What strength / goods have you identified, if no why?

   ………………………………………………………………………………

   ………………………………………………………………………………

4. If yes have you identified any weakness? If yes name some of them

   ………………………………………………………………………………

   ………………………………………………………………………………

5. Any comments:

   ………………………………………………………………………………

   ……………………………………………………………………………

Appendix 4: Observation Checklist

TOPIC: The Assessment of Natural Resources Management in Zanzibar.   A Case of Forest Resource in North Pemba

The observation will be guided by the following questions:

1. What are the factors contributing in forest resource exploitation in the area?

2. To what extent government strategies have achieved in management of forest resources?

3. What are the Policy weaknesses in relation to management of forest resources?

4. What are the community strategies used to minimize forest resource depletion?