ANALYSIS OF ROLE OF LOCAL INSTITUTIONS IN COMMUNITY PARTICIPATION IN FOREST MANAGEMENT: CASE MPANGO AND TEMBWE FOREST RESERVES IN DEDZA DISTRICT

MASTER OF ARTS IN DEVELOPMENT STUDIES THESIS

HAPPY RICHARD CHAWAWA

UNIVERSITY OF MALAWI

CHANCELLOR COLLEGE

JULY, 2019

ANALYSIS OF ROLE OF LOCAL INSTITUTIONS IN COMMUNITY PARTICIPATION IN FOREST MANAGEMENT: CASE MPANGO AND TEMBWE FOREST RESERVES IN DEDZA DISTRICT

MASTER OF ARTS IN DEVELOPMENT STUDIES (MDS)

By

HAPPY RICHARD CHAWAWA
BSc (Social Work) - Catholic University of Malawi

Thesis submitted to the Faculty of Social Science in partial fulfilment of the requirements for the degree of Master of Arts (Development Studies)

University of Malawi
Chancellor College

July, 2019

DECLARATION

I, Happy Richard Chawawa hereby declare that this thesis/dissertation is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

HAPPY RICHARD CHAWAWA

_____

Full Legal Name

_____

Signature

_____

Date

CERTIFICATE OF APPROVAL

We certify that we have examined this thesis by Mr. **HAPPY RICHARD CHAWAWA** and find it satisfactory as a basis for the award of a **MASTER OF ARTS IN DEVELOPMENT STUDIES.**

Signature: ……. Date:…….

GEORGE JAWALI, PhD (Lecturer)

First Supervisor

Signature: ……. Date: …….

EDISTER JAMU, PhD (Lecturer)

Second Supervisor

DEDICATION

To Sr Mercedes Arbesues for linking me up with the sponsors to assist me with funding for my studies. To my dear wife Neless Kweza Chawawa for being there for me through thick and thin during my studies.

To my God, in the words of Paul:

For I am already being poured out like a drink offering, and the time has come for my departure. I have fought a good fight, I have finished the race, I have kept the faith (2 Timothy 4: 6-7). Amen.

ACKNOWLEDGEMENTS

It has been a long journey realizing this dream. *I have embraced and nurtured for a long time in my life.* However, this dream would have remained a wishful thinking and insurmountable if it was not for the efforts and support of the following people who I feel I will be failing in my duty if I do not express my heartfelt indebtedness, gratitude and appreciation to them.

I am very thankful to my Mum Sr Mercedes Arbesu for her advice, guidance, and financial support throughout my academic journey. *"Your advice has been unique, your guidance and support has been too instrumental.* Let me also accord special thanks to my sponsors for their selfless support financially. "You did not have a lot but from what was given in your hands, you were not selfish but considerate enough. I do not have the right vocabulary to express my gratitude but God will surely remember you for all you've done." Let me also thank my seasoned and vast experienced supervisor Dr George Jawali for his wisdom and guidance during the writing of this Thesis. My sincere gratitude should also be extended to and the entire Forestry Department crew at Kanyama Extension Planning Area (EPA) and at Dedza District for allowing me to conduct this study and for providing me with the necessary support and information that I needed during my research. Thank you very much!

Other people that deserve a special mention are my lecturers, relatives and friends (too numerous to mention) among whom are Prof Happy Kayuni, Dr Dulani, Dr Kambewa, Prof Ben Kaluwa and Prof Mulwafu. Let me also extend my heart-felt appreciation to my lovely Wife Neless Kweza Chawawa, Marvellous Chawawa and Happy Richard Chawawa Junior and my only brother Gift Chawawa. Let me also extend my heart felt appreciation to my roommate Hanith Ereck Banda meeting you was not a coincidence but God's initial arrangement. You were all I needed and a friend indeed. You gave me the courage and motivation to go on when I needed it. I will always remember the food, selfless support financially, emotionally and socially and the jokes we shared. Gratitude to Chipiliro Mizere for technical support.

Above these wonderful people, I am very grateful to the Lord Almighty for the life, Strength and Grace He gave me throughout my two years stay at Chancellor College. Thank you Lord for everything and I'm humbled because you have been my Strength and provider.

ABSTRACT

The Study evaluated the effectiveness of local institutions on community participation in forest management in Tembwe and Mpango villages which were sites for a social forestry decentralization program in Dedza forest. Common Resource Pool theory CPR guided the study. CPR theory focuses on the ability of people to act collectively to overcome the management dilemmas inherent to common-pool resources. The theory developed in response to the work of Olson (1965) and Hardin (1968), both of whom argued that groups of people were not likely to work effectively together. The theory is very much in line with the objectives which assumes that open access management of common-pool resources can be avoided through collective action.

Structured interviews were used for data collection during focus group discussions, key informants and household interviews. Socioeconomic characteristics of the households and institutional design principles were assessed to determine factors that influence community participation in forestry management. Trees and forestry measurement were carried out in the Village Forest Area (VFA) to determine forest cover since the establishment of the local institutions. Quantitative data were analyzed using Statistical Package for Social Science (SPSS). Inference were drawn from descriptive across tabulations and frequencies. Some data were imported into Microsoft Excel because it was easy to make good graphs than in the former. The study revealed that Village Natural Resources Management Committees (VNRMCs managed forest resources in the area. It was also revealed that community participation was governed by socio economic and demographic attributes of the community and existence of institutional design principles as significant difference ($p<0.05$) were observed in people's participation in forest management. It was also noted that there was significant increase ($p<0.05$) in forest cover and species composition in the area which was indicative of forest improvement in the area.

Key words: Community participation; Decentralization; Forest management; Local institution

TABLE OF CONTENTS

LIST OF TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

DFID	-	Department for International Development
DFO	-	District Forestry Officer
EPA	-	Extension Planning Area
FAO	-	Food and Agricultural Organisation
GPS	-	Global Positioning System
IGA	-	Income Generating Activity
MSCE	-	Malawi School Certificate of Education
NFP	-	National Forestry Programme
NGO	-	Non Governmental Orgamisation
NSO	-	National Statistics Office
SFP	-	Social Forestry project
SPSS	-	Statistical Package for Social Scientists
UNHCR	-	United Nation High Commissioner for Refugees
VDC	-	Village Development Committees
VFA	-	Village Forestry Area
VNRMC	-	Village Natural Resources Management Committee

CHAPTER ONE

1.1 Background

Forests have environmental, ecological, cultural, social and economic values in supporting natural systems and improving human welfare. Within Development studies these issues are studied in relation to Natural Resources Management regimes (Porter 2014). This study attempts to join the debate on these issues of natural resources management (Maconachie 2006). Accordingly, to Hobley (2006) argued that worldwide, about 1.6 billion people rely heavily on forestry resources for their livelihoods. NACSO (2016), found that forest products are used for firewood, timber, poles, fodder, charcoal, fruits and honey. They also provide services such as water catchments function, ecological processes maintenance, carbon sinks, sites for cultural, traditional and religious beliefs. The Chronic Poverty Research Centre's (CPRC 2005) report indicates that forests account for 30% of the earth's total land area or about 3.6 billion hectors. Out of this coverage, about 2.9 billion ha are closed forests (stand density greater than 20%), while 700 million ha are open forest (mixed forest, grassland systems, with trees covering at least 10% of the ground). In addition, there are 1.7 billion ha of other wooded land, including forest fallow and scrubland. Thus the total area of "woody vegetation" is 5.3 billion ha which is equivalent to 40% of the world land area (FAO, 2013). Mvimi (2010) found that 57% of the world's forests cover is located in developing countries mostly in the tropics where varied forms of resource management regimes such as social and community forestry are in use.

Community participation in resource management essentially means sustainable use and management of natural resources by people, living in and around a region integrated ecologically, socially and culturally. Age-old traditional practices have often been neglected in this modernizing world. Yet, traditional practices that have been sustained over generations may provide insights for developing sustainable practices in the present scenario (Cunliffe 2011). While some traditional practices

may be preserved as such, others might need some modifications depending upon their strengths and weaknesses in addressing the present and future problems. Building on traditional practices means less dependence on external assistance. If one realizes the potential of traditional practices in developing sustainable resource management in forestry and related environmental matters, a detailed analysis of indigenous knowledge and socio-cultural capital need to be undertaken in varied environmental, social and economic conditions (Ribot 2002).

Issues concerning forestry and the environment are to some extent everybody's business. In recent years, there have been increasing interests by researchers in matters concerning the environment. These include environmental degradation and its impacts, global warming and its effects as well as safeguarding the environment and minimizing impacts caused by human operations and other activities. Both government and Non-Governmental agencies are not left out in the search for community participation in environmental management and sustainability issues and reduction in poverty. As such there is the need to investigate community participation in forest resource management and the relationship it has with poverty. Often times different forms of conflicts arise in efforts to involve communities in gaining benefits a natural resource, such as forests. (Bertzky 2012). The idea of community participation in the management of forest resources is gaining some attention although much is not done in this field. Human beings interact with their environment more often so as to make ends meet. Such human interactions with the environment can build or destroy it (Dovers 2017). However, since resources are dynamic and keep changing with time and as humans continue to interact with their environment, it is very essential that in the management of such environmental resources, and forest in particular, the community is not left out so as to ensure its sustainable usage for development (Tchamba 2018).

The individuals that make up the community need to make informed choices about themselves during their day to day interaction with their environment. The community members may be aware of some effects of their actions but are forced to do things that are harmful to the environment (Matthews 2016). Therefore, there is the need to make them aware of other effects of their actions that they may not be aware of. According to the study conducted in Kenya by Hussein (2015) revealed that awareness creation

to be undertaken successfully, the management body of these forestry resources should incorporate the community in the management of the resource in whatever way possible so as to reduce conflicts of interest and contribute to a reduction in poverty. Regional and global literature championed by Lowore (2014) demonstrates that it is possible that poverty can be reduced when communities interact better with their environment and are able to make better choices that will help improve their living conditions. It is also through such interactions with the environment that can destroy the forest resources when proper care is not taken. Henceforth, it is essential that in the management of such resources the community take part in it in order to ensure its sustainable usage for development. Cleaver (2012) explored in more detail that communities are able to develop their own understanding on their aspect of management and control and are confident on which activities they undertake. Since the communities reside closer to the resource than the management, their participation in the management of the resource can increase the communication links between the community and management and can report any unwanted activities that go on or with which the resource is being used for. They can also contribute in their own small way by helping to stop certain disasters that can occur for instance, fire outbreak.

Additionally, Chao (2012) suggest that by participating in the management of the resource, the community is able to take part in the decision making process and are able to point out decisions that affect their lives negatively and to decide on other areas where decisions should be geared towards in order to improve their living conditions (Chao 2012).

Participatory Natural Resource Management (PNRM) entails the managing of resources by the pertinent stakeholders. It necessitates the discussion on objectives and suitable tradeoffs among various stakeholders, who may comprise researchers and other educational organizations. It also includes participatory problem description, discussions on future issues and structuring a shared program for action. Sharing the same opinion on regulations on resource management and how to put into effect conformity is an essential constituent of participatory resource management (Pound 2009). Peters (2012) argues that this will enable policy makers to enact policies that incorporate community participation in forest resource management. This will further encourage other researchers interested in issues concerning communities and forest

resources to also undertake research in these areas. YThis will henceforth, go a long way to help the nation as a whole in increasing awareness on community participation in the management of forest resources as a tool for reducing poverty and cut down government spending on poverty issues.

From the foregoing it can be argued that the community within which the resource is found must value it as such. Henceforth, there is the need for them to benefit from that forest resource, be it artificial or natural. The ability of the community to benefit from the resource enables them to appreciate that resource and use it sustainably. As the analysis of the regional and global literature above shows, this can successfully can successfully be done when the community is engaged in the management of the forest resource.

1.2 Malawi: Many forest resources?

In Malawi many forest resources are disappearing due to deforestation resulting from increased demand for fuel wood products expansion for agriculture and human settlements and mismanagement of forest resources (Forest department 2017). This has increased scarcity of trees and forest products in Malawi. For instance, biomass assessment of 2011/2012 showed that the extent of forest cover declined drastically (Swedish Space corporation 2012).

Poverty eradication, a thriving economy and good environmental management are important goals for Malawi. Forests and trees can and should be managed and used to contribute to achieving these goals. Malawi's National Forestry Programme (NFP) aims to make this possible by providing an agreed set of priorities and actions to bring about sustainable management of forest goods and services for improved and equitable livelihoods (Eboh 2010). Malawi's NFP has been developing since the early 1990s–with a concerted development phase during 1999 and 2000. Existing information has been unearthed and utilised, new analysis has been carried out by working groups, key international obligations and opportunities have been considered, and consultation processes with stakeholders at national, district and local levels have been carried out and synthesised in this document. Improved forestry and livelihoods are given a solid policy framework in the Constitution, the National. Forest Policy and the Forest Act. The NFP is the means to operationalise the Policy and the Act to

translate good intentions into real results. It does this by focusing on the key issues, drawing on experiences of good local and national practice in all the key areas needed for better forestry, and making better two-way connections between policy and practice so that both can be improved (Mutimukuru 2009). Malawi is a nation of smallholders most households only have a hectare or so of land from which they must get a variety of livelihood needs. Forest goods and services may be crucial components of these livelihoods and should be further developed to improve them by providing fuel, building materials, cash, or soil fertility.

In order to ensure effective implementation of the forest policy, the National Forestry Programme (NFP) was established. The National Forestry Policy whose goal is to implement sustainable management of forest goods and services for improved and equitable livelihood, was developed as a mechanism to guide the implementation of the policy. One of the themes of NFP is to support community based forest management. The strategy for achieving this theme is accomplished by empowering local communities to collaborate with government in managing forest resources and develop forestry based enterprise on customary land based on clear mechanism on ownership and control of the resources (Astrom 2008).

Furthermore, the policy goal for community based forest management is to empower rural communities to conserve and develop Malawi's forest resources for the economic and environmental benefit of the present and future generation. It has two principle objectives. Firstly, it aims at stemming the prevailing widespread destruction of forestry resources on customary land. Secondly, it encourages the development of forestry and woodlands as economic assets for the communities (Malawi government 2010). Hence government formulated these instruments that would facilitate and mobilise communities in the management of forest resources especially on customary land (Larsen 2010).

In order to accomplish the involvement of the local communities in forestry management, the forestry department promotes community organization and mobilization through establishment of the local institutions such Village Natural Resources Management Committees VNRNCs. The involvement of local institutions is essential for sustainable forest management at the local level. Although the term

Community Based Natural Resources Management (CBNRM) was not generally in use until the 1980s, the notion that communities should, and could, satisfactorily manage their own resources according to their local custom, knowledge and technologies has a long history (Molokomme 2003).

Main findings of the review the community based. The ideas of community have constantly been shaped and reshaped by different outsiders through time from colonial Governor-Generals, political advisors, European settlers, and more recently rural development consultants and academic writers (Ellis 2010). Thus, the idea of CBNRM has evolved through time and been specific to particular countries, but over the past 15 years, there has been a convergence of various strands of meanings in the international development literature and in the practice of International Funding Institutions (IFIs). In India and Nepal and most countries of south-east Asia, and Natural Resource Management Committees in Malawi have some quite close similarities at a general level (Cotterill 2010). These have resulted from similar strategic policy designs from IFIs. Still, at the level of the detail of administrative, legal and financial structures and of policy implementation, the term means widely different things to different people. In the colonial period in Africa, the practice of Indirect Rule was developed for which ‘‘native institutions’’ had been adapted and shaped for the purpose of rule by colonial rulers, dividing the rural from the urban and one ethnicity from another, and forming an institutional segregation. Africans were relegated to a sphere of customary law (in francophone Africa), while Europeans obeyed civil law (Ribot, 2013).

These institutions, based upon ‘‘traditional’’ (usually chiefly) leadership, amounted to what (Mamdani 2010) calls decentralized despotism. These institutions were essentially local and varied according to a great variety of cultures, ecologies and material needs, but usually underpinned by communal tenure and chiefly authority. They were in many ways neglected by administrators except for purposes of political and strategic control, labor mobilization and latterly for soil and water conservation, in the period before Independence. Otherwise, they were treated with disdain or neglect by most colonial writers, who assumed that processes of ‘‘natural evolution’’ would eventually lead to individual tenure, a market in land, and the commercialization of agriculture (Lugard, 2011). The assumptions behind Lugard’s

thinking and his ‘‘dual mandate’’ had become standard development wisdom by the period of the winning of independence by most African states. It remains powerful in the minds of many government officials who implement CBNRM programs (Taylor, 2001). The assumptions were that individualization of land tenure with registration of title would encourage long term investment in natural resource management, would inhibit (what was later styled as) the ‘‘tragedy of the commons’’ (Hardin, 2010), help to provide collateral for production loans, and create incentives to shift production from subsistence the market late colonial narrative with a very contemporary ring. CBNRM remains a touchstone for much of rural development and sustainable natural resource management and has been promoted by most major IFIs since the early 1990s. Yet, I argue, it has largely failed to deliver the expected and theoretically predicted benefits to local communities (Kontoleon 2010).

1.3 Problem statement

Devolution of natural resource control to local communities has occurred in participatory community based approaches as well as in the form of integrated conservation and development projects (ICDPs). However, under the neoliberal agenda, true local control of resources has been limited. In some instances, corporations and international agencies, such as large environmental development NGOs, have increased their influence over local resource use through the decentralised governance structures. In many, economic activities linked to the market, such as ecotourism or involvement in PES schemes, are promoted as livelihood options, which could further disfranchise marginal communities. (Weddikkara 2008)

Indeed, the effects of local participation in forestry management is highly contested throughout the literature and though studies showing casual effects between participation in forest management and positive outcomes are insufficient (Fernando). Despite the alluring arguments that community participation in forest management promotes increased equity, greater efficiency and facilitates rural development. Studies from various African countries such as Mali and Burkina Faso shows that, the latest reforms have neither created accountable representative local institutions nor have ceded power to local levels (Mongoi 2012). Authorities have great influence on

decentralized forest management modalities but the characteristics of the outcome is anchored on the power receiving local entity and whether the devoted local entities are representative and downwardly accountable Kayambazinthu (2010) in his assessment of factors that influence participation of Community Forest Association (CFAs) on the forest resource management in Dzalanyama he explores experiences encountered in of implementing participatory forest management under the forest act 2005. He argues that despite the establishment and existence CFAs cases of illegal logging, grazing and forest encroachment remain high. Indeed, human drivers of changes in forest ecosystems such as these been subject to intensive study for several decades, however, emerging major traditions or theories that have been examining human-forest interactions have often neglected analysis of the understanding of the influence of governance on forests at the level of the nation-state, where many decisions about forest management are made. On its part Common-Pool Resource (CPR) theory, as applied to forestry, largely focuses on the prospect for collective action to solve commons dilemmas at the local or village level (Tucker 2010; Araral 2014). While Land Use and Cover Change (LUCC) scholarship focuses on large-scale drivers of forest cover change, at the same time it is largely silent on the role of policy and governance (Rudel 2008).

The overall argument here is that although the economic value of wild resources including forest resources is often ignored in literature on rural economy and rural livelihoods, managing the resources sustainably can have important direct positive benefits on livelihoods of rural people (Fisher et al 2008) Granted this argument and the academic acknowledgement of persistent conflicts between local institutions and Government in management of natural resources including forestry resources (Mutimukuru 2010). This study therefore investigates participation of local institutions in community forestry resources in Kanyama EPA.

1.4 Overall objective

The overall objective of the study was to examine the effectiveness of local institutions in participating in forestry management in Kanyama EPA.

1.5 Specific objectives

I. To explore the roles of local institutions in forest management in Kanyama EPA
II. To analyses the participation of local institutions in forest management in the EPA
III. To assess benefits accruing to local institutions in forest management in the EPA
IV. To determine effective co-management arrangements of forestry resources involving local institutions and Forestry staff in the EPA

1.6 Research questions

I. Which local institutions are involved in forest management and their roles in the study area?
II. How effective are institutions in forest management in the area?
III. What are the factors that influence participation of local institutions in forest management?
IV. What are the attitudes of forest staff and local communities towards co management of forest reserves?

1.7 Significance of the study

Today a number of scholars, development practitioners, and environmental activists forward micro-institutional solutions as the remedy for renewable resource management. Their arguments have helped to shift attention away from market or state-oriented policies as the only two alternatives to achieve development or environmental conservation (Agrawal 2009).

According to Abebe (2003), state forest policy, legislation and administration in modern-day Ethiopia began as early as 1945 with the creation of the Department of Forestry, Game and Fishery within the Ministry of Agriculture. The Department of Forestry, Game and Fishery was dissolved and replaced by the Wildlife Conservation Department with the responsibility to create and manage wildlife reserves in 1964. In 1971 again, the Wildlife Conservation Department was renamed into Wildlife Conservation Organization and stewardship for forest management and conservation

matters was outsourced and given over to the newly established State Forest Development Agency (UNEP 1992 cited in Stellmacher, 2006). Generally, during the time of Emperor Period, the Ethiopian government was made attempts to establish an institutional framework with the objective to promote environmental protection in general and forest protection in particular. However, none of these measures was ever implemented in practice (Stellmacher, 2006)

Local institutions were established in Tembwe and Mpango Villages in Kanyama E. P.A in order to improve conservation protection, management and utilization of trees and forest. However, since establishment of these institutions there is no evidence of any attempts to evaluate the effectiveness of local institutions in promoting community participation in forestry management. Using Common Resources Pool Theory, this study is an attempt at providing a picture from different perspectives about the participatory process in Community based forest management around Dedza forest reserves. This study joins the existing studies in attempting to contribute to the developing body of literature on local institutions in participation in community forestry management. Besides, the study addresses the issue of local level institutions, the characteristics of the forest resources, and the community which are influencing the behavior of individuals for collective action towards sustainable forest resource use and management. Furthermore, this research will provoke similar studies of wider coverage of different forests in different regions beyond adding to the stock of existing knowledge and narrowing the research gap in the study area regarding the issue of local institutions and forest resources management.

This thesis is organized in five chapters. The first chapter is the introduction part where the problem of the study is justified; the objectives and research questions are indicated. In the second part, theoretical literatures are reviewed while the third chapter presents research methodology and description of the study area. The fourth chapter has dealt with results while chapter five focuses on discussion. In the last chapter conclusion and recommendations are given.

CHAPTER TWO
LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This study is located in the larger debate on "the challenge of sustainable development" as the debate emerged in the 1992 UN Rio Summit (Fisher et al 2008). As the debate evolved it argued for a "People-Environment Partnership" in order to address the needs of a subset of Sustainable Development (SD), namely; the link between livelihoods, poverty and conservation (Tchamba 2003). In light of this the debate defines conservation in its broadest sense, including management of natural resources sustainably as well as their protection and restoration, rather than in the narrow sense of maintaining their original state or preservation.

2.1.1 Institutions

The breadth, fluidity and power of institutions make them difficult to understand. Ostrom (2006) explains the difficulties of studying institution by explaining the issue starting from the definition of the word institution itself. It is hard to make much progress in the study of institutions if scholars define the term institution as meaning almost anything.

According to the popular institutional economist, Douglas North (1990), institutions are the rules of the game of a society, or they are the humanly devised constraints that structure human interactions. This definition is set as "By institutions we mean the humanly devised constraints that shape human interaction and the way societies evolve through time. Institutions are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behavior, conventions and self-imposed codes of conduct), and their enforcement characteristics; thus they shape incentives in human exchange, whether political, social or economic".

It is also defined as “An institution is the set of rules (rules-in-use) actually used by a set of individuals to organize repetitive activities that produce outcomes affecting those individuals and potentially affecting others” (Ostrom, 1992). Their major function is to enhance the predictability of human behavior and is formed to reduce uncertainty in humans’ exchange (North, 1995).

According to Gant 1993 in Mekdes, 2005, people organize their affairs in relationship with each other in form of institutions. An institution as a system of action, comprehends the structures and mechanisms that provide the capacity and support of action in the form of organizations. Systems of action also comprehend processes and delivery instruments by which specified tasks are executed or categories of functions are supported or controlled. Furthermore, Gant emphasized the three qualities that institutions as a system of action should possess. These are first, an institution must be effective in accomplishing its purpose; second, it must be accepted in the society and environment of its location and third, an institution must be able to survive as it is adequately supported with the necessary, financial, personnel, and political capability to adapt itself and its program to changing and evolving situations.

Ostrom (2006), also define institution by referring it to shared concepts used by humans in repetitive situations organized by rules, norms, and strategies. Rules refers to common prescriptions (must, must not, or may) that are commonly understood and unavoidably enforced in particular situations by agents accountable for monitoring behaviour and for imposing sanctions. Norms indicate shared prescriptions that tend to be enforced by the participants themselves through internally and externally imposed costs and inducements. Strategies can be explained as the regularized plans that individuals make within the structure of incentives produced by rules, norms, and expectations of the likely behaviour of others in a situation affected by relevant physical and material conditions.

Institutions are not unchallengeable: they shape behavior of individuals, but are also shaped by the actions of individuals and groups. As institutions into which a person is borne and through which he or she lives determines the understanding of his environment and constitute his behavior, at the same time the nature of these institutions can be changed by the person (Watson, 2001). It is obvious that

institutions are constraining and enabling structures; limiting and making possible different forms of social action and organization towards their environment. In other word, institutions bring order by providing a structure within which humans can interact by means of enabling as well as constraining factors.

2.1.2 Types of Institutions

Institutions are established practices and they are formal or informal in nature. Formal institutions are defined as: "The law sphere, constitutions and regulations, which reinforcement is guaranteed by the legal system" (Tridico, 2004 in Stellmacher, 2006). Informal institutions are defined as: "Arrangements or rules of behaviour such as sanctions, customs, traditions, and codes of conduct." (North, 1991 in Stellmacher, 2006).

Informal institutions in include kin networks, local cultural administrative structures such as locally elected, appointed, or hereditary leaders and elders, customary rules and regulations to access to resources, and indigenous practices of grazing and use of forest and forest resources. These types of institutions have a potential to determine individuals, groups or communities' behaviour towards resource access, use and management and it is considered as rule-in-use in the community. Different studies showed that informal institutions, particularly the body of indigenous practice and rights and regulations governing those practices represent good environmental actions (Pankhurst, 2001).

Study by Stellmacher (2006) showed that the level of formality does not earmark institutions to be good or bad per se and he explained it as, neither formal nor informal ones are solution by themselves to prevent exhaustion and damage of forest resources, and that the inter-linkage, hence the appropriate 'mix' of institutions of different formality, is an important factor determining whether institutions are 'successful' or not. The organizations or set of decision-makers charged with creating and modifying rules may be elected (through a variety of rules), nominated or appointed (by many potential authorities), and may adopt rules in many different ways as well. Enforcement can be explained in many varieties, raising questions about

who should enforce, how strictly, for what payment, and who will monitor the enforcer (Agrawal, 2007).

2.1.3 What do we mean by Local Level Institutions?

Management of forest resources is not only determined by ecologic, economic, or demographic factors, but influenced by a heterogeneous set of institutional arrangements. They provide the "rules of the game" (North, 1990) for human behaviour towards forests, both as enabling as well as constraining factors (Stellmacher 2006). According to the same author local institutions are grouped according to their genesis, upon which community-initiated institutions, governmental initiated institutions and NGO-initiated institutions are distinguished.

In this study, local institutions are defined broadly to comprehend as many institutions, both formal and informal, which are directly engaged in forest resources management and/or use at local level. Generally, local institutions refer to structures that shape the behaviour of rural communities towards forest resources management through a range of indispensable functions they perform in rural contexts such as information gathering and dissemination, resource mobilization and allocation, skills development and capacity building, providing leadership, and networking with other decision makers and institutions. Local institutions are easy to understand and enforce, locally devised, take into account differences in types of violations, help deal with conflicts, and help users and officials accountable to lead to effective governance of forest resources (Agrawal, 2007). It facilitates capacity building, participatory decision-making and sustainable approaches to forest conservation and can modify the effect of factors thought to be driving force of deforestation.

According to Agrawal (2008) there are three types of local institutions relevant to forest resource management: civic, public and private institutions in their formal and informal forms. Local public institutions: refers to local governments, local agencies (e.g. extension services and other arms of higher levels of government operating at local levels). Civil society institutions: rural producer organizations, cooperatives, savings and loan groups. Private institutions: service organizations such as NGOs and charities, private businesses that provide loans.

The role of local institutions in forest management is examined within the wider context of the land tenure system, traditional political structure and administration as well as village social and economic structures (Uweme, 2015).

2.2 Forest and people's livelihoods

People throughout the world have been relying on trees and forests in one way or the other. The benefit of trees and forest to mankind are numerous (Weladji 2003). These include their contribution to the livelihood of the poor people such as by improving soil fertility, providing food supplements and provision of wood for building and construction purposes. Although trees and forest are important for people's livelihood, this essential role has in many instances, not been complemented by sustainable management of forest resources (1993). This has led to depletion of forest resources. According to (White 2010) there are number of factors that lead to reduced participation of local communities, in forest resource management. Issues of land and tree tenure, benefit sharing and ownership rights of the forest resources are some of the fundamental factors affecting people's participation in managing forest resources, these institutional issues influence participation of people in the forest management which contribute significantly towards managing forest resources sustainably for local communities (FAO 2010). In order to sustain local participation in forest management, the local institutions are essential since they provide and operationalize institutional arrangements and guidelines that regulate and control access to and exploitation of the forest resources, which consequently ensures community participation in forestry management.

Although within the theoretical debates there seems to be growing advocacy for holistic, social ecological, adaptive and participatory approaches to natural resource management, current policies seem to have hijacked both protectionist or 'fortress 'and community based approaches. These have been rolled into one as such clear distinction between the two can be hard to identify in practice. The way this has happened has been through the dominance of neo liberal thinking leading to the increasing commodification of nature, where natural resource 'goods' and 'services 'are transformed into 'objects' meant for trading as commodities (Heinen 2001). Notions closely associated with the commodification of nature include the separation

of humans from the environment (e.g. narrowing down an ecological function to the level of an ecosystem service, hence separating the latter from the whole ecosystem), the establishment of a monetary value of nature where price becomes paramount over other metrics of worth) and the separation of the resource user from the manager and the rise of the managerial class (the 'provider' and 'consumer of resources set up a supply demand relationship in market or market like exchanges (North 1995).

In this paradigm, and under the label of 'green capitalism' or 'market environmentalism', the creation and capture of market value for the services provided for humans by the non-human world is considered the most efficient and sustainable means of mitigating global environmental problems. Some of the problems include climate change, while maintaining and even enhancing economic growth (Büscher 2012). However, little is known about the potential impacts of these new funding initiatives on forest conservation and to what extent they recognize, if not ensure, inclusion of divergent values, participation in political decision-making and equitable distribution of benefits, as determined by ethnicity, gender, age, income distribution and other differentiating factors (Sah 2001).

2.3 Collaborative adaptive management

Rudel (2016) argued in many parts of the world, particularly intertropical biodiversity rich regions are dealing with increasingly complex, dynamic and unpredictable social ecological systems. Many natural resource management problems seem intractable and often involve the convergence of multiple crises: unpredictable and dynamic development financing; food insecurity; unplanned urbanization; climate change; escalating organised crime; environmental degradation and biodiversity extinction; unemployment; life threatening pandemics such as AIDS and avian flu, corruption, and the list could go on and on .Three distinct approaches to managing these complex situations have been identified: authoritarian, mark and collaborative. The authoritarian approach has the appearance of rapid implementation. The market led approach can generate a range of creative and innovative solutions, but frequently runs the risk of allowing the most financially successful approach to dominate, which principally benefits the established economic elite rather than addressing wider issues of social justice and ecological sustainability. The majority of scholars researching the management of complex problems have instead encouraged a clear shift towards the

adoption of a trans disciplinary, multi-scalar, participatory and adaptive approach to problem-solving which is led and owned by local communities (Ross 2001).

Participatory Forest Management (PFM) is an arrangement where key stakeholder enter into mutually enforceable agreement that define their respective roles, responsibilities, benefits and authority in the management of defined forest resources (Springate 2003). It is a forest management approach deliberately involving the forest adjacent communities and other stakeholders in management of forests within a framework that contributes to community's livelihoods (KFS, 2007a). According to Vyamana (2009) Participatory Forest Management in the Eastern Arc Mountains of PFM is carried out through stages, which are interdependent and as such, it is a process.

As Iversen, (2006) argued that globally, Nepal, Mexico, India and Australia embraced the concept of Participatory Forestry Management (PFM) in early 1980‟s (The rise of PFM and other participatory natural resource planning and development approaches in Sub-Saharan Africa was from a unique background and history (Munyoli, 2007). There has been an increase in the adoption of neo-liberal outlook and policies on PFM mainly at the behest of donors, World Bank and the International Monetary Fund (FAO, 2008). The Earth summit of 1992 identified local community participation in Natural Resources Management (NRM) as critical to continued existence of forest landscapes globally (Marshall et al, 2006 and OECD, 2006).

In Kenya, forest destruction, encroachment, conversion to other land uses and unsustainable exploitation had become the hallmark of forest degradations (Emerton, 2010). Kenya has put in place measures to mainstream the new management approach through Kenya Forestry Master Plan (KFMP) developed in 1994 (MENR,1994). The measures entail identifying policy, legal and institutional reforms that are crucial in addressing emerging challenges in the forestry sector and in enhancing sustainable forest management in Kenya. These three areas are vital to the successful implementation of PFM all over the world (Brockington, 2007). The first PFM pilot initiative was carried-out at Dida in Arabuko-Sokoke forest with approval of the Ministry of Environment and Natural Resources (MENR) in 1997 (ARPIP, 2008). This pilot study resulted in other initiatives of PFM all over the country,

particularly in Meru Upper Imenti, Loitokitok, Kakamega, parts of Mt. Kenya and Aberdares forest.

2.4 Community Based Natural Resources Management

Community-based natural resource management (CBNRM) is, in various forms, an established policy goal of rural development, especially in Africa. The natural resources in question are usually though not exclusively common pool resources (Adams 2004) In Southern Africa, these are typically forests open woodland or grasslands for livestock grazing, wood supply, medicines, and famine foods; farm land for gleaning, grazing after harvest, and crop residues; wildlife for game meat and safari incomes; fish in fresh water lakes; and aquifers, tanks, and irrigation channels for domestic and livestock water supply and irrigation (Adams, Brockington, Dixon, & Vira, 2000).

Pankhurst, (2010) observed that CBNRM are illustrated with the findings of country research in two contrasting African nations. The first is Malawi, the rural people of which have endured decades of sustained dispossession by a neo-patrimonial despot and currently face serious food insecurities and extreme absolute poverty. Over 60% of the population live below the poverty line. Over 85% of the rural population live on customary land, illiteracy is around 50% and 30% of Malawi's households are female headed. The government has recently pursued a program of progressive legislation for forests removing restrictions to the access and use of woodland, and has specifically targeted women as key resource users (see the National Forest Policy 1997 and Forest Act 1997). It has only had decentralization policy since 1998, approved a strategic Plan for CBNRM as recently as November 2001, and has proceeded since with some CBNRM implementation especially in forestry and artisanal fisheries. However, policy reform has had to contend with decades of institutional destruction at the local level, and a rural population which had grown weary and wary of any further interventions by the government.

On the other hand, Agrawal (2017) noted that that the second case is Botswana, a comparatively wealthy African nation, designated as a Middle Income country with a GDP per capita of around $9,500. It has been able to provide education, health and social security, and this has been important in guaranteeing a minimum level of

welfare for its population. However, unemployment and rural poverty remain high (.40%). Botswana has low population land resource ratios and its government has taken seriously the devolution of powers to manage natural resources since the mid-1980s. This has involved CBNRM initiatives since 1998, following assistance from USAID (focusing mainly on wildlife and tourism). Malawi and Botswana have had very different histories of government, but many rural inhabitants of both have recently witnessed the growing interference into, and resulting dissolution of, local chiefly government, combined with territorial incursions by the state and private capital to establish plantations and state forests in Malawi, and private ranches, game and nature reserves in Botswana (Voysey 2000).

Although the term CBNRM was not generally in use until the 1980s, the notion that communities should and could satisfactorily manage their own resources according to their local custom, knowledge and technologies has a long history. The ideas of community have constantly been shaped and reshaped by different outsiders through time (from colonial Governor Generals, political advisors, European settlers, and more recently rural development consultants and academic writers). Thus, the idea of CBNRM has evolved through time and been specific to particular countries, but over the past 15 years, there has been a convergence of various strands of meanings in the international development literature and in the practice of international funding institutions (IFIs). Today, for example, social and community forestry in India and Nepal and most countries of south-east Asia, and Natural Resource Management Committees in Malawi have some quite close similarities at a general level. These have resulted from similar strategic policy designs from IFIs. Still, at the level of the detail of administrative, legal and financial structures and of policy implementation, the term means widely different things to different people. In the colonial period in Africa, the practice of Indirect Rule was developed for which ‘‘native institutions’’ had been adapted and shaped for the purpose of rule by colonial rulers, dividing the rural from the urban and one ethnicity from another, and forming an institutional segregation. Africans were relegated to a sphere of customary law (or the harsh in francophone Africa), while Europeans obeyed civil law (Ribot, 1999).

These institutions, based upon ‘‘traditional’’ (usually chiefly) leadership, amounted to what Mamdani (1996) calls decentralized despotism. These institutions were

essentially local and varied according to a great variety of cultures, ecologies and material needs, but usually underpinned by communal tenure and chiefly authority. They were in many ways neglected by administrators except for purposes of political and strategic control, labor mobilization and latterly for soil and water conservation, in the period before Independence. Otherwise, they were treated with disdain or neglect by most colonial writers, who assumed that processes of ‘‘natural evolution’’ would eventually lead to individual tenure, a market in land, and the commercialization of agriculture (Lugard, 1923). The assumptions behind Lugard’s thinking and his ‘‘dual mandate’’ had become standard development wisdom by the period of the winning of independence by most African states. It remains powerful today, even in the minds of many government officials who implement CBNRM programs (Taylor, 2001). The assumptions were that individualization of land tenure with registration of title would encourage long term investment in natural resource management, would inhibit what was later styled as the ‘‘tragedy of the commons’’ (Hardin, 1968), help to provide collateral for production loans, and create incentives to shift production from subsistence to the market a late colonial narrative with a very contemporary ring (Varela 2000).

According to Williams (2010) there has been considerable progress in decentralizing authority over forests from the state to local communities in Asia, and there are now numerous examples within Africa. Within the wildlife sector there has been considerable activity in the last decade, especially in southern Africa, where almost all countries have programs to allow communities to manage and benefit from wildlife. In Zimbabwe, Botswana, Zambia, and Namibia, a wildlife management focus has provided the major initiative for CBNRM. In South Africa, land restitution has been the major driving force for more equitable and participatory forms of natural resource management. In contrast, in Lesotho the need for more effective rangeland management provided the primary impetus for CBNRM. In a few countries, such as Malawi and Tanzania, forestry has provided the focus for decentralization (Kayambazinthu 2010).

Decentralization describes the process by which bundles of entrustments (e.g. regulatory and executive powers, responsibility and authority in decision making) are transferred to local groupings (e.g. local governments or communities).

Decentralization can occur through devolution, in which case the entrustments are transferred more or less completely to the local users. Devolution is often the mode of decentralization considered in this study, but the term decentralization will be used throughout much of this article for purposes of consistency. In all, the decentralization initiatives in the region, effort has been made to transfer at least some responsibility and authority over natural resources from a central level to a lower level, whether to local government, state aligned district organizations, and or directly to communities themselves (Ribot 2002).This transfer of authority can manifest as the control of decision-making; the control of income, expenditure, and benefits; the control of developments such as tourism ventures; the transfer of ownership and property rights; and improved status amongst the individuals and organizations involved. It is therefore not surprising that decentralization is frequently accompanied by competition for the benefits of the new authority. This may take place between the organization receiving authority and existing organizations (e.g. between traditional leaders and newly formed community-based organizations), or between the body transferring the authority (usually the state) and the receiving authority, or it may emerge amongst different actors within the region.

2.5 District control of CBNRM (e.g. Zimbabwe Sengwe and Zambia cases)

Murgai (2015) argued that district organizations have a role to play in NRM, a role that varies from pervasive (Zimbabwe, Zambia and Malawi. This tiered arrangement is theoretically designed to enable community needs and priorities to filter up into district level planning processes. The reality is often the opposite, with these organizations forming a channel through which decisions made at a higher level can trickle down (Chao 2015). According to Ribot (2017) in Zimbabwe the Rural District Councils (RDCs) are linked to Ward Development Committees and Village Development Committees (VIDCOs). VIDCOs have little direct role in resource management since this function has not been delegated down by the councils. The District Councils in Zambia similarly link into lower tier organizations known as Ward Development Committees and Resident Development Committees, but in terms of CBNRM, these are superseded by the sectoral department organizations and are barely functional at the village level.

In Sengwe all decisions over CAMPFIRE are made at district level, including those concerning quotas the granting of concessions problem animal control and rules regarding wildlife utilization. Villagers from a Ward are represented by a single councilor at the district, and he is only one of a number of councilors, many of whom may be from areas poor in wildlife and have little interest in CAMPFIRE apart from the revenue it generates. Furthermore, many decisions are made by government officials at the district level rather than by councilors (Kayambazinthu 2000).

According to Chao (2012) in Zambia, decisions relating to wildlife in Game Management Areas (GMAs) are made by multi-stakeholder forums operating at district and sub-district level that report directly to the wildlife department. These forums are the Wildlife Management Authority in the Mumbwa GMA case and Local Leader's Committee in the Lupande GMA case. Along with chiefs, sub chiefs, members of parliament, wildlife department officials, and other representatives, councilors from the district councils sit on these bodies creating a link to local government. Community members are not represented in these organizations. Thus, there is virtually no mechanism to cater for local people at village level and consequently the community is sidelined and voiceless.

2.6 Benefit distribution and attitudes towards CBNRM

Ngulube, (2010) argued that in Sengwe 50% of the total revenue from hunting leases (15% as a levy and 35% as a management fee) is retained by the Rural District Councils. The remainder is channeled to the community, often after inordinate delays. This is resented by the community who feel they should receive a larger proportion of the funds generated, especially since they must bear the costs of wildlife damage. A similar situation prevails in Zambia. In Mumbwa Game Management Area (GMA) 35% of the income returns to the community for development projects. Local leaders are primarily responsible for determining how these funds are spent, and the development activities have tended to cluster around chiefs' palaces. Previously only 40% of the income from Lupande GMA reached the community, but recent restructuring now sees about 80% going directly to Village Action Groups.

Sanderson (2011) states that sentiments of community members towards CBNRM in the Zambian and Zimbabwean cases are largely negative. There is discontent due to crop losses and other damage by wildlife, lack of compensation mechanisms, the high proportion of revenue retained by the district, the lack of consultation on issues such as fencing, a feeling "their" animals are being driven to other areas to be hunted, the lack of communication with the private sector operator, and the operation of law enforcement agents (village scouts). In many areas, local people perceive the wildlife program as a donor and wildlife department initiative rather than a community based program.

2.7 Village committees supported by sectoral departments (e.g. Malawi, Tanzania and Zimbabwe Gokwe cases)

According to the study by Larsen (2010) demonstrate that there are number of cases of village level committee Village Natural Resource Management Committees in Malawi. Village Forest Committees in Tanzania, and Resource Management Committees in the Zimbabwe Gokwe case as the primary CBNRM organizations. These committees are supported by the forestry department, and are elected by the community. In Malawi and Tanzania, the committees have a clear role in the management of forest areas, woodlots, and reforestation programs. Their duties include making and enforcing rules on the conservation of state forests, regulating the utilization of forest products, planning fire patrols and firefighting, and collecting revenue (Scherr 2011).

The committees in Gokwe play an intermediary role between the forestry department and local people, brokering rules for accessing forest products from the state forest and monitoring resource use in the village. Committees in Malawi and Tanzania can play an active role in by-law formulation, unlike in Zimbabwe (Agrawal 2017). In Tanzania, village management plans and use rules are reframed as by-laws that are approved by the District Council. All these committees are embedded within the local organizational system (e.g. the committees in Malawi report to Village Development Committees - VDCs) consisting of members of the community and chaired by the village head. A group of VDCs then form the Area Development Committee, chaired by a chief. Membership of this committee includes the traditional leaders, government extension officers, members of parliament, NGOs, and elected councillors. The next

level up is the district level. In Gokwe, the Resource Management Committees should report to Village Development Committees, but the latter are weak, leaving the Resource Management Committees without much authority.

The role of the forestry department varies amongst case studies. In Malawi it has a dominating presence in the Chimaliro case but, in Mangweru, mobilization for forest management was largely driven by the community. The Village Forest Areas are under the committees exclusively, but forest reserves on state land are jointly managed by the committees and the state. In the latter case the state still makes most of the rules, monitors and enforces resource use, and holds ultimate authority as the owner of the land. In Tanzania, the forestry department has taken a very facilitative role, having almost no say in the workings of the committees. In Zimbabwe, the forestry department has a dominating role, with very little authority in the hands of the committee. The Tanzanian case is peculiar because villages in Tanzania have corporate status and thus hold a good deal of authority. The Zimbabwe case is at the other extreme with the committees having minimal authority and legitimacy. The Forestry Commission controls most aspects of the "shared" resource (Kayambazinthu 2000).

2.8 Community participation in forest management in Malawi

According to Kayambazinthu (2000) Malawi has a long history of involving local people to manage local forests dating back to the 1920s. For many years, the colonial administration was preoccupied with controlling the use and conservation of natural resources, including trees and forests. By mid 1920s, most forests had been gazetted as protected areas. However, due to conflicts between the state and the local communities over land, the colonial government established the Communal Forest Scheme managed by the central government (District Administration). Under the scheme, approximately 2.7 million ha of forested area was allocated to communities for their use and management referred to as Village Forest Areas (VFAs) (Kayambazinthu, 2000). These VFAs were managed by Village Forest Committees (VFCs) led by village heads. However, the scheme only lasted one decade when the policy focus of the colonial administration shifted from community forestry to forest establishments for commercial exploitation.

After independence in 1964, all forest-related matters on customary land were handled by the local government (District Councils). In 1985, the management responsibility reverted to the central government (Forestry Department). By that time, the authority of village heads to control the VFAs was overpowered by the political influence, which dictated the composition and operations of the VFCs. The number of active VFAs dropped from 5,108 in 1963 to 1,182 in 1994 (Lockie 2002).

The participatory-approach to natural resource management was revived in the 1990s, especially following the 1992 United Nations Earth Summit in Rio de Janeiro during which participatory development was accepted as an integral part of the rural development strategy. In 1996, the Malawi Government formulated the National Forestry Policy and the New Forestry Act was endorsed by parliament in 1997. The new legislation removed a number of barriers to people's involvement in the conservation of trees, forests and protected forest areas, and empowered village heads to confiscate forest products illegally obtained from natural woodlands (Sakanda 1996; Malawi Government, 1997).

In 1996, with support from the World Bank and United Kingdom (DFID), the government launched the forest co-management (FCM) program in Chimaliro and Liwonde forest reserves. These forest reserves comprise natural '*miombo'woodlands* dominated by *Brachystergia* ,*ulbernadia* and *Isoberlinia* and are located in the central/Northern and Southern regions of Malawi, respectively (Ngulube, 1999). The program was designed to improve rural livelihoods by generating household income, contributing to food security and providing environmental services while enhancing the productivity of forests through sustainable forest management and utilization (Meyers et al., 2001).

Approximately 210 ha and 1,172 ha out of 160, 000 ha and 274 000 ha of Chimaliro and Liwonde forest reserves were respectively demarcated into three blocks. The demarcation process was participatory involving the local people, civil society, government and chiefs during which ancestral boundaries separating different clans were traced to determine the customary boundaries (Jere et al.,1999). In Chimaliro, the block sizes were 18, 118 and 74 ha, while in Liwonde they were 416, 288 and 468 ha. There are no significant differences in the species composition, stocking densities

and size classes across co-managed blocks in Liwonde (Makungwa and Kayambazinthu, 1999). In Chimaliro, species composition across blocks is generally the same, while stocking densities vary considerably due to differences in soil characteristics (Chanyenga and Kayambazinthu, 1999).

The overall legal framework for the FCM program is guided by a constitution (Marsland et al., 1999). The constitution stipulates, inter alia, the rights and obligations of the committees and government, conditions on the sharing of revenue between government and the community, and the types of forest products that can be legally collected from the forest reserves. The program activities are implemented at the block level. Within each block, a forest management committee (VFC) with representatives from the designated villages provides leadership in drawing up its own local bylaws and block management plans. The FCM activities include boundary marking, firebreak maintenance, controlled early burning, firefighting and supervised harvesting. In general, the operations of the program differ from block to block and between the two reserves due to differences in the leadership and cooperation among the local people. Most of the co-management activities are undertaken during the dry season (July-October) when demand for agricultural labor is low and when forest reserves become more susceptible to wild fires.

There are no strong restrictions regarding who should participate in the program. Participation is voluntary as long as the household lives within the designated villages, abide by the local bylaws and participate in implementing forest management plans besides attending FCM meetings and patrolling to monitor illegal activities. In return, the scheme legitimizes participants' access and use of forest reserves to collect various forest products. These include fuelwood, thatch grass, poles, fodder, mushrooms, wild fruits and other non-timber forest products (NTFPs) (Kayambazinthu, 2000). These products, and especially fuelwood, are important in people's daily livelihood. Edible forest products also help to fill gaps in food supplies during the lean period of between November and March (rainy season) when most NTFPs especially mushroom and wild fruits become more abundant. Some households, mainly in Liwonde, obtain their main source of income through selling of fuelwood, cane baskets, mushrooms, honey, wild loquat (Uapaca kirkiana) and other fruits by the roadside.

Institutional studies conducted in Malawi have singled out the FCM program in Chimaliro as a model of a successful devolution program in Africa (e.g., Kayambazinthu, 2000). This is in contrast to Liwonde where the FCM program has not been effective in halting excessive exploitation of forest products for commercial purposes leading to a higher utilization pressure (Makungwa 1999). Compared to Chimaliro, few institutional studies have been conducted in Liwonde. This study uses data from both Chimaliro and Liwonde to understand factors that influence participation decisions in order to trace sources of the unequal performance of the program between the two sites.

Malawi's 1965 Land Act and 2002 Land Policy recognize three types of land: customary, public, and private land. Forested public lands are managed by the Department of National Parks and Wildlife and the Department of Forestry (DoF). Customary land is all land held, occupied, or used by communities under customary law and is under the jurisdiction of traditional authorities. Malawi's legal and policy framework for forests (1996 Forest Policy, 1997 Forestry Act, and 2001 National Forest Programme strongly emphasizes Participatory Forest Management (PFM) with local communities in an attempt to devolve land and resource rights to local communities, reduce deforestation rates, and address lack of government capacities and resources to manage forests. The 2003 Community Based Forest Management Supplement to the National Forest Policy states that the policy goal for community based forest management is to empower rural communities to conserve and develop Malawi's forest resources for the economic and environmental benefit of the present and future generations. Success in transferring certain management responsibilities to the district level has been mixed, since resource constraints for district offices have created challenges for the effective protection and control of public forests. PFM can take place on customary land through the management by communities of Village Forest Areas (VFA), or in state Forest Reserves and plantations through co-management of communities with the Department of Forestry.

2.9 Roles of the local institutions

This section outlines the roles of local institutions in the forestry management. Local forest institutions are crucial for forest management. Some of the major roles of local institutions in managing forest resources have been discussed. Providing enabling

environment for community participation, facilitating in decision making for forest management,

2.9.1 Creation of institutional arrangements

Local institutions create rules that significantly affect forest conditions, management, conservation and utilization (Hobley 1996). For instance, in India, despite establishment of government's forestry policy, local communities established institutional arrangements that had a positive outcome when they were incorporated in forest management policies (Davis 1998). Rural communities in both Nepal and India carried out re-afforestation activities on communal land to complement their government's efforts to reducing forest degradation. Therefore, the creation of rules for forest governance by communities in local institutions had a positive impact on the reduction on forest degradation (Macgean 2008).

2.9.2 Cost effective measure for forest management

Local forest institutions act as cost effective measure for forest management on the part of forestry department (Ngulube 2000). National government in Sub Saharan and Asian rarely passes enough personnel on financial capacity to implement policies adequately (Clark 2000). Participation of local institutions complements Forestry Department efforts in managing forest resources. In Malawi, local communities in various parts of the country practiced community forestry in which communities managed forest resources by using indigenous knowledge and resources for their own benefit (Forestry Department 2000). Macgean (2001) reported that local communities in India managed 20,000 hectares of forest lands in collaboration with forestry department which could not be accomplished if government worked alone. Consequently, this resulted in reduced costs incurred by government on the management of the state forest lands. Probyn (2000) found that in Malawi, a growing number of foresters and planners acknowledged that one of the promising strategies to stabilize was through capacity building of the local forest institutions. Warmer (2001) emphasizes that when given clear rights and responsibilities, local institutions have proven they work as allies with government and Non-governmental organization to establish effective access control and regulated forest use system which are vital for effective forest management.

2.9.3 Providing enabling environment for community participation

The other role of local institutions is to provide an enabling environment for the local people to conserve forest resources and promote sustainable rural livihoods. This is achieved through having ownership and tenure rights of the forest resources (DFID 2010). Arnod (2012), argued that local institutions which lack secure rights to forest resources are tempted to use up the resources without considering the future supply of the forest resources. In addition, Edmunds (2003), emphasized that when local communities do not exercise land and tree tenure rights and ownership rights of the forest resources, they also lose any incentive they might have felt to manage the maximum long term benefit. As a result, local communities compete with each other in order to extract as much short-term benefits from the resources as possible which exacerbate overexploitation of the forest resources (Campbell 1999). For instance, in Malawi, before the devolution of forest management powers to local communities, they had no ownership rights of the forest resources. (Forestry department 2014). This resulted in increase in forest degradation, since the communities had little or no incentives to constrain the consumption of forest products (probyn 2011)

2.9.4 Facilitating in decision making for forest management

The other role of the local institution is to influence in decision-making and assisting the community reach consensus regarding forest management. This can only happen if each group's interest within the community is adequately presented in institution (Chao 2012). However, Larsen (2010) argued that simply opening up decision – making and management of forest for local communities cannot in itself improve in forest management. Therefore, for effective community participation, there must be formal local level with guiding institutional arrangements to guide the community towards achieving the intended objectives. It is against this background that in Malawi each village that decides to enter into community forest management elects a VNRMC as local institution to represent people's. Such local institutions act as points of liaison in dealing with forest extension workers and other non-governmental organization (Malawi Government 2010).

Issues of natural resource management and institutional analysis can be scientifically approached by many tools from social science perspectives. Especially for the

analysis of institutions - due to different understandings of the term, its thematic breadth, complexity, and interrelatedness many tools for approaching the subject have been developed, which often cover different levels of analysis (Ostrom, 1999). In this research Common Resource Pool was used for analyzing institutional aspect of forest resource management at local level.

2.9.5 Theoretical framework

Theories are formulated to explain, predict, and understand phenomena and in many cases, to challenge and extend existing knowledge within limits of critical bounding assumptions. The theoretical framework is the structure that can hold or support a theory of research study (June 2000). The researcher took into consideration of Common Resource Theory. The theory is very much in line with the objectives which assumes that open access management of common-pool resources can be avoided through collective action.

2.9.6 Common Resource Pool theory

CPR theory focuses on the ability of people to act collectively to overcome the management dilemmas inherent to common-pool resources. The theory developed in response to the work of Olson (1965) and Hardin (1968), both of whom argued that groups of people were not likely to work effectively together. Hardin, in particular, blamed resource degradation on the "tragedy of the commons," in which users are unable to cooperate to achieve mutually beneficial outcomes. Although Hardin used the term "commons" in a generic fashion, Hardin's tragedy was the result of a confluence between two variables: a type of resource, called a common-pool resource (or commons for short), in which exclusion is difficult, but consumption rival, encouraging overuse, and an open-access property regime, in which there is no collective regulation of access and or use (Hardin 1994; McKean 2000). Thus, CPR theory is a theory about the conditions under which open access management of common-pool resources can be avoided through collective action. Beginning in the 1970s, a large number of scholars noted that Hardin's dour predictions were inconsistent with empirical observations. Syntheses of this growing literature were published in a series of reports from the late 1980s through the early 2000s (National Research Council 2002). These syntheses focused on identifying variables which

contributed to collective action in the management of common-pool resources, and have received strong support in subsequent studies (Cox 2010).

For the forest sector, CPR theory has been tested by the International Forestry Resources and Institutions (IFRI) research program on small-scale forest systems, with supportive results (Tucker 2010). In this paper, the term CPR theory refers both to this group of variables, as well as to the theories that connect these variables with collective action and successful resource governance. CPR theory developed a focus on the ability of local users of the commons to sustain collective action in traditional management systems. This focus was later extended to examine the local management of forest resources that were decentralized by central governments (Andersson and Ostrom 2008). Although a number of authors have attempted to apply the lessons of CPR theory at larger scales, these efforts have not been systematic. Some authors have largely confined themselves to speculations about the applicability of CPR theory, without attempting to seriously grapple with the theoretical complexities of such a process, nor systematically comparing their predictions to actual cases (McGinnis 2007). A second related literature has focused on cross-scale and 'multi-level governance, providing useful insights on the role of governance at scales above the local, including the regional, national and international (Basurto 2014).

Others have delved into the specific problem of large scale commons governance, occasionally informing their theory in a haphazard fashion through case studies, and have arrived at conflicting conclusions. Stern (2011) argues that global commons are potentially governable, although the nature of collective action problems at the global scale are different from those at the local scale. Specifically, he differentiates between local and large-scale commons in terms of scale, number of users, salience of degradation, distribution of interests and power, cultural and institutional heterogeneity, feasibility of learning, resource regeneration, and knowledge about and stability of resource dynamics. Departing from this observation, Stern argues that while most design principles apply, "defining boundaries for resources and appropriators is not a meaningful exercise for global commons," presumably because the global scale includes everything. Stern also argues that an additional set of principles apply at global scale, including investments in science to understand resource dynamics, integrating science with deliberation, multi-level connections for

rule-making, and planning for institutional adaptation and change. However, he does not explain how he derived these principles, nor why he believes they are relevant at global, but not at local scales. A further weakness of Stern's work is that he focuses only on global commons problems such as global climate change, and thus it is not clear how his nascent theory would apply to regional or national level commons, which while much larger than those traditionally studied in CPR theory, are nonetheless much smaller than the entire globe. For example, his critique of the relevance of boundaries seems to apply more to commons that are genuinely global in scale, as opposed to those that are regional or national.

By contrast with Stern's optimistic view that CPR theory can be used with modification at a global scale, Araral (2014) offers a pessimistic outlook on ability to overcome collective action problems at large scales. He argues that although the theoretical dilemmas of the local and large commons are the same (overharvesting, free riding, monitoring and enforcement), differences in scale, transaction costs, and the nature of the actor groups (individuals vs. nation states) create wicked problems in which Hardin's tragedy may be inescapable. Although Araral differs from Stern in that he discusses specific cases of largescale commons failures to support his theory, including forests in Indonesia, these examples appear to be chosen haphazardly and are only discussed in a cursory fashion, so again, it is not clear if his theoretical reasons are well supported or are merely speculation.

Human drivers of changes in forest ecosystems have been subject to intensive study for several decades, however none of the major traditions examining human-forest interactions have focused on understanding the influence of governance on forests at the level of the nation-state, where many decisions about forest management are made. Common-Pool Resource (CPR) theory, as applied to forestry, largely focuses on the prospect for collective action to solve commons dilemmas at the local or village level (Araral 2014). While Land Use and Cover Change (LUCC) scholarship focuses on large-scale drivers of forest cover change, it is largely silent on the role of policy and governance (Rudel 2008). Finally, political ecology, while frequently engaging with national-level policies, tends to focus on the impact of national governance at the local level, rather than at the national level (Robbins 2002).

Similar problems plague studies of other types of commons, with knowledge about governance of environmental commons with large spatial extent and involving large numbers of actors particularly limited (Berkes 2006).One proposed solution to this problem is to apply common-pool resource theory derived from village and community-level studies to study systems in which the number of potential actors is large and the spatial extent of the commons and governance system is much greater than in community-level studies (Berkes 2006). Although CPR theory is one of the most prominent contemporary theories of environmental governance, there have not been systematic tests of its applicability to large-scale forest governance. As a result, it is not clear whether CPR theory is suitable to be applied to the study of forests with large spatial extents and large numbers of users, whether the theory requires modification to be applicable to these systems, or whether the theory is not useful for the study of these forests. Specifically, it is unclear which variables and design principles from CPR theory can be applied at these larger scales, or whether the logic of collective action underlying CPR theory can be used to study cases involving large numbers of actors.

This chapter has presented the discussions of results. Village development committee VDCs, Village Natural Resources Management Committee VNRMCs are local institutions which are involved in the forestry management. In general, the study shows that the following factors have influencing factors when it comes to community participation in forest management on household size, land holding size of the household, size of the forest user group, size of the forest user area, distance to the forest resources, time taken to access forest resources and educational level

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents a brief description of the study area, research design, sampling techniques employed in the study, data collection procedures, details on data analysis which includes description of variables and indicators to be analysed and ethical consideration. The last section concludes the chapter.

3.2 Study site

The study was conducted in Tembwe and Mpango villages in Kanyama EPA in Dedza district. Kanyama is located about 18 Km north of Dedza township. The area has forest reserves and there is deliberate Social Forestry programme of involving local communities to take care of forest reserves in conjunction with forest department from the district. Therefore, this area has been chosen because it one of the areas that received this project in the first place when it was introduced in 2007, hence it is a good period to assess the impact of the approach.

3.3 Forest status in the area

Due to the influx of Mozambiqian refugees in the 1980s there was overexploitation of trees and forest and consequent of tree and forest resources. To reduce this problem, the Department of Forestry Programme (DFP) planted trees around Msongwe as part of bare hill tree planting programme from 1980s (Malawi Government 2010). By the end of 1990 a total of 12 hectares were planted. The species were *pinus patula, P oocarpa, Eucalyptus grandis, E.camaldulesis and E. Maidenii.* The other part of the hill was covered with indigenous woodland. The total area was 5 hectors and the main indigenous species were *Terminalia sericea Uapaca kirkiana and combretum molle.*. After phasing out the forest was handed over to the Village headmen and local communities of the two villages.

3.4 Research design and methodology

This study used both qualitative and descriptive approaches. Despite the fact that different scholars have different views in regard to these two approaches. For instance, De Maria, (1981) argues that the two strategies are naturally unable to get along. However, many scholars such as Mc Roy (1981) do not believe that these two approaches are inherently incompatible. He further argues that despite philosophical differences, qualitative and quantitative methods play an equally important and complementary role in knowledge building and they have done so throughout the history of contemporary social science. As a result, the emphasis of the two approaches may depend on the condition and the purpose of the research. It is from this argument that the researcher saw it worth using both strategies because of the conditions and purpose of this study which is to examine the views of the people on community participation in forest management.

Quantitative research methods emphasises the production of precise and generalizable statistical finds and are generally more appropriate to homothetic aim. Quantitative methods verify whether a cause produces an effect in general, are likely to use quantitative methods. Quantitative approach is important to this research because it can be measured, generalised and replicated (Cahn 2003). Qualitative research involves broadly stated questions about human experiences and realities, studied through sustained contact with the people in their natural settings, generating rich, descriptive data that helps to understand their experiences and attitudes (Rees 2009). Qualitative research is mostly used to find out people's attitude, opinion and behavior which cannot be quantifiable. "By using the qualitative method, researchers collect data and explain the phenomena more deeply and exhaustively" (Mugenda 2003). The advantage of using qualitative methods is that they are in-depth in their inquiry, participants get to express themselves fully and freely, emphasize on context and concerned with participants' perspectives (Rees, 1996).

3.5 Population and Sample Size

The two villages had 1,446 households with an average 5 members per households. Mpango village had 879 households while Tembwe village had 567 households. A sample of 150 was considered a reasonable sample size for the study with level of confidence being 80%. According to the forestry department (2010), 90% of the

communities directly or indirectly benefited from the forest resources. Hence 90% was used as proportion in this research. Simple random sampling was used to come up with the sample size. Simple random sampling is the basic sampling method assumed in the statistical computation of social research (Schutt 2003). The researcher used this type of sampling to avoid bias and indeed to ensure some degree of representativeness and also permit an estimate of the error present. The sample size was determined by using the following formula:

$$n=z^2(1-p)p/e^2$$

n =Sample size

p= Percentage proportion of population involved in the forest management

z= *z*- Value yielding the desired degree of confidence (1.96)

e = Error term (0.05)

Using the above formula and an addition of a factor of 10% for a possibility of non-respondents (Edriss 2003) a sample of 150 respondents was selected

3.6 Data collection

A structured questionnaire with recall questions and checklist were used during data collection. Data collection consisted of focus group discussion, Household survey, key informant's interviews and tree and forest measurements. In addition, secondary data such as field reports and progress reports from Forestry Department were also used. The secondary data was used to determine the following parameters before and after decentralization process: Number of individuals and households participating in the forestry management, forest activities carried out, local institutions which managed forest and performance of the institutions.

In order to determine the performance of the local institutions, several variables were assessed. These were number of institutions and their roles, socioeconomic and demographic characteristics of the households that were interviewed, area estimation of the forest cover, tree diameters at breast height within the village forest area, tree species composition in the area and level of local participation in the forest area. The

study also assessed the existence and effectiveness of some designed principles that characterized the sustainability of local forest institutions. The institution design principles that were investigated included ownership rights, land and tree tenure, benefits sharing, institutional arrangements for forest management and conflict resolution mechanisms. These parameters were assessed to analyse the effectiveness of the institutions in promoting community participation in forest management.

3.7 Focus group discussions

Focus group discussions were used to collect data common to all or show little variations among households in the village Gaona (2013). The discussion was aimed at obtaining in-depth information on perceptions, concepts and ideas from the group. These were held at village level meetings. A checklist of the data variables was used during focus group discussion (appendix 1). Major variables that were captured included number of people who participated in forest management, forest cover change in the village, average number of trees and area planted per year and number of local institution in the study area. Other data that were collected included activities undertaken in managing the VFA and the benefits communities got from managing forest resources. Information on the perception of community with regard to effectiveness of the institution and the level of participation was also collected.

3.8 Household survey

Household surveys were conducted using structured questionnaire (Rosenberg 2004). This was done in all two villages of Mpango and Tembwe. The aim of household surveys was to get as much detail as possible about the participation of specific households of forest management in the area. The data which were collected during household surveys included socio economic and demographic information such as size of the households, land holding size, education status of the household head, age, occupation and sex of the household head. Information on the perceptions of the household members on the effectiveness of the local institutions were also obtained through the household interviews.

3.9 Key informants

Key informants were interviewed using the checklist (Appendix 3) to verify information collected through focus group discussion and household surveys. According to Jackson and Ingles (1998) use of key informants assumes that interviewees are in a position to accurately articulate forest programme in a village setting. Key informants that were interviewed were village headmen and forestry staff working in the area. The other variables that were triangulated involved change in extent and conditions of forest cover and the level of community participation in the two villages.

3.9.1 Questionnaire

The other instrument that was used is questionnaire. The researcher issued out questionnaires to respondents. The questionnaires were translated in Chichewa except those used by Forestry department. This is so because, not all respondents that were targeted in this research were literate enough to understand English. The questionnaires comprised of questions which were probing more in order to try to answer the objectives of the research. The researcher was in favour of the questionnaires for these two reasons; first, it is less expensive to administer and easily handed to a large number of respondents at once in a seating. Second, it avoids bias in the sense that the interviewer is not present so the interviewee has liberty to write what they want without regard to the interviewer or investigator (Mitchell &Jolley, 2001).

3.9.2 Data Analysis

Answers recorded during the interviews were coded and entered for computer data analysis using Statistical Package for Social Science (SPSS). Chi Square test were used to show the relationship between resources use by households and their demographic characteristics. Knowledge of such relationship is important because socio economic factors such as education, employment and income determine the extent to which local people depend on the forest for their livelihood (Obua (2011).

3.9.3 Tree and forest measurement

Tembwe and Mpango collaboratively manage one VFA. Tree measurement were conducted in the VFA during the study. Both indigenous and exotic trees were found in the forest. Indigenous species covered 8 ha while exotic species covered 16ha. The number of plots for each stratum was calculated by using the following formula:

$$n = \{S/XD_{max}\}^2$$

Where $\boldsymbol{n}$ =number of plots

$\boldsymbol{S}$= Standard deviation of the variables to be assessed

$\boldsymbol{X}$= mean of assessed variables

$\boldsymbol{D_{max}}$ = Maximum confidence limit accepted (±0.1)

3.9.4 Descriptive analysis

Descriptive statistical such as percentages and frequencies were used for summarising and presenting data. In addition, Chi Square (X^2) tests were conducted to show relationship between paired data.

3.9.5 Discriminant function analysis

Discriminant function analysis (DFA) was used in order to determine variables that influence participation of people in forest management. According to the Breyer (2005) DFA is used to determine which variables discriminate between two or more naturally occurring groups. Therefore, this analytical tool was used to investigate the variables which discriminate between communities who were participating and those who did not participate in forest management. In this case DFA assisted to determine the variables that were best predicators of respondent's likelihood to participate in forest activities or not. In order to determine factors that influence community participation within local institution, the following discriminant function model was used in the study with different probable variables.

$$\boldsymbol{\gamma} = f(\beta \text{ i}, X \text{ i}) + e$$

Where $\boldsymbol{\gamma} =$ is latent variable (participation) formed by the discriminant variable function

$\boldsymbol{\beta}$ = Discriminant Coefficient

$\boldsymbol{e}$= error term

$\mathbf{x_i}$= probable discriminating variables

x_1= age of the respondents

x_2= Gender

x_3 = Household size

x_4 = Land holding size of the household

x_5 = Size of the forest user group

x_6 = Size of the forest user area

x_7 = Distance to the forest resources

x_8 =Time taken to access forest resources

x_9 = Educational level

3.9.6 Tree species diversity

Trees species diversity in the VFA was calculated using Shannon Weiner information index (H') (Magurran 1988). Using the following formula

$$H = -\sum_{j=i}^{k} pi \log pi$$

Where Pi is the proportion of species i relative to the total number of species. The index of tree species dominance (D') of the forest community was calculated Simptoms index using the following formula;

$$D' = \sum_{j=i}^{k} \frac{(ni)2}{N}$$

Where D' is the index of dominance and ni and N being the same as in the Shannon index of general species.

3.9.7 Diameter classes of trees in the VFA

Diameter of breast height (dbh) of both exotic and indigenous trees species were measured from sample plots laid out in the VFA. One-way analysis of variance ANOVA was used to test the differences in the average number of stems in each diameter class.

3.9.8 Ethical considerations

The researcher did uphold ethical requirements by seeking consent from the respondents before data collection. The respondents were notified of their right not to be part of the study, thus the researcher sought an informed consent to ensure that subjects are voluntarily involved. Therefore, the researcher ensured confidentiality of the subjects. Berg (2001) defines confidentiality as an active attempt to remove from the research records any elements that might indicate the subjects' identities. Precaution was taken to ensure that sensitive information does not accidently fail into the wrong hands or become public. Community leaders Chief Mpango and Tembwe were briefed on the objectives of the study and in all sites leaders welcomed the data collection exercise. All completed questionnaire and interview reports were kept confidentially. At the end of every interview, respondents were given a chance to ask questions and these were adequately addressed before leaving the place.

In the summary in order to achieve the first objectives, the following variables were analysed: number of institutions and their institutional roles: individuals and households participating in the local institutions and perceptions of respondents on the performance of the local institution on forest management. The existence of the institutional design principles such as equitable benefit sharing in the area was assessed in the local institution was assessed to achieve the second objective of the study. The design principles determine whether the local institutions are effective for managing forest resources or not.

The third objective of the study was to assess factors that influence participation of local communities in forest management in the study area. In order to achieve this objective Discriminant Function Analysis was conducted against social economic and demographic variables of the households. Lastly in order to achieve the fourth objective, the following indicators of the level of community participation in forest were analysed: Number of individuals and households participating in forest management, seedlings raised, planted and sold, number of woodlots established, area planted per year and species diversity and tree diameter classes before and after community empowerment. The next chapter presents the findings.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.1 Introduction

The study was conducted with the aim of analysing the effectiveness of local institutions in promoting community participation in Temwe and Mpango villages within Kanyama E.P.A. This chapter provides results on effectiveness of institutions in enhancing community participation. The chapter also presents number of social economic and demographic factors that contribute significantly towards community participation in managing forest resources. Furthermore, it provides results it of forest measurement which were conducted during the study. The forest measurement was also done to determine the extent and condition of forest cover in the study area. This was done in order to compare the forest cover before and after the community empowerment which could also determine whether the institutions were effective for implementing sustainable forest management or not.

4.2 Demographic and socioeconomic characteristics of sampled households

This section provides a summary of demographic and socioeconomic characteristics of the household that were interviewed during the study. These attributes were assessed as they contribute significantly towards participation of communities in forest management (Saigah 2002).

4.2.1 Gender and marital status of the household head

Of the 146 selected for the study, 76% and 24% were male and female headed households, respectively. On marital status results showed that 75.4 of the respondents were widowed, separated, separated and divorced respectively.

4.2.2 Occupation of the household heads

The major occupation for most households was farming. About 90% of the respondents mentioned farming as their main occupation. Only 5.4% of the respondents in Agri business (selling crops) while 1.4% of the respondents were employed. Another 1.4% of the respondents were involved in running grocery business. The rest of the respondents were dependent on other people as there are too old and sickly to have their own occupations.

Maize was the main staple food and it was grown by all respondents. Cash crops grown by the communities were irish potatoes, tomatoes tobacco and paprika. However only 5.4 of the communities produced cash crops while the rest grew for consumption. The study also revealed that more than 70% of the households that did not grow cash crops relied on the sales of firewood as their income generating activity (IGA). It was also observed that men were engaged in various occupations apart from farming while all women were engaged in farming. This gender disparity in farming between men and women was also shown in forest management where women participated more than men. Similar results were also observed by Dubois and Lowore (2010) who reported that participation of women under community forestry was higher than that of men.

4.2.3 Age of respondents

The respondents ages ranges from 21 to 65 year with mean average 39.5 years. Most of the respondents 33% were between the ages of 21 to 30 followed by 41 to 50 years ‘age group.

Table 1: Age distribution of the respondents during the study n=146.

Age Categories	Women	Men	Number of respondents	Percent
21-31	9	39	48*	33
31-40	2	27	29	20
41-50	14	24	38*	26
51-60	9	19	28	19
>60	0	3	3	2
Total	**34**	**112**	**146**	**100**

***=Significant at P< 0.05**

There was significance difference (P<0.005) in the number of respondents within different age classes. However, despite age variation, there was no significant age difference between men and female respondents across the two villages.

4.2.4 Household size

The selected households showed an average family size of 4-6 members per household (see Table 2 below). The mean household sizes did not differ significantly (P<0.005)

Table 2: Household size of the respondents during the study (n=146)

Villlage	Number of members per household			
	1-3	**4-6**	**7-9**	**≥10**
Tembwe Village	32	29	26	5
Mpango Village	23	16	13	2
Total	55	45	39	7
Percentage	**37.7**	**30.8**	**26.7**	**4.8**

4.2.5 Education level of the household head

Results in the table 3 shows that the level of education in the area was generally low the mean level of education was standard 1-5.

Table 3: Educational level of the household head during the study (n=146)

Educational levels	**Men**	**Women**	**Total Per educational level**	**Percentage**
None	46	22	68	47
Std1-5	49*	7*	56	38
Std6-8	14*	5*	19	13
JC	2	0	2	13
MSCE	1	0	1	0.7
Total	112	34	146	100

***=Significant at P** <0.05

Chi-Square test showed that there was significance difference in the level of education between male and female headed household) ($P<0.05$ Male headed households had mean education level of 6-8 which was significantly higher than that of female households whose average education level was standard 1-5. It was also noted that because of their higher of education men usually left village to seek employment or were engaged in other occupations apart from farming which was mostly done by women. It was also observed that male members of the community dominated in decision making in the local forest institutions probably due to their higher level education levels. This results provided evidence that participation of forest management is independent of educational levels.

4.2.6 Land holding size

The mean land holding size per household was 1.5 hectares. The largest landholding size was 10 hectares per household. Only few (0.8%) individuals owned 10 hectares of land (Table 4 below). The smallest land holding size per household was 0.5 hectares. Chi square test showed significant difference ($P<0.05$) in land holding size among individual households across the two villages**.**

Table 4: Landholding size by selected households during the study (n= 146)

Size of land (ha) respondents	Number of respondents Owning the land	percentage of
0,5-1.5	58*	39.7
2.0-3.5	46*	31.5
4.0-5.5	35*	23.9
6.0-7.5	4	2.7
8.0-9.5	2	1.4
≥10	1	0.8
Total	**146**	**100**

***=Significant at P=** <0.05

4.3 Local institutions managing forest resources in Temwe and Mpango

Results revealed that 45% and 47% of respondents of Tembwe and Mpango villages respectively mentioned VNRMCs as the main local institutions facilitating forest management activities in the area. Households and limanas (a group of households governed by kingship within a village). Were the lowly marked in both villages**.**

Table 5: Local institutions involved in forests management (n =146)

Institution	Percentage of respondents	
	Tembwe (%)	Mpango (%)
Households/families	2	3
Limanas	1	2
BeeKeeping	22*	18*
VNRMCs	45*	47*
VDCs	30*	30*
Total	**100**	**100**

***=Significant at P** <0.05

Chi Square test showed significant difference in the (P<0.05) respondents perception on the involvement of local institutions on forest management in Temwe and Mpango

4.3.1 Number of local institutions

Results showed that there were only two local institutions in the area. About 90% of the respondents reported that there was one Village Development Committee (VDC) and Village Natural Resources Management Committee VNRMCs in each of the two villages. It was also revealed that apart from VDC and VNRMCs both villages had one beekeeping clubs. Similar institutions were found by Dubois and Lowore (2015) and Mwabumba (2010) who reported that VDC, VNRMs and beekeeping clubs were local institutions in managing forest resources in most communities in Malawi.

4.3.1.1 Village Development Committees (VDCs)

Results in table 6 below indicates the perception of key informants on the performance of VDCs in forest management. Results revealed that all respondents were aware of the functions of VDCs. Similar results were noted by Hobley (2013) who reported that before the introduction of community forest, most communities in India did not recognize the roles and functions of VDCs which resulted into low participation of village population to manage forest resources since the VDCs failed to mobilise the communities.

Chi Square test showed that there was significant difference ($P<0.05$) among the respondent's awareness on the performance on VDCs before during and after the project in Table 6. For instance, results revealed that communities had little confidence in the VDCs before the community empowerment. In contrast all respondents indicated their full confidence in the VDCs before community empowerment. Similarly, respondents reported that they were not aware of forest bylaws before the decentralization while the converse was true after the decentralization.

Table 6: Responses of key informants on their perception on performance of VDCs before and after project

Variable	Responses	Key Informants' responses		
		2009	2010-2014	2018
Awareness of existence of VDC	Yes	2(16.6)	8(66)	12(100
	No	10(83)	4(33)	0
Familiarities with roles of VDC	Very Familiar	0	2(66)	1(92) *
	Moderate	0	2(16.6)	1(8)
	Not Much	0	1(8)	0
	None	12(100) *		0
Level of involvement in forest Planning	Full involvement	0	4(33)	7(58)
	Partial	2(16.6)	4(33	2(16.6)
	Not Involved	12(100) *	4(33)	3(25)
Degree of confidence in VDC	Very confident	0	2(100) *	12(100) *
	Moderate	0	0	0
	Not at All	12(100) *	0	0
Awareness of forex by laws	Yes	0	95(75)	2(100) *
	No	12(100) *	3(25)	0
Level of involvement in making Bylaws	Full involvement	0	4(33)	7(58)
	Partial	0	3(25)	2(16.6)
	Not involved	12(100) *	5(42)	3(25)

*=Significant at $P< 0.05$. Numbers in parenthesis indicate percentages

4.3.1.2 Bee keeping club

Results showed an increasing trend in number of people participating in beekeeping club. The number of participants was lower before the community empowerment than after empowerment process. Significance difference ($P<0.05$) were observed in the number of people who participated in bee keeping club before and after empowerment in both villages. In addition, significance ($P<0.05$) were also noted in gender participation in both villages during and after the community empowerment (see Table 7 below). More men participated in bee keeping than women. This finding supports Hobley (1998) and Warmer (1995) who reported that men mostly dominate in come generating activities as compared to women who usually do not take leading roles midst of their men.

Table 7: Membership of Bee making club during and after project in a study area

Village	Participation in beekeeping club 2009-2012		2018	
	Male	Female	Male	Female
Tembwe	19(11.3)	11.65	46(27.4) *	24(14.3)
Mppango	14(8.3)	8(4.7)	27(16.0)	19(11.3)
Total	**33**	**19**	**73**	**43**

***=Significant at *P*< 0.05. Numbers in parenthesis indicate percentages**

4.3.1.3 Village Natural Resources Management Committees. (VNRMCs)

Results showed slight increase in the number of participants in VNRMCs in the period before and after the community empowerment (see Table 8 below). It was revealed that 223 men and 244 women participated in VNRMCs before while 434 and 364 male female members, respectively participated in the institution after community empowerment. This showed a significant increase in membership of the VNRMCs after the community empowerment process.

Table 8: Gender and age composition of VNRMCs during the project

	Participating in VNRMCs			
Age Class	**2009-2015**		**2006**	
	Men	**Women**	**Men**	**Women**
21-31	64(5.4)	46(3.9)	71(6.1)	53(4.5)
31-40	88(7.5) *	71(6.1) *	94(8.1) *	75(6.4)
41-50	102(8.7) *	84(7.2) *	108(9.3)	91(7.8)
51-60	52(4.5)	33(2.8)	50(4.3)	36(3.1)
>60	17(1.5)	10(0.8)	11(0.9)	9(0.8)
Total Number of Participants	**323(2.7)**	**244(20.9)**	**334(28.7)**	**264(22.7)**

***=Significant at *P*< 0.05. Numbers in parenthesis indicate percentages.**

In reference to age the results showed that the mean age of participants in the VNRMCs was 39.5 years and their age ranged from 21 to 63 years. Chi Square test in table 8 shows that there were significance differences in the number of participants among age classes within the VNRMCs before and after community**.**

These results revealed that the VNRMCs were dominated by the members of age group of 41 to 50 years followed by 31 to 40 years-age group. The least age group ranged from 21 to 30 years old. Similarly, it was found that the institutions were more dominated by office bearers whose age range was 41 to 50 years while the least age group of office bearers ranged between 21 and 30 years old. However, these results revealed that no significance difference in the number of male and female members participating in VNRMCS before and after the community empowerment.

Respondents were also asked to indicate their perception about the performance of VNMCs see (Table 9) below. In managing forest resources before decentralization process. The general trend in awareness of the performance of VNRMCs was low before and was higher after handing over powers to community (Table 9). For instance, only 38% of the respondents revealed that they were aware of the bylaws of and existences of forest constitution. Furthermore, the level of involvement in the

formulation of bylaws and constitution was lower before while it was higher after community empowerment.

Table 9: Responses of key informants on their perceptions of VNRCMCs during and after project (n=12)

Variable responses	Responses	Key Informants'	
		2008-2013	2018
Level of community participation	High	12(100) *	12(100) *
	Low	0	0
Familiarities with roles of VNRMCs	Very Familiar	49(33)	12(100) *
	Moderate	6(50)	0
	Not Much	1(8)	0
	None	1(0.8)	0
Level of involvement in forest	Full involvement	4(33)	7(58)
Planning	Partial	4(33)	2(16.6)
Not Involved		4(33)	3(25)
Degree of confidence in VNRMCs	Very confident	0	12(100) *
	Moderate	0	0
	Not at All	12(100) *	0
Awareness of forex by laws	Yes	7(58)	0(83.3) *
	No	5(42)	2(16.6)
Level of involvement in making	Full involvement	4(33)	7(58)
Bylaws	Partial	3(25)	2(16.6)
	Not involved	5(42)	3(25)

***=Significant at *P*< 0.05. Numbers in parenthesis indicate percentages**

4.4 Roles of local institutions in managing forest resources in the study area.

Most local forest institutions are involved in many roles in order to mobilise and promote community participation and helping community to reach consensus regarding forest management decision (Warmer 2010). To accomplish their functions, local institutions are involved in a number of roles outlined in Table 10 below. During the study respondents were asked to indicate their perceptions on the existence of institutional laws before and after community empowerment.

Table 10: Response of key informants on the roles of institutions during the project in a study n= (12)

Role of institution	2009		2011-2015		2018	
	Yes %	No %	Yes %	No %	Yes %	No %
Conflict Resolution	5.5	94.5	84.9	15.1	100*	0.0
Planning of activities	15.1	84.9	93.2	6.8	60.0	40.0
Setting rules for use	13.7	86.3	100.0	0.0	100.0	0.0
Monitoring and Policing	6.8	93.2	100.0	0.0	98.6*	1.4
Nursery and silviculture	20.5	79.5	100.0	0.0	93.2	6.8
Community mobilization	14.2	88.4	96.3	2.7	92.5	7.5
Leadership	27.4	72.6	87.7	12.3	87.0	13.0
Call for meetings	3.4	96.6	95.9	4.1	91.8*	8.2

Significant at P<0.05

Results revealed that there were significant differences ($p<0.05$) in the interviews responses on the roles of institutions before and after the decentralization process.

4.5 Effectiveness of the local institution in forest management

The design principles determine whether local institutions are effective for managing forest resources or not (FAO 2005). Responses to identify whether the design principles existed in the local institutions or not before and after the decentralization are in the Table 11 below.

Table 11: Existence of institutional design principles before and during and after study of project (N=146

Institutional Principles	Percentages of the respondents by gender				
	2009-2014		2018		sig
	Male %	Female %	Male %	Female	
Appropriation and provisional of rules	81.4	78.1	83.9	74.3	0.113
Forests planning procedures	86.1	78.2	34.9	25.3	0.042*
Right to organize forest management	73.2	76.2	74.6	70.2	0.231
Collective choice arrangements	76.5	74.8	76.3	70.6	0.191
Equitable benefit sharing	89.2	91.4	23.3	28.4	0.017*
Institutional incentives	92.1	83.7	43.1	44.2	0.041*
Ownership rights	71.1	71.0	60.2	63.7	0.234
Forest resource security	94.1	92.3	86.4	93.7	0.241
Graduated sanctions	85.9	82.5	86.3	84.9	0.450

***=significant at *P*< 0.05**

Results in table 11 revealed that household respondent's awareness on forest planning procedures, benefiting sharing issues and institutional incentives showed significant difference (P<0.05) between the periods during and after community empowerment. In contrast no significant differences were observed for the rest of design principles which implies that most of the design principles existed and were effective and sustainable for managing forest resources. On forest planning procedures results showed that the number of respondents who knew about the existence of forest management plan was significantly lower. P < 0.05) than the number of respondents who indicated knowledge of the management plan after the decentralization process. This implies that 63.1 % and 74.7% of male and female respondents, respectively expressed skepticism on existence of forest management plan after the decentralization process.

With regard to equitable benefit sharing 89.2 and 91.4% of male and female respondents respectively expressed awareness of equitable benefit sharing issues after community empowerment on natural resources management. These results also showed a significant decline (p<0.05) in the level of awareness regarding equitable

benefit sharing after decentralization process as opposed to the time before decentralization. On institutional incentives 91.1 % and 83.7 % male and female respondents, respectively expressed awareness of this design principle after the community empowerment on forestry management (Table 11).

4.6 Factors promoting community participation in forest management

Discriminant Functioning analysis (DFA) was conducted against socioeconomic and demographic variables of the households to determine factors that influence participation in forest management. Social economic and demographic characteristics of the households were independent variables while community participation was dependent variables. Therefore, test of equality of group means were conducted for silviculture, forest protection and decision-making. The DFA conducted in this study showed that the overall Wilks Lambda in each of the three cases. Silviculture, forest protection and decision making was significant. This implies that the DFA model was valid for predicting the variables that may influence community participation in forest management. The finding is similar to what Chidumayo (2010) found that 82% of the 33 respondents responded that they were influenced by the availability of fruits in the forests.

4.6.1 Test of equality of group means for participating in silviculture

The first analysis was the test of equality of group means for community participation in silviculture. Results of the discriminant analysis in table,12 below shows that for community participation in silviculture 86.3 % of the group cases were correctly classified. This means that 86.3% of all the variables in the discriminant scores can be explained by the model. This implies that the DFA model used in the study for silviculture operations was significant and could effectively be used to discriminate variables that motivated people to participate in forest management.

Table 12: Test of equality of group means for community participation in silviculture

Variable	Wilk's Lambda	Sig.	Std.cor. coefficients
Household Size	0.777	0.883	-0.219
Educational Level	0.983	0.121	0.180
Gender	0.801	0.000**	0.601
Age	0.530	0.000**	0.970
Distance to forest resources	0.997	0.045*	-0.546
Time taken to access forest resources	0.921	0.030*	- 0.255
Land Holding Size	0.990	0 .238	0.180
Size of village forest	0.995	0.383	-0.231
Size of forest user group	0.987	0.034*	0.987

% of grouped cases correctly classified. * = Significant at = P<0.05. ** =Significant at *P*<0.01

The DFA in table 12 shows that age of the household head, size of the forest and size of the foresee user group were significantly different (P<0.05) of the group means of the other variables with regard to community participation in silviculture. In addition, age was positively correlated (r=0.930) with participation in siviculture while size of the forest and size of the forest user group were negatively (r=-0.967) and positively (r=0.897) correlated with community participation in silviculture, respectively**.**

4.6.2 Test of equality of group means for participation in forest protection

The second analysis of equality was the test of equality of group means of the independent variables for community participation in forest protection, Results showed that 89% of grouped cases were correctly classified. This implies that 89.0% of all the variables in the discriminant scores can be explained by the model see (Table 13).

Table 13: Test of equality for group means for community participation in forest protection

Variable	Wilk's Lambda	Sig.	Std .cor.co efficient
Household	0.777	0.883*	0.219
Educational Level	0.983	0.121	0.180
Gender	0.801	0.000**	0.601
Age	0.530	0.000**	0.546
Distance to forest resources	0.997	0.045	-0.255
Time taken to access forest resources	0.921	0.030	-0.180
Land Holding Size	0.990	0 .238	-0.231
Size of village forest	0.995	0.383	-0.231
Size of forest user group	0.987	0.034*	0.987

84.2% of grouped cases correctly classified. * = Significant at = P<0.05. ** =Significant at P<0.01

Results in table 13 showed that gender, age, distance to travel from collect wood, time taken to access forest resources and size of the forest user group were significantly different from other group means for forest protection. Both gender and age of the respondents showed highly significant difference from other group means and were also positively correlated to participation for forestry protection (r=0.601 and r=0.970 respectively). In contrast distance to the forest resources and time taken to access forest resources were negatively correlated (r= -0.546 and r= -0.255) respectively with participation in forestry protection while size of the forest user group was found to be positively correlated (r=0.987) with participation in forest protection.

4.6.3 The test of equality of group means for participation in decision-making

The third analysis was the test of equality of group means of independent variables for community participation in decision-making. Results in Table 14 below showed that 84.2% of grouped cases were correctly classified. This implies that DFA could be used to discriminate variables that motivate people to participate in decision making.

Table 14: Test of equality of group means for community participation in decision-making

Variable	Wilk's Lambda	Sig.	Std .cor. coefficients
Household Size	0.782	0.007*	0.225
Educational Level	0.983	0.014	0.239
Gender	0.845	0.841	0.350
Age	0.589	0.000**	0.969
Distance to forest resources	0.929	0.845	-0.263
Time taken to access forest resources	0.579	0.902	-0.204
Land Holding Size	0.987	0 .171	-0.105
Size of village forest	0.999	0.758	-0.072
Size of forest user group	0.876	0.798*	0.237

84.2% of grouped cases correctly classified. * = Significant at = P<0.05. ** =Significant at P<0.01

Results in table 14 above shows that household size, educational level and age of household head were significantly different ($p<0.05$) from the other group of independent variables for decision-making in the analysis. In addition, these variables were positively correlated with participation in decision making. This support the findings in Brazil by Baohua (2008) who argued that the ownership of collective forest was classified at the Natural Village (NV) level, and collective forest is deemed to be under individual household responsibility and the management of natural villages.

4.7 Level of community participation

The indicators that were used in assessing community participation in the study area were number of individuals and households that participated in forest management, seedlings raised, planted and sold per year, number of woodlots established, area planted per year and number of man days per month dedicated to forest activities.

4.7.1 Indicators of community participation

Table 15: ***Indicators of community participation before and after decentralization process'***

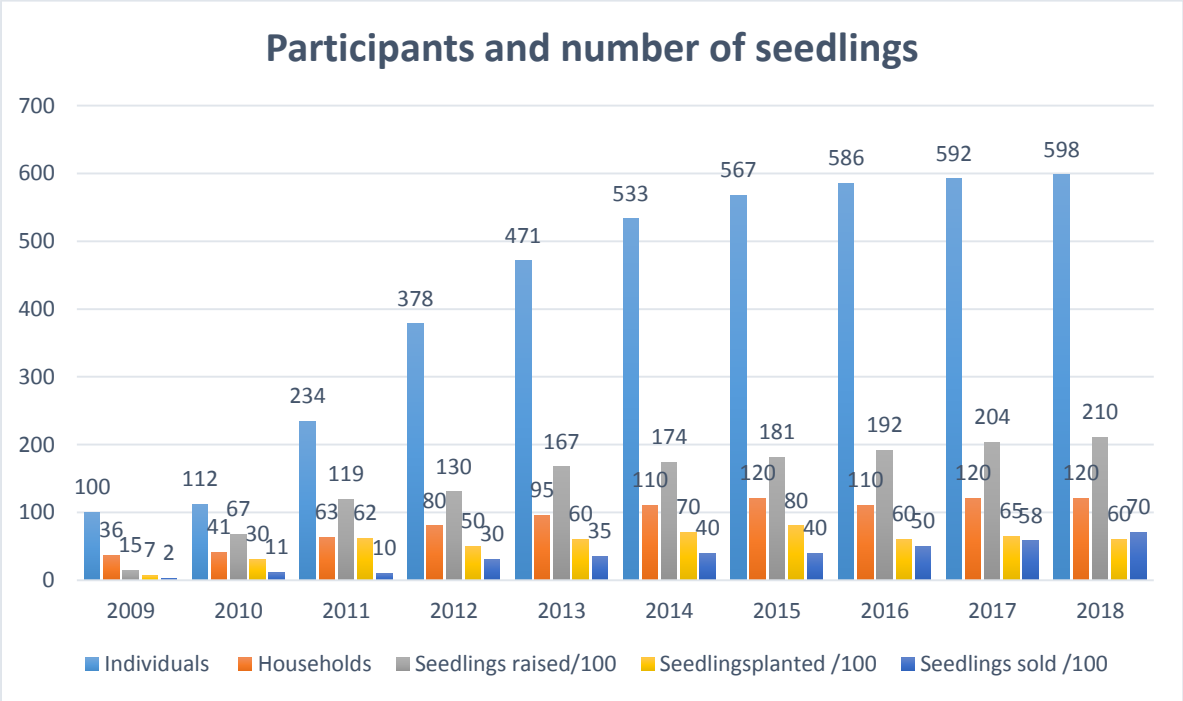
Indicators of community Participation	2009	2010-2014	2018
Individuals	17	567*	598*
Households	12	181*	210*
Av.no seedlings raised yr^{-1}	3000	12000	1200
Av.no trees planted yr^{-1}	2500	8000	6000
Av.no seedlings sold yr^{-1}	500	4000	6000
Area planted yr^{-1} (ha)	5	45*	53*
Area of the forest cover	2	5	4
(Cumulative) ha^{-1}	11	47*	55*
Av.man days $month^{-1}$	34	2268*	2392*

Av= Average* = Significant at = P<0.05

Results showed that there were significant differences ($p<0.05$). In the quantity of all indicators before and after the decentralization process. This is to the extent that level of community participation was significantly lower before and then after community empowerment as depicted by the indicators in (Table 15) above. For instance, results revealed that there were only 17 and 12 registered members and households that were involved in the management of forest resources before community empowerment. Similarly, only an average of 3000 and 2500 and 500 tree seedlings were reported to have been raised planted and sold per year. In contrast results indicated the rapid increase in quantity of all variables after decentralization.

On trend in community participation, the study revealed that there was steady increase in the number of individuals and household's participation in forest management after community empowerment. The increase in the number of individuals and households

was essential for effective forest management. This is in consistent with WollenBerg (2003) who reported that, as group size increases, the likelihood of successful collective action in forest management is also likely to increase, hence achieving the intended objectives.

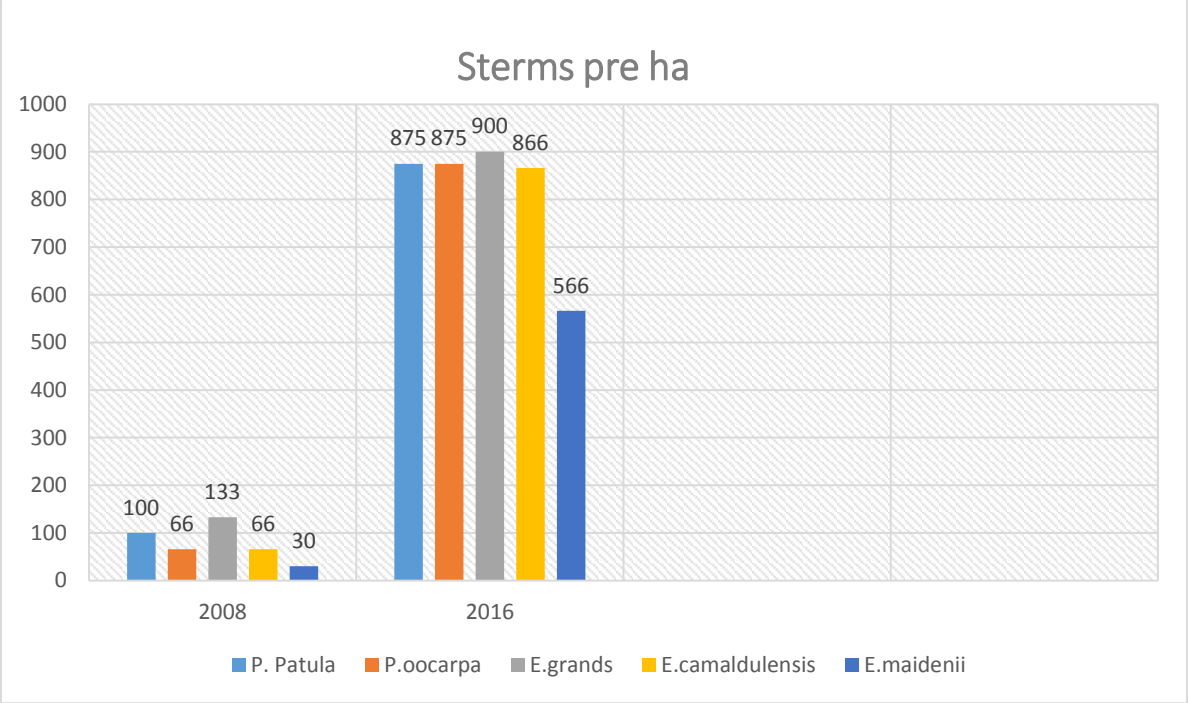


4.7.2 Extent and conditions of forest cover in the area

Forest measurement were conducted during the study to assess the extent and conditions of forest cover in the area. The assessment was aimed at determining the effectiveness of the local institutions in managing forest resources in the area. It was noted that forest cover in the area comprised the VFA and woodlots in the area. Tree measurement in the VFA comprised tree stocking per ha, tree species composition and diameter and diameter of trees at breast height.

4.7.2.1 Tree stocking ha before and after decentralization

Results in figure 3 below shows stocking of exotic tree species in the VFA before and after the decentralization process. The tree species recorded were P *patula, P oorcapa E. grandis E camaldulesis* and E maidenii. It was reported that the period before decentralization process had the lowest stocking per ha.



Number of stems per ha for exotic trees species before and after community empowerment

4.7.2.2 Tree species composition in the Village Forest Area (VFA) In the study area

Various indigenous species were assessed in the VFA. Table 16 below the Shannon Wiener information index and index of the dominance of the main indigenous trees species in the VFA before and after the community empowerment.

Table 16: Shannon Weiner Index H and index of dominance D before and after the decentralization

Species	H' 2009	H' 2010-2013	H' 2018	D' 2009	D' 2010-2013	D' 2018
U kirkiana	0.296	0.256	0.208	0.027	0.014	0.007
F speciose	0.000	0.119	0.208	0.000	0.001	0.007
P Curatellifolia	0.191	0.253	0.208	0.005	0.014	0.007
P Angolesisi	0.000	0.119	0.208	0.000	0.000	0.007
A Amyththophylla	0.119	0.119	0.162	0.005	0.014	0.003
S Cordadum	0.119	0.253	0.208	0.005	0.014	0.003
A garceanna	0.296	0.253	0.208	0.027	0.014	0.007
T Sericea	0.191	1.119	0.208	0.005	0.001	0.007
Total	**1,021**	**1.238**	**1.618**	**0.074**	**0.072**	**0.048**

Results in table 16 revealed lower tree species richness before than after the community empowerment. Results also revealed a higher Shannon Weiner Index H after decentralization as compared to before community empowerment. Therefore, higher species diversity as measured by species richness and species abundance was observed in the VFA. In contrast, the index of the species dominance D was higher before the community empowerment than after the community empowerment. However, results revealed lower values of D than the values of H before and after community empowerment. The high values of H and lower values of D indicate high tree species diversity.

4.7.2.3 Diameter classes of trees in the VFA

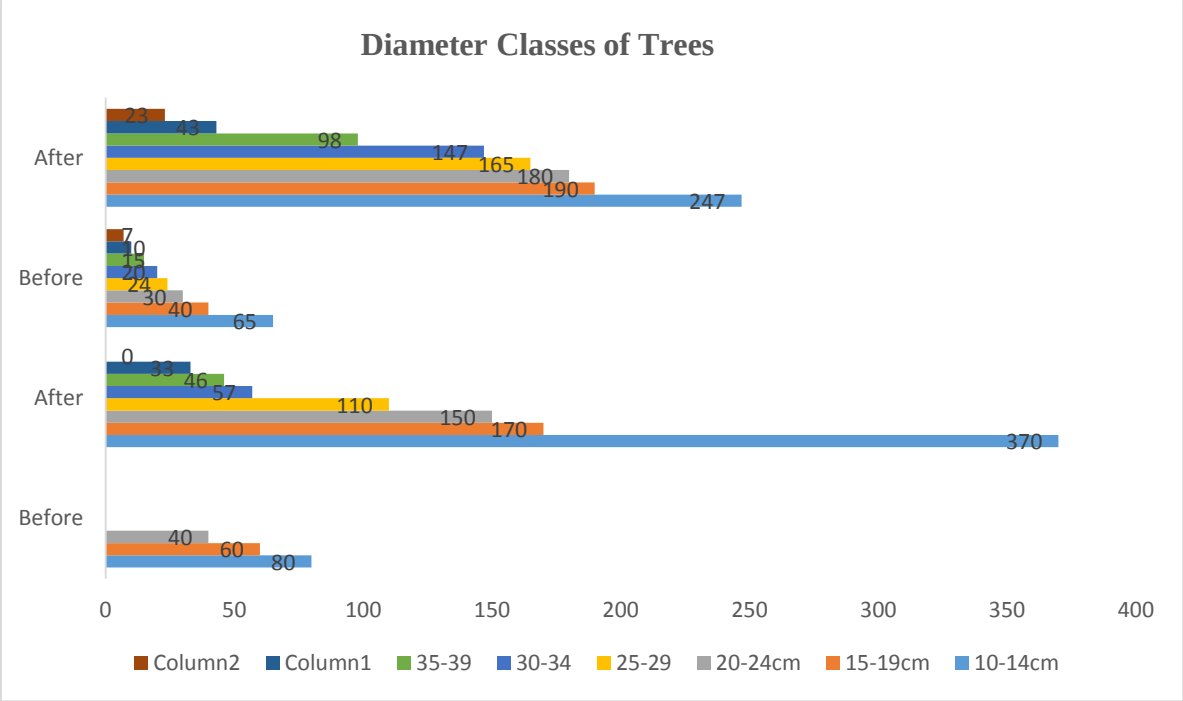
Results in figure 4 below shows the frequency distribution of diameter classes of trees in the VFA. It was observed that the diameter classes for all species before community empowerment were lower than after decentralization. A significant increase was observed in the number of stems in each diameter after the community was given powers to manage forest resources. Overall, for all species growing in the VFA, there had been significant increase in the number of stems per ha for each diameter class. The mean number of stems per ha for all tree species in the VFA

showed great variation before and after community empowerment (see Table 17 below). All species showed statistically significant ($p<0.05$) differences in the number of stems per ha before and after community empowerment. Similar significant differences were also observed before and after community empowerment**.**

Table 17: Mean number of stems ha for the tree species in the VFA before and after decentralization

	Tree species in the VFA	
Period of project		
	Pinus	**Eucalyptus**
Indigenous		
2009	22.5 ± 11.6a	26.4 ± 6.7a
50.4 ± 11.4		
2010-2015	82.4 ± 24.9b	97.0 ± 20.6b
86.1 ± 23.7b		
2018	117.0 ± 32.5b	136.6 ± 27.1b
114.4 ± 27.4b		
Sig.	0.03	0.02
0.04		
LSD $_{(0.05)}$	12.7	9.7
3.0		

Values in the columns followed by same letters are not significantly different from each other LSD $_{(0.05)}$



Distribution frequency of diameter classes in cm for pinus, Eucalyptus and indigenous tree species in the VFA.

This chapter has presented the findings according to the outline of the specific objectives. With respect to the first objective, which was meant to explore the roles of local institutions in forestry management in Mpango and Tembwe forestry reserves, it was found that facilitating in decision making for forest management, conflict resolution, planning of activities, setting rules for use monitoring and policing and community mobilization. The forest measurement was also done to determine the extent and condition of forest cover in the study area. This was done in order to compare the forest cover before and after the community empowerment which could also determine whether the institutions were effective for implementing sustainable forest management or not. The next chapter outlines the discussion of results.

CHAPTER FIVE
DISCUSSION OF RESULTS

5.1 Introduction to discussion

This chapter discusses results of participation of local institutions in promoting community forest management before and after community empowerment on forest management.

5.2 Local institution in Tembwe and Mpango Village

The first specific objective of the study was to determine the effectiveness of local institution involved in the forest management and their roles in managing forest resources in the study area. Results indicated that the main institutions that took leading role in managing forest resources were the VDCs, VNRMCs and Beekeeping clubs as they were ranked highly by local communities (Table 5). Simmilar results were found by Karthus (2010) who reported that VDCs, VNRMCs and bee keeping clubs played a key role in managing forest resources in community mobilization under the Blantyre City Fuelwood project. Apart from VDCs, VNRMCs and Beekeeping clubs a small proportion (about 3%) of respondents in Both Tembwe and Mpango villages revealed that household families and limanas were also involved in management of forest resources. However, these two institutions managed the resources at a small scale on individual household basis as compared to VDCs and VNRMCs which facilitated community mobilization for managing the VFA. Management of forest resources at household and limanas levels were fundamental for the sustainability of woodlots and homestead tree planting area. However, the discussion in this study focused on VDCs, VNRMCs and Bee keeping clubs as these were the institutions that facilitated in community management of forest resources.

The study showed considerable increase in number of local institutions managing forest resources. For instance, there only Limanas and household who were managing forest resources at household level however after the handing over powers to communities there was establishment of institutions these were VDCs, VNRMCs and

Beekeeping Clubs. The institutionalization of the forest management in the study area supports the findings by Dubois and Lowore (2000) and Ngulube (2000) who reported that VDCs, VNRMCs and Bee keeping Clubs were the main local institutions in managing forest resources in most communities in Malawi.

It is therefore concluded that the institutions which were established were sustainably maintained and continued to manage forest resources. The establishment of local institutions seemed to have contributed significantly towards survival and sustainability of managing forest resources.

5.2.1 Village development committee VDCs

The leadership of the VDCs is headed by village headman. The headman has legal control for managing the VDCs (Mwabumba 2000). The major role of the VDCs was to coordinate and facilitate in all developmental activities at the village level. All individuals and households in the village are automatic member of the VDC while other local institutions are the subcommittees. These institutions support each other by sharing skills and local knowledge in the forestry management (Forestry Department 2012).

On their perception about the VDCs communities were not more aware of the existence and performance of VDCs before the community empowerment. This is because they did not have any forest management plans and forest constitutions to effectively conserve and manage resources. However, the performance of VDCs appeared to have improved since the village wide community was involved in planning and implementation of forest activities. This shows that decentralization in forest management were viable for promoting the sustainability and effectiveness of VDCs in the area.

5.2.2 Bee Keeping Club

The bee keeping club was established after the decentralization as part of income generating activity by the club. The club was involved in conservation and management of trees and forest in order to sustain bee keeping while managing forest resources. It was revealed that bee keeping club acted as one entry point activities for

promoting and motivating communities to participate in forest management. This finding supports Eboh (1999) who in his study noted that income generating activities such as bee keeping were established in communities that were managing forest resources to promote community participation in forestry in selected areas in Nigeria. In Tembwe and Mpango Village members of Bee Keeping Club were working together in collaboration with VNRMCs and therefore the club was the arm of VNRMNC.

With the regard to community participation in beekeeping club, there was increased trend in the number of people participating in the forest management (Table 7). However, more men participated in the beekeeping club than women. In his study in Chimaliro Forest, Ngulube (2000) reported men took the leading role in most IGAs such as bee keeping in order to increase their access to forest sources of income. This assertion supports Hobley (1998) and Warmer (1995) who argued that men mostly dominated in income generating activity as compared to women who do not take an active role in the midst of men.

The increase in number of people participating in beekeeping club was probably due to increase in markets for honey in Dedza township and other surrounding areas. Pearce (2009) argued that accessible markets act as outlets for forest products such as honey as such acts as incentives for community participation in forest. Hence the improvement in community participation justified the effectiveness of local institution in promoting mobilisation of communities in forest and natural resources management in general. This also sustainability of community natural resources management.

5.2.3 Village Natural Resources Management Committee (VNRMCs)

The village natural resources management committee (VNRMCs) were the mainstay of the forest management activities in the area. VNRMCs worked as subcommittees of the VDCs in two villages. Each of the two villages had VNRMCs. Both VNRMCs operated jointly in managing community forestry resources in the area. With regard to community participation the study showed slight increase in number of participants. This increase might have resulted from various forest products that people were harvesting from the forest resources. Such products included poles, firewood, honey

and mushroom that were being harvested from the forest. This implies that forest products acted as incentives for community participation in forest management through local institution. This finding supports Banda (2001) and Kayambazinthu (2000) who reported that access to forests acts as incentives for community participation in forest resources management. Dubois and Lowore (2000) emphasized that institutional incentives that deal with characteristics of the resource base are essential for sustainable community participation in most local forest institutions.

In terms of the age of participants in the VNRMCs the elderly persons were regarded as having decision making and leadership skills hence they were more likely to be elected a leader in various positions in the institutions (Table 8). In addition, in Malawi it is a cultural and gender issue to associate elderly people with leadership and decision making positions (Mwabumba 2000). This may be the reasons why elderly persons more than 40 years dominated in leadership positions in Tembwe and Mpango villages. Similar results were also reported by Poffernbeger and MacGean (1998) who found that in India and Nepal participation in forest management was dominated by people within 40 to 50 years' age group. However, the younger age groups of 21-30 years and 31-40 years dominated in silviculture and forest protection activities that were more physical than leadership.

The younger age group had significant contribution in managing forest resources since most of the forest activities were largely physical in nature such as monitoring and patrolling forest resources and forest protection against forest fires and theft. In addition, there was gender balance in participation of people in the VNRMCs as no significance difference were observed in number of female and male members participating in VNRMCs (Table 8). Equal participation of men and women in forest management was essential as it ensured the implementation of different gender roles in silviculture and forest protection that were necessary for the forest sustainability.

With regard to the awareness of the performance of the VNRMCs most of the communities in the study area were not aware of their existence before the decentralization. Inadequate awareness of the VNRMCs may probably be due to lack of proper collaboration, consultation and involvement of the communities by forestry department staff and other stakeholders. Consequently, this might have brought

doubts and distrust among the communities. Khare (2000) argued that if local communities have no confidence in forest staff, most community forest management activities are not likely to be achieved. In contrast VNRMCs were more known by the communities. This could be result of increased access and ownership right that the communities had towards forest resources after decentralization to manage forest resources by the local communities. It also appears that adequate consultation were being made during planning and implementation of forest activities in order to incorporate ideas from wide community. For instance, according to Malawi Government (2004) Community wide consultations were made in the study area before formulation of forestry bylaws and constitution. This is in agreement with Bohero and Velded (1999), who argued that when local communities have access and ownership rights to forest resources they become motivated and confident in managing the resources which is essential for sustainability and equitable distribution of the forest resources.

5.3 Roles of the local institutions

The aim of local institutions was to promote community participation in forestry and helping the community reach consensus regarding the forestry management decision in the study area. To accomplish this function. The institutions were involved in a number of roles (Table 10). The main institutions roles were conflict resolutions, setting rules for use, monitoring and policing, nursery management and silviculture. Apart from the key roles, other roles were being practiced by the institutions which resulted in successful forest resource management. According to Clark and Hobley (1998) these institutional roles are fundamental for positive and successful implementation of forest management at local level. In contrast the study showed that implementation and enforcement of the roles was not in existence before the community was empowered to manage the forests. This was due to lack of institutional framework that would ensure effective governance of the forest management. Salim and Ullsten (1999) reported that the functioning of the roles may be faced with weakness which include unclear polices and weak local institutions. It is also difficult to enforce rules pertaining to forest use due to weakness in tenurial arrangements (Pretty 1998). However, the study showed that the institutional roles for managing forest resources in the area were sustainable and effective. This shows that the institutions were effective for managing forest resources. Similarly, Clark (2000)

reported that where communities have institutional arrangements for managing forest resources, the forests tend to be better managed than where such institution do not exist. This research finding addressed the second research question in the study: What are the roles of institutions in participatory management of forest resources in the area?

5.4 Effectiveness of the local institutions in the management of forest resources.

The existence of institutional design principles were used to assess the effectiveness of the local institution. Institutional design principles act as criteria which determine whether the local institutions are effective for forest management or not (FAO 2005). The study showed that institutional design principles existed and this indicates the likelihood that the institutions were robust in promoting community participation. This is emphasized by Hobley (2010) who reported that communities in India who had design principles were more effective in managing forest resources than those that had none. The design principles have been discussed as follows.

5.4.1 Congruence between appropriation and provisional rules

Appropriation rules regulated the utilization of forest resources in the area to ensure sustainable use of resources. They dealt with restriction of time, place and quantity of the resources that could be harvested from the forest. Extraction of forest resources was often regulated by designating days when people were permitted to harvest forest resources. Provisional rules dealt with the contribution that individuals or households rendered to the local institutions for effective performance. For example, people were contributing labour and other inputs such as watering cans, hoes and pails for nursery management and other forest operations. Contribution of resources was fulfilment of the provisional rules that the group agreed upon. Adherence to provisional rules ensures self-reliance of the communities in forest management where they conduct forest activities using their own resources (Kayambazinthu 2000). Hence existence of congruence between appropriation and provisional rules for forest management seemed to be among the factors contributing towards the effectiveness of the local institution in the area. This conclusion supports Bohero and Velded (1999) who reported that congruence between appropriation and provision of rules provided

community ownership rights of forest resources in Tanzania, which was crucial for forest effective management.

5.4.2 Right to organize forest management

The study has shown that the right to organize forest management by the communities were more effective after the decentralization. This shows that leadership and decision making powers were transferred from forest department to local institutions which entails that full right to organize forest resources were assumed by local communities. These rights are fundamental to the use and sustainable management of the forest since they specify access to resources (Pangiola 2009). Therefore, the right to organize forest management provide communities with incentive to use forest resources efficiently and to invest in resource conservation and improvements (Warmer 1995). This contributed significantly towards promotion of local participation in forestry. This assertion is in support of Dubois Lowore (2000) who reported that that given the right to organize and enforce rules local communities become motivated to participate in forest management at local level.

5.4.3 Forest planning procedure

As already highlighted, the role of forest planning appeared not to be effective before the community empowerment (Table 11). Similarly, as one of the institutional design principles, forest planning was not as effective as other design principles in other area. For instance, of the respondents who were aware of the existence of forest management plan 60% expressed ignorance on the objective of the management plan. It was noted that most of the community members who had knowledge of the objectives of the management plan held executive positions in the local institutions. It appeared there were no proper consultations between the executive committee and the entire community on the formulation of the management plan. This is probably one reason why some members were not aware of the existence of the forest management plan let alone its objectives. This might have considerably affected the performance of the institution in promoting community participation in managing forest resources as significant differences in people's perception on existence of this role were observed during the study.

5.4.4 Collective choice arrangement

Collective choice arrangement refers to the ability of the local institutions to modify operational rules in forest management to suit their local conditions for forest management (Hobley 2001). Clark (2010) reported that with collective choice arrangements, local communities play a leading low in decision making in managing forest resources. Therefore, the existence of collective choice arrangement is essential for effective forest institutions. This design principle seemed to have significant influence on the promotion of community participation as the local institution had control of resources in two villages. This support Olson (1965) and Hardin (1968), both of whom argued that groups of people were not likely to work effectively together. Hardin, in particular, blamed resource degradation on the "tragedy of the commons," in which users are unable to cooperate to achieve mutually beneficial outcomes. Although Hardin used the term "commons" in a generic fashion, Hardin's tragedy was the result of a confluence between two variables: a type of resource, called a common-pool resource (or commons for short), in which exclusion is difficult, but consumption rival, encouraging overuse, and an open-access property regime, in which there is no collective regulation of access and or use (McKean 2000).

5.4.5 Equitable benefit sharing

The study indicated that communities in Tembwe and Mpango villages were skeptical about the existence of equitable benefit sharing arrangement before the decentralization. Local communities reported that questions about how benefits were to be shared caused problems in community participation because there had been no clear and agreed upon method of sharing the forest benefits. Similar results were found by Dubois (2000) who reported that unclear method of sharing forest benefits acted as disincentive for local forest management. Hobley (2000) argued that the success of any community forest management often hinges on the perception that the benefits from the utilization of forest resources are equally shared within the community. Overall more women than men expressed awareness of equitable benefit sharing because usually women obtained intermediate forest products such as firewood and other non-wood forest products from which most men did not do.

5.4.6 Institutional incentives

Institutional incentives are the elements or factors within an institution that motivate people to manage forest resources. These incentives have three characteristics. These are characteristics of forest resource base, characteristics of institutional rules and characteristics of community involved in forest management (Clark 1998). The study revealed that local communities had more access to institutional incentives and some members in the community who did not have access to institutional incentives did not take part in forest management. Rather than, promoting collective responsibility in forest management, this can create conflicts in community which may result in significant reduction in community participation.

5.4.7 Ownership rights of forest resources

For people to actively participate in forestry management, it is necessary for ownership, land and tenure rights to exist in local community (Warmer 1995). Ownership rights of the forest resources are vital for the effectiveness of the local institutions to promote community participation (Upton and Bass 1996). It is argued that ownership of the forest resources by local communities establishes efficiency and equity on the management and use of the resources where customary rules are followed (Raintree 2001). The study in (table 11) has shown that the ownership rights for forest resources were sustained in the two villages. This might have enhanced the effectiveness of the local institution to promote community participation. For instance, Kramer (1995) reported that in areas where the ownership rights are well defined and enforced the condition of the forest is arguably better than in those areas where such rights do not exist.

4.4.8 Forest resource security

It was noted during the study that monitoring and forest security was being implemented by members of VNRMCs and beekeeping club (Table 11). The forest security measures included forest weeding, patrolling, fire break maintenance and enforcing forest tenure. Respondents indicated that there was improved forest security in the areas after establishment of the local institutions. It was also reported that before establishment of the local institutions especially VNRMCs forest problems such as encroachment, fire and theft of wood resources were more common than after

establishment of local institutions. The improvement of forest security appears to be sustainable due to forest tenure existing in the area. Tenure affects resource sustainability through its determining influence on who has access to resources (Pearce 1990). According to Seymour (2000), tenure system that do not guarantee continued ownership and control of trees are not likely to be conducive to the adoption of long term forest resources management. Therefore, communities become reluctant to participate in forest management especially in tree planting in the absence of well-defined tree tenure arrangements (Thomson 2001). Hence increased participation in forestry in the area implies that people were sure of the tree resources tenure which is essential for forest resource management.

5.4.9 Graduated sanctions

In this regard members of the community who violated operational rules were likely to receive graduated sanctions from the members of the local institutions. These sanctions formed part of the bye-laws for governing forest resources. The local institutions had various ways of dealing with the offenders. These included verbal warning, fines and reporting them to VDCs. Warning seemed to be used mostly commonly especially with first time offenders. Fines were often levied on members with previous record of warnings. With graduated sanctions, the institutions are said to contain defined system of resource use and control and there is exclusion of non-members and enforcement mechanism for punishing deviant behaviors (Probyn 1997).

It has been shown in this study that the local institutions were effective in managing forest resources. This was determined by the existence and sustainability of institutional designed principles in the area. Most of the institutional design principles that determine the robustness of the institutional were sustained and enhanced the performance of local institutions. Therefore, designed principles largely contributed towards the effectiveness of the local institutions to sustain forest management activities in the area. Conversely, equitable benefit sharing, institutional incentives and forest management planning were as effective as the other principles. However, the dwindling status of the tree design principles did not affect the general performance of the local institutions in the management of the forest resources in the

area. The findings under this section provided answers to the third objectives which was “How effective are the resources in managing forest resources?”

5.4.10 Shortfalls in the local institutions

Despite having most of the design principles in the local institutions, some shortfalls were observed during the study. Some of the major shortfalls were lack of forest harvesting plan, lack of forest management agreement for the VFA between the Forestry Department and communities and insufficient organizational training beyond leadership skills. Similar shortfalls were reported Karthus (2003) who noted that most of VNRMCs were faced by technical and governance problems which consequently affected the effective management of forest resources. Both forest management and harvesting plans are essential for effective local institutions as they define management objectives VFA based on community needs (Davis 1998). Due to lack of harvesting plan VFA most community members were not aware of the financial value of the forest resources in the VFA or any possible market strategies in order to realize the potential of their forest resources. It was also noted that the actual size VFA was not known in the absence of the forest map which made it difficult for proper planning of the forest activities. The lack of forest management agreement also affected the functions of the institutions. For instance, many people especially those that did not participate in forest management had negative attitudes towards forest Policy and the forest department since they were not sure of their ownership rights of the forest resources in the absence of the agreement management and utilization between department and the community. Forest management agreement is therefore essential for the formal transfer tenure and management responsibility from the forest department and the communities (Pangiola 2002). In regard to training it would appear that most communities only received forestry technical trainings such as tree nursery establishment and tree planting and very few had received organizational training beyond leadership skills.

This affects the performance of the local institutions since there are only few individuals who can effectively plan appropriate forest activities in the area which affect effectiveness of the institutions. These are some of the common problems being face by VNRMCs in other areas (Malawi Government 2005). It is against this

background that standard and guidelines for participatory forest in Malawi were formulated to guide in the implementation of community based forest management. However, the standard and guidelines do not explicitly indicate procedures on how institutional design principles should be implemented to ensure viable and robust forest management. For instance, the standard and guidelines do not reveal how graduated sanctions and conflict resolutions in the VNRMCs can be achieved in the community based forest management resources. As a consequence, such shortfalls defeat the rationale for the implementation community forest programmes (Dubois and Lowore 2000).

5.5 Factors promoting community participation in forest management

The third objective of the study was to assess factors that promote participation of local communities in forest management. Test of equality of the group means were conducted for silviculture, forest protection and decision making (Tables 12, 13 and 14) against the socioeconomic and demographic and demographic parameters of the household in the study area. A discussion on each of the significant variables is outlined.

5.5.1 Age and participation

Discriminant analysis showed that age could be determining factors for members of the community in the study area to participate in forest management. It was noted that the age classes of the household heads were associated with particular forest activities undertaken by the community. The standard correlation coefficient showed that age was positively correlated in community participation in silviculture (r =0.930) forest protection (r=0.970) and decision making (r=0969) (Tables 12,13 and 14). This implies that older people (> 40 years old) were more likely to participate in forestry management activities such as silviculture operations. Forest protection and decision making as compared to younger people (< 40 years old) who could opt for other occupation that may provide immediate returns to investment rather than forestry. The long term investment in forestry act as disincentives for younger people to undertake forestry activities at local level as compared to the order members of the community. In addition, Garforth (1985) reported that older farmers (> 40 years old) in most rural communities have larger farms and households and have extra economic labour capacity to invest in forest resources.

5.5.2 Size of the village forest and participation

Discriminant analysis (Table 12) showed that size of the village forest area could be one of the determining factors predicting community forest participation in silviculture. This implies that forest size was the determining factors for people's choice to participate in forest management or not. Standard correlation coefficient (Table 12) indicated that size of the forest was negatively correlated (r = - 0.967) with community participation in silviculture. This implies that when the size of the forest is small with few resources forest owners such as the VNRMCs are motivated to participate in managing the forest in order to protect the remaining forest resources for their livelihood. This is in contrast with a situation where the forest resources are in plentiful. People do not have the incentives to participate in management of forest resources as they could if the resources were not scarce. Hobley (1995) also argued that scarcity of forest resources in India and Nepal acted as incentives for local communities to participate in forest management so as to increase their access to resources. Therefore, the scarcer the resources are to local communities, the more motivated people become to participate, thus size of the forest is predicator for community participation to manage trees and forests. It can also be argued that with larger VFAs excludability becomes low and therefore presents disincentives in investing management.

5.5.3 Size of the forest use group and participation

The study revealed that the size of the forest user group could determine the community participation in forest activities especially in silviculture and forest protection. Standard correlation coefficients (Tables 12 and 13) showed positive relation between size of the user group and silviculture (r =0.897) and forest protection (r=0.987). This implies that the larger the size of the forest user group, the more the community participated in order to increase access in forest resources. Similar results were reported by Clark (1999) who found out that where there was large community managing few resources, participation of the people to manage the resources was higher than where there is small community with plenty of resources. Kuchii (2000) also argued that an institution that gains in size as more villages participate in activities is better able to raise more resources and ensure greater monitoring of the forest resources.

5.5.4 Gender and participation

Gender was found to be one of the factors for predicting the behavior of communities in regard their participation in forest management. Standard correlation coefficients (Table 13) showed positive relationship (r=0.601) between gender and participation in forest management. Since there were more male respondents than women per household, it implies that men were more likely to for the protection activities such as forest fire fighting and monitoring of forest resources than women. The study has shown that men were more likely to take leading role in leadership and decision making for the protection and conservation of forest resources than women. The significant of gender in the analysis showed that the division of labour between men and women may promote community participation. For instance, in Nepal Aghrawal (2000) found that 70% of silviculture operations such as raising seedlings were dome by women while men did more protection activities. Therefore, allocation of community members in positions in which they will show their optimum potential may enhance efficiency in forest management (Clark 200).

5.5.5 Distance to the forest and participation

The study has also shown that the distance to the forest resources had an influence on the participation of people on forest management especially forest protection (Table 13). Standard correlation coefficient for distance to forest showed that participation in forest protection and distance to forest resources were negatively correlated (r=0.546). This implies that it was difficult for the community to effectively protect and manage forest resources located far away from local community which in the final analysis acts as disincentives for communities to manage resources. As expected the shorter distance to the forest resources, the better the protection measures of the resources and the higher the community participation becomes. Similar results were found by Human (2000) who reported that communities living close to forest resources create ownership rights for the resources and it is easy for them to exclude outsiders. This reduces free-riders' problems within local institution and enhances the effectiveness of the institutions.

5.5.6 Time spent to access forest resources and participation

Time spent to access forest resources from the forest area had a significant influence on the participation of people on forest management. It seems that some of the local communities that did not participate in VFA were influenced by increased time that was being spent in searching various forest resources such as firewood in the VFA as most of the forest area was not yet established to produce adequate amount of forest products to satisfy the demand. Therefore, as an alternative to the VFA most of them had established woodlots close to their homes. Standard correlation coefficient showed that time spent in forest to search forest products had negative relationship (r= -0.255) with participation in forest protection (Table 13). This implies that the more time spent on accessing forest resources, the less was on community participation in most of the forest activities especially forest protection and silviculture. Similar results were found by Forestry Department (2002) which reported that increased amount of time searching for forest resources in community forests acts as disincentive for community participation to manage the resources.

5.5.7 Household size and participation

The study also found that the household size would predict the likelihood of the household to participate in forestry activities especially decision making as shown by the positive correlation (r=0.255) with participation in decision making (Table 14) This implies that larger families (≥7-9) members per household) had more workers and hence a higher probability of participating in forest activities than smaller families. Similar results were reported by Saigal (2003) who indicated that larger households with greater households labour are likely to participate in forestry management. Furthermore, it was observed that heads of the households with larger number of family members were largely dependent on forest resources and were likely to participate in forest management in order to obtain forest resources in return. This results strongly supports the arguments that families with larger families are in the better position to participate and utilization whereas the converse is true for smaller household (Hoskin 2000). Therefore, household size is one of the factors which promote community participation in forestry management.

5.5.8 Level of education and participation

The study showed that the level of education could influence participation of an individual in decision making or leadership (Table 14) In addition, standard correlation coefficient showed positive relationships (r= 0.239) between level of education and participation in decision making. This implies that the likelihood of participation of people who did not attain any education in decision making and leadership was significantly less than those who attained higher level of education. Decision making and leadership require skills that literate members of the community may likely have. Having realized their low education status, communities prepared forest management plans in collaboration with Forestry Officers based in the area. This type of initiative and improved relationship with forest staff also contributed towards the effectiveness of forest management in the area. This support finding by Clark (2000) argued that allocation of community members in position in which they will show their optimum potential may enhance efficiency in forest management.

5.5.9 Land holding size and participation

Discriminant analysis showed that land holding size was not significant in the analysis (Table 12, 13 and 14). Land holding size therefore seemed not to have any influence in community participation to manage forest resources in the study area. However, Hobley (2000) argued that household that hold larger pieces of land have high likelihood to plant trees as compared to those households having smaller area of land.

The study has shown that age, size of the village forest and size of the forest user group seems to influence community participation in silviculture. On the other hand, gender, age, distance to forest resources, time to access forest resources and size of the forest user group appeared to influence participation in forest protection. Household size, level of education and age also seemed to influence community participation in decision making.

5.6 Level of participation

The fourth objective of the study was to access the level of community participation in the area. In order to achieve the objective a number of variable were assessed which included number of seedlings raised, planted and sold, number of individuals involved in forest management and the extent and the condition of the forest cover.

5.6.1 Indicators of the community participation

The trend in community participation showed a steady increase in community participation since the process of decentralization was done. Before the decentralization the level of community participation was significantly lower than after the decentralization (Table 15). The study revealed that the average number of seedlings raised per year was constant before decentralization and higher after decentralization. It was noted that the study area faced problems of shortages of land for forest establishment since some land which had been set aside for forest practices was reported to have been converted to agricultural land, hence the lower number of planted seedlings (Table 15). It is against this background that 50% of seedlings were being sold while half of the remaining were planted on the remaining pieces of land in the area. Regardless of shortage of land for tree planting, the overall community participation in the area improved significantly.

The increasing trend in the community participation implies that the local institutions were effective in mobilizing community participation in forestry management. However, it was noted that 80% of the communities participated in forestry in order to increase their access to forest resources. Similar observation was reported by Mayers and Bass (2004) who found that local communities considered the benefits and costs engaging themselves in forest management before investing their efforts in conserving forest resources.

The steady increase in the number of seedlings raised, planted and sold appeared to be positively correlated with the increase in the number of participating individuals and households. This implies that as the number of community members grew, there was also increase in labour for undertaking an increased amount of forest activities such as nursery operations which would not be possible with few individuals and households. Similar results were reported by Ngulube (2000) who indicated that increased number of people participating in forestry was positively correlated with an increased production of forest activities in Chimaliro forest reserves Kasungu. In addition, Hoskins (2004) reported that larger groups of participants are likely to be more successful in raising more resources to accomplish activities which would be difficult with smaller group.

In concluding this section, there was an increase in most of the parameters that were used to assess the level of community participation. Therefore, it can also be concluded that the local institutions that were established were more effective in promoting community participation.

5.6.2 Extent and conditions of forest cover in the area. Number of trees per hector

Before the decentralization process, it was reported that the number of exotic trees terms per hector was low. The probable trend for this reason was forest resources were used as *de facto* open access property where everybody used the resources but nobody managed them. This resulted in the reduction in the number of stems per hector for all exotic species before the decentralization. The higher number of stems per hector that was assessed during the study was probably a result of tree planting exercise after decentralization, most of the stocks were fully stocked, hence a higher number of stems per hector. E camaldulensis and E maidenii species were planted through enrichment planting operations. This results implies that there had been sustainable improvement in community participation in forest management since the decentralization process which showed that local institutions were effective. This trend support Hardin (1968) on Common Resource Pool Theory (CPR) theory which argues on ability of people to act collectively to overcome the management dilemmas inherent to common-pool resources. There was regulated harvesting and utilization of forest resources for sustainability. This indicates that local institutions that were established had a significant positive influence on local participation for effective and sustainable forest management and utilization.

5.6.2.1 Tree species composition

The results indicated smaller species richness and species diversity compared to the period after the decentralization processes due to human exploitation and unsustainable felling of forest resources as woodlands in the area were regarded as *de facto* open access property resources. This result agrees with Mwase (2007) who reported that in many communities' customary land is open access due to weakened traditional control over the resources. This trend supports Hobley (2008) who indicated that common property regime are usually responsible for over exploitation and mismanagement of forest resources. The higher species richness and diversity

implies that after the local institution were established, there was improved conservation and management of forest resources in the area due to institutional arrangements that were formulated. Restrictions were put in place to avoid unnecessary cutting, harvesting and extraction of forest resources from VFA. The higher number of species in the VFA after the decentralization process shows that institutionalization of forest management has a positive influence on species richness and diversity in woodlands at the local level. This is to the extent that the local forest institutions enhanced regeneration and conservation of forest resources which resulted in an increase species composition in the study area. This trend support Hardin (1968) on Common Resource Pool Theory (CPR) theory which argues on ability of people to act collectively to overcome the management dilemmas inherent to common-pool resources. The increase in species richness is therefore indicative of improved community participation. Raintree (2009) also argued that improved participation of local communities in managing forest resources promoted regeneration and improved species composition within a unit forest area in India. Therefore, it can be concluded that local institutions were effective in promoting participation of the local communities in managing forest resources in the study area.

5.6.2.2 Diameter classes of trees in the VFA

The study showed that the number of stems per hector was significantly lower before decentralization process. This implies that there was no effective management and utilization of forest resources in Tembwe and Mpango villages before establishment of local institutions which resulted in the reduction of stems in each diameter class for all tree species (Figure 4). Conversely, the higher number of stems per hector in each diameter class recorded after the decentralization process, implies that there were improved management of forest resources hence the higher number of stems were observed in each diameter class. Before the decentralization process, the curve for *Pinus and Eucalyptus* species revealed very few number of stems per hector each diameter class. An explanation for this trend is that probably trees may have been felled for either poles or timber and harvesting without following the proper procedures as people had no management plans to control and regulate forestry harvesting and extraction. This was exacerbated by lack of local institutions that could facilitate by sustainable management and utilization of forest resources. Similar

findings were observed in the study of co-management of Chimaliro Forest reserves in Malawi in which Kayambazinthu (2000) Forestry Department (1999) and Coote (2015) reported that lack of collaboration amongst local communities in forest management coupled with absence of tenure and ownership rights of forest resources contributed towards the unstainable harvesting of forest resources.

In concluding this section, there was a steady increase in participation of communities in the local institutions after empowering the communities on managing forest resources. The study revealed that there was sustainability in the managing forestry resources because the majority were benefiting from income generating activities from the forest. Among the institutions VNRMCs were regarded as the main local institutions managing forest resources in the area. These finding addressed the first objective which was to determine local institution involved in the forest management in the area and answered the first research question in this study: Which local institutions are involved in management of forest in the area? The next chapter discusses the conclusion and recommendation of the study.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

The study was carried out to analyze the role of local institutions in community participation in forestry management of Tembwe and Mpango forestry reserves in Dedza.

The finding of this research revealed that, the majority of the people in study areas depend on forest and forest products. Mpango and Tembwe are relatively intact and provides a full range of potential and actual forest resources which are the basis for the community's livelihoods. Extent of dependency on the resources, type of resources used, and distant of the community from forest reserves are dependent on the forest are important in influencing the behavior of the individuals for collective action in forest use and management. On the other hand, heterogeneity in terms of ethnicity and religion has no negative impact on individuals' behavior for collective action to manage forest resources.

The first objective of the study was to identify the local institutions involved in forest management and their roles in managing forest resources in the study area. Before the decentralization government through forestry department managed the forest resources while VDCs, VNRMCSs and Beekeeping clubs were involved in management of forest resources. Consequently, management of forest resources was not as effective before giving power to the communities Hence management of forestry resources improved after establishment of local institution in the study area.

The second objective of the study was aimed at assessing the effectiveness of the institutional roles in forest management. The institutions were effective in managing forest resources as most of the institutional design principles that characterize robustness of local forest institutional. It can therefore be concluded that the design

principles are essential for efficient performance and sustainability of the local institutions in the management of forest resources. This is to the extent that if the design principles are lacking, there is high likelihood that the local institutions would not be effective in their operations.

The third objective of the study was to assess factors that influence participation of local communities in forest management. Both demographic and socioeconomic characteristics of the local communities have an important influence in community participation in forestry. For example, age, gender and size of the forest user group an important bearing on community participation in forestry. Failure to consider and incorporate socio-economic and demographic factors of the community during the planning and implementation of forest activities would likely jeopardize the effective performance of the local institutions.

The fourth objective was to assess the level of community participation in forest management. Forest resources were treated as open assess property which acted as disincentives for the local people to invest their resources in managing woodlands, hence forestry degradation increased in the area. It can therefore be concluded that the establishment of the local institutions enhanced mobilization and active participation of the communities to manage forest resources which consequently improved the level of community participation in forestry management hence local institutions are essential for community mobilization to participate in forest management.

Therefore, according to the study, the local institutions were effective in promoting community participation in forest management. This has been shown by the existence of the forest roles and design principles for effective forest management. In addition, the level of community participation, extent of forest cover, species composition, tree stocking and diameter class distribution showed significant increase after decentralization process.

6.2 Recommendations

From this study it has been learnt that institutional design principles contribute significantly towards effective local institutions. Therefore, during establishment of local institutions community members should be trained on both technical forestry and organizational forestry. In organizational forestry, communities should be trained in implementation of the institutional design principles to achieve effective and sustainable forest management.

In order to establish sustainable local institutions for effective forestry management, there in need to revise the current standards and guide lines for participatory forest management as formulated by Malawi government (2005) to be consistent with institutional design principles that Ostrom (2000) formulated. Since there has been significant increase in forest resources in VFA, there is need to formulate a forest harvesting plan and forest management agreement with the forestry department for the VFA especially for the exotic species. This may contribute in developing possible market strategies in older to realize optimum returns from the resources. It will also assist the institution to be accountable in implementing equitable benefit sharing mechanisms.

Since different socio-economic and demographic characteristics promote community participation in forestry, considerations should be made to allocate some forest tasks to local communities based on the socio-economic and demographic characteristics of particular individuals and households in older to achieve effective and sustainable forest management.

There is need to formulate equitable benefit sharing mechanism between the local communities and Forestry Department through the establishment of forestry management agreement and by laws in order to sustain and motivate local participation in forest management in the area. Similar benefit sharing arrangements should be established amongst local communities themselves in order to reduce conflicts in managing forest resources. These measures would enhance and ensure forest ownership and property rights for forests by the communities which may contribute towards effective management of forest resources.

REFERENCES

Astrom, E.E, L. Schroeder and S. Wynne. (2008). Institutional incentives and sustainable development. West View Press, Oxford, UK.

Bertzky B. et al (2012) *Protected Planet Report: Tracking progress towards global targets for protected areas,* IUCN, Gland and UNEPWCMC, Cambridge.

Binns, T. and Maconachie, R. (2006), *Post-conflict reconstruction and sustainable development*: diamonds, agriculture and rural livelihoods in Sierra Leone. International Journal of Cultural, Economic and Social Sustainability, 2, 205–16.

Carter, J., and Chao B. (2012). *Recent Approaches to Participatory Forest Resource Assessment*, London: ODI.

Chao, S. (2012) *Forest peoples: numbers across the world, Forest Peoples Programme,* Moreton-in-Marsh, UK.

Cleaver (2012) Culture *and development: Taking culture seriously in development for Andean indigenous people'.* Environment and Planning D: Society and Space, 24(2): 231–248.

DFID, (2010), *Sharing Forest Management: Keys Factors, Best Practice and Ways* Forward. London: DFID.

Dovers J. I., (2017), *Wildlife economics: a study of direct use values in Botswana's wildlife sector*. PhD Thesis, University of London.

(Ellis B (2010) *Management of conflicts over common property resources: Challenges and strategies.* A paper presented at the IASCP conference, Victoria Falls, Zimbabwe, 17-21 June 2010.

(Eboh W. and Mistry J (2010). Natural resource management: A critical appraisal

NACSO (2016), *Namibia's communal conservancies: a review of progress and challenges. Namibian Association of CBNRM* Support Organisations, Windhoek, Namibia.

Fortmann, L. and J. Bruce and Lowore (2014), *Whose Trees? Proprietary Dimensions of Forestry*, Boulder, Westview Press.

Government of Malawi, (2010), *National Environmental Policy, Malawi. NFP Co-ordination Unit, 2001, Community Based Forest Management*: District Level Consultation, to Lead to a National Review of Policy, Notes for District Forest Officers, May 11th 2001, Lilongwe:

Hackeleton, S., G. Von Malitz, and J. Evans. (2008), *Land reform and agririan in Southern Africa. An occasional paper series. School of Government*. University of Western Cape. South Africa.

Hobley, M., (2006), *Participatory Forestry: The Process of Change in India and Nepal* London: ODI.

Muir, K and R. Cunliffe, (2011*). Economic policy, wildlife, and cattle management in Zimbabwe and their environmental implications*. AFTES, World Bank.

Mvimi, E. T., (2010) *Assessing and comparing success of four community-based organizations managing natural resources in northern Botswana*. Masters dissertation, Agricultural University of Norway.

Jere, P., K. Varela Hussein and B. Voysey, ((2015)), *Synthesis Study of Initiatives in Co-Management of Natural Resources in Malawi*, Working Group on Co-Management of Forest Goods and Services, Malawi, Lilongwe: NFP.

Kayambazinthu, D., (2000), '*Empowering Communities to Manage Natural Resources: Where Does the power Lie?* – The case of Malawi' in S Shackleton and B. Campbell

Empowering Communities to Manage Natural Resources: Case Studies from Southern, CIFRO, USAID, IUCN, WWF, Africa Resources Trust, CSIR, and IES.

Katerere Y., Moyo S and Mujakachi L. Weddikkara (2008) The *national context: land, agriculture and structural adjustment, and the Forestry Commission* in Zimbabwe.

Leisher C, Sanjayan, M., Blockhus, J., Kontoleon, A. and Larsen, S. (2010) *Does conserving biodiversity work to reduce poverty?* A state of knowledge review, The Nature Conservancy, University of Cambridge, and International Institute for Environment and Development (IIED), Cambridge.

Machinjili, C., C. Mataya and M.G. Tsoka, (1999), *A Study to Develop Research Policy for, and Operational Definition of, Poverty in Malawi, Lilongwe*: Poverty and Social Policy Division, National Economic Council.

Mamdani P (2010) *Indigenous Peoples and Biosphere Reserve Conservation in the Mosquitia Rain Forest Corridor, Honduras*. In: Conservation Through Cultural Survival: Indigenous Peoples and Protected Areas. Stevens, S. Washington: Island Press.

Matthews J. (2016). *Economic instruments for environmental management and sustainable development.* UNEP, Nairobi, Kenya.

Mayers, J., J. Ngalande, P. Bird, and B. Sibale, Molokomme (2003), *Forestry Tactics: Lessons from Malawi's National Forestry Programme*, London: IIED.

Mutimukuru T (2009). *Managing Conflicts for Sustainable Forest Management: Lessons from Mafungautsi Forest, in Gokwe Communal Area, Zimbabwe* London: IIED.

Norwegian Forestry Society (NFS). (2013). *Chobe forests inventory and management plan*. Gaborone, Ministry of Agriculture. Botswana.

Ostrom E., (Rudel 2008) *Governing the Commons. The evolution of Institutions for collective action.* Cambridge University Press.

Porter (2014). *The Companion to Development Studies*. Washington, DC: Island Press.

Pound C and Peters K. (2012) An *action plan to support community based forest management, Malawi:* GOM / UNDP / NEP.

Ribot, J. C. (2002). D*emocratic decentralization of natural resources.* Washington, DC: World

Roe, D., Thomas, D., Smith, J. Walpole, M. and Elliott, J. (2011) *Biodiversity and Poverty: Ten Frequently Asked Questions* –Ten Policy Implications, Gatekeeper 150, IIED, London.

Ross, S. (2001). *An ecotourism feasibility study of the Chobe District forest reserves*. Draft Report. Kasane, Botswana.

Ross, S. Mongoi 2012). *An ecotourism feasibility study of the Chobe District forest reserves.* Report Kasane, Botswana.

Sah, J.P, and J.T. Heinen. and Agrawal C (2009). *Wetland resource use and conservation attitudes among indigenous and migrant peoples in Ghodaghodi Lake area*, Nepal. Environmental Conservation,

Scherr, S.J., A. White, and D. Kaimowitz. (2002) *'Making markets work for forest communities', Forest Trends Policy Brief,* Washington, DC.

Scherr, S.J., A. White, and D. Kaimowitz. (2002). '*Making markets work for forest communities', Forest Trends Policy Brief*, Washington, DC Resources Institute.

Steele, P., Fernando, N., and Weddikkara, M. (2008) *Poverty Reduction that Works:*

Experience of Scaling Up Development Success, Earth scan, London

Taylor, M. (2001). *Whose agenda? Reassessing the role of community-based natural resources management in Botswana*, Mimeo.

Tevens, S. (Kontoleon T (2010). *Conservation through cultural survival*. Washington, DC: Island Press.

Vira, B. and Kontoleon, A. (2010) *Dependence of the poor on biodiversity: which poor, what biodiversity?* A State of Knowledge Review, International Institute for Environment and Development. London.

Weladji, R.B., and N.M. Tchamba. (2003) *Conflict between people and protected areas within the Bénoué Wildlife Conservation Area*, North Cameroon.

Wily, L.A. (Fisher et al (2008) *Forest Management and democracy in East and southern Africa*: Gater keeper International Institute for Environment and development, London, UK.

World Bank (2001) *Poverty Manual*, World Bank, Washington

APPENDICES

Appendix 1: Checklist for focus group discussions

Part 1 Forest utilization

1. What are the sources of trees and forest resources in the village?
   1) VFA (2) State plantations (3) Woodlots (4) planted community forests (5) Gardens and (6) others specify.
2. What the main forest products that people get from the forest in the village?
   ……
   ……
3. What is the most important forest product (MIP) for the livelihood of the people in the village?
   (1) Firewood (2) Charcoal (3) Timber or other wood (4) Medicine from the forest (5) forage from the forest (6) food from the forest and (6) other specify
4. How has the availability MIP changed over the past especially before and after the decentralization process?
   (1) Before decentralization……..
   (2) After decentralization ……..

   Codes *1=Declined 2 = about the same 3= Increased*

5. If the availability of the MIP in this category has declined what are the reasons?

   Rank the most important reasons maximum of three

   - ✓ *Reduced forest areas due to small clearing of for agriculture*
   - ✓ *Reduced participation by the local communities in managing forest resources*
   - ✓ *Population of people has increased but land for the forest management remains the same*
   - ✓ *Increased us of MIP due to more local people collecting*
   - ✓ *Changes in the authority managing forest resources*
   - ✓ *Local restrictions of forest use (e.g rules by the community)*
   - ✓ *Others specify*

6. If the availability of MIP in this category has increased what can be the main reasons?

   Rank the most important reasons max 3

Part 2: Community participation in forest management

7. Does the village community practice any form of active and deliberate forest management?

   Codes: *0=no, not at all 1=yes but only to limited extent 2= Yes they are common*

8. If yes, when did you start practicing this management of trees and forests? Mention year?

   ……

9. What prompted you to commence participating forest management?

   …….

10. What has been the trend of people's participation in forest management since you started managing trees and forests?

    Codes: *0= Number of people has been constant 1= Number of people has been decreasing 2= Number of people has been increasing 3= others specify*

Part 3: Institutional arrangements

11. Are there customary rules regulating the use of MIP in the village?

    Codes: *0 =non, very few; 1= Yes, but vague/unclear; 2= Yes clear rules exist.*

12. If "Yes" clear rules exist in 11. Are there customary rules regarding forest use enforced by the population of the village?

    ……

    ……

13. Are there government rules that regulates forest use in the village?

    Codes: *0 =non, very few; 1= Yes, but vague/unclear; 2= Yes clear rules exist.*

14. If "yes" (code "1" or "2" above). Are the government rules enforced by the members in the village?

Codes: *0=no; 1= Yes*

15. Do the villages require any permission to harvest the MIP?

    Codes: *0=no; 1= Yes, users have to inform the authorities 2=No yes written permission needed*

16. If "yes" does the user have pay for the permission?

    ……

    ……

17. If "yes" who issues this permit?

    Codes: 1= *Village head; 2= VNRMCs 3= Forest Officer (From forest department) 4= Other government officials and 5= others specify.*

Part 4: Existence of local institution

18. Are there any institutions that deal with forest management in the village?

    Codes: 0= no; 1= Yes

19. If yes Mention the institution

    …….

20. Were the local institutions existent in the village before or after the decentralization

    Before ……..

    After…….

    Codes: 0= no; 1= Yes

21. When were the local institutions formed?……..……Year

22. How were the local institutions formed?

    Codes:1=*Initiative of the Forestry department; 2=Initiative by the local authorities; 3= Initiative by the NGOs and 5=Others specify*

23. What were the main objectives of having local institutions?

    ……

    ……

    ……

24. How many members are there in each local institution?

    ……

25. How many times on average per year do the institution have committee meeting?

26. Does the local institution have a written management plan?

27. What are the main tasks of VNRMCs *Select as many as appropriate by ticking code*

- ✓ *1=Setting rules for use ……*
- ✓ *2=Monitoring and policing……*
- ✓ *3= Silviculture and management……*
- ✓ *4= Harvesting forest products……*
- ✓ *5=Selling forest products ……*
- ✓ *6=Others,*

  specify……

28. Overall, on scale from 1-5 *(1 is highest 5 is lowest)* How effective would you say that VNRMCs is ensuring sustainable forest management use since its establishment?

    ……

29. Are there any new forest institutions in the village apart from VNRMCs?

    Codes: 0= no; 1= Yes ……

30. Do you have any local forest institutional design principles for effective forest management in your village? Which principles are available? *Tick whichever is available in the village*

- ✓ *1=Ownership rights of the forest resources……*
- ✓ *2=Equitable benefit sharing ……*
- ✓ *3=Clearly defined boundaries for forest areas……*
- ✓ *4=Appropriation and provision rules……*
- ✓ *5=Monitoring of forest resources……*
- ✓ *6=Graduated sanctions……*
- ✓ *7=Conflict resolutions mechanism……*
- ✓ *8=Other specify……*

31. Which institution design principles are effective in managing forest resources? *Rank the best five principles*

- ✓ *1=Ownership rights of the forest resources……*
- ✓ *2=Equitable benefit sharing ……*
- ✓ *3=Clearly defined boundaries for forest areas……*
- ✓ *4=Appropriation and provision rules……*
- ✓ *5=Monitoring of forest resources……*

- ✓ *6=Graduated sanctions……*
- ✓ *7=Conflict resolutions mechanism……*
- ✓ *8=Other specify……*

32. What is your option on the following for; effective local institution in managing forest resources in the area? *Record the code*
    a. Land and tree tenure

       (1) Before decentralization process (2) After decentralization process

    b. Number of technical personnel in the forest management

       (1) *Before decentralization process (2) After decentralization process*

    c. Existence of forestry management plans

       (1) *Before decentralization process (2) After decentralization process*

    d. Existence of forestry institution

       (1) *Before decentralization process (2) After decentralization process*

       Codes: *(1) Not existing (2) Existing, but poor; (3) Quiet effective (4) Effective (5) Highly effective*

33. How do you compare the ability of the local institution in mobilizing communities to participate in forestry resources management before or after decentralization? Explain reasons for your answer

    Before ……..

    After…….

    Codes: *1= poor; 2= fair 3= good 4= very food 5= Excellent*

34. How has been the level of the following forest components when you compare before or after decentralization process
    - ✓ 1=Seedlings produced/yr……..
    - ✓ 2=Seedlings planted/yr……
    - ✓ 3=Number of existing woodlots in the area……
    - ✓ 4=forest cover ……

- ✓ 5=Number of people participating in the forest…….
- ✓ 6=Tree species composition……
- ✓ 7=Type and number of institutions managing forest woodlots……

Codes *1=Declined 2 = about the same 3= Increased*

Part 5: Enabling conditions for community participation

37. Do you think the local institutions provide enabling conditions for community participation by having the following factors in place?

- ✓ *1=Existence of operation institution arrangements……..*
- ✓ *2=Management plan in line with Forestry Policy and Act……..*
- ✓ *3=Land tenure and property rights of the resource by the community…..*
- ✓ *4=Control of the forestry management and utilization ……..*
- ✓ *5= Control of encroachment ……..*

Codes: (*0) Non-existence of conditions; (1) Yes but not effective (2) Effective;(3) Yes very effective*

38. How do you compare existence of the above factors before and after decentralization? Use codes below

- ✓ *1=Existence of operation institution arrangements……..*
- ✓ *2=Management plan in line with Forestry Policy and Act……..*
- ✓ *3=Land tenure and property rights of the resource by the community…..*
- ✓ *4=Control of the forestry management and utilization ……..*
- ✓ *5= Control of encroachment ……..*

Codes: (*0) Not-existing (1) existing but poor (2) Quiet effective; (3) highly effective*

Part 6: Existence of the institutional incentives

39. What institutional incentives do the local institutional have to promote participation of the local communities?

……

……

40. How effective have these institutional incentives been for community participation?

……

Codes: *1= poor; 2= fair 3= good 4= very food 5= Excellent*

Part 7: Monitoring and forest resources security

41. In your opinion do you think the local institution have established a secure and stable forest status to meet the needs of the present and future generation? Give reasons for your answer

Codes: 0= no; 1= Yes

42. Which forest protection measures have been put in place by the local institutions to ensure sustainable forest management for the present and future generation?

43. Which forest problems do you think those protection measures would guard against *List them in order of priority*

44. Were these problems existent before the decentralization process? Explain your answer

Codes: 0= no; 1= Yes

45. What were the causes of these problems?

……

……

46. How do you compare the present forest security status by the local institution to the security status before the decentralization process?

Codes: (*0) No security in place (1) not effective (2) Quiet effective; (3) highly effective*

Part 8: Forest planning

47. Do you as a community have woodland? If so, do you have management plan for the woodlands?

……

……

48. Do you know the objectives of the management plan?

***Codes**: 0= no; 1= Yes*

49. At what level are you involved in formulating and implementing a forest management plan?

Codes: (1) Full involved; (2) Partial involved (3) Not involved

50. Was there a forest management plan before decentralization process?

Codes: 0= no; 1= Yes

51. What are the differences between management plans used before decentralization and after decentralization process?

……

……

What is your overall assessment, do you think community empowerment to manage forest resources was successful or not?

……

……

THANK YOU FOR YOUR COOPERATION AND YOUR TIME

Appendix 2: Evaluation form for households

Household number ……. Surveyors Name ……

Household name ……. Household code ……. ….Date……

Part 1: Socioeconomic characteristics of the household

a. Name of head of household ……
b. Family size (Number of people in the household……
c. What is the highest level of education attained……?

1. Type of household

   Codes :*1=FHH; 2=MHH*
2. Age of the respondent…….
3. Marital status of the respondent……

   (1) Single (2) married (3) widow (4) divorced (5) Separated
4. Occupation of the respondent (h/h head

   Codes: (1) Farming; (2) Business (3) Forestry (4) Employment (5) Others Specify

Part 2: Forestry activities

5. What are the sources of trees and forest resources in the village?

   2) VFA (2) State plantations (3) Woodlots (4) planted community forests (5) Gardens and (6) others specify.
6. What are some of the forest non-Timber products (benefits) that you obtain from the woodlands in your area? *List in their older of important*

   ……

   ……

   ……
7. What is your lore as a member of this community (village) regarding woodlands management in the area?

   ……

   ……
8. When you need advice on tree growing practices, where do you often go? Tick whichever is applicable

Codes: *(1) VNRMCs; (2) Forest assistance; (3) Forest guards (4) Agri Extension staff; (5) Family members and friends.*

9. Does your household now walk longer or shorter distance to collect firewood after decentralization process?

   Codes: (1) more (2) Less (3) about the same

10. Do your households now spend more time or less on getting firewood after decentralization process?

    Codes: (1) more (2) Less (3) about the same

11. How has the availability of firewood changed since the decentralization process?

    Codes: (1) more (2) Less (3) about the same

Part 3: Institutional participation in forestry

12. Has your household planted any woodlots or trees on farm over the past 5 years?

.....

13. Which local institutions are involved in the management of woodlands in the area?

    Codes: (1) VNRMCs; (2) Women groups (3) Bee keeping clubs; VDCs and (4) Others, specify

14. What are the main tasks of VNRMCs *Select as many as appropriate by ticking code*

    - ✓ *1=Setting rules for use ……*
    - ✓ *2=Monitoring and policing……*
    - ✓ *3= Silviculture and management……*
    - ✓ *4= Harvesting forest products……*
    - ✓ *5=Selling forest products ……*
    - ✓ *6=Others, specify……*

15. Are you satisfied with the local institution activities in management of forest resources? Mention reasons for your answer

    Codes: 0 =No; 1=yes

16. What benefits resources do you obtain from the for forest resources?

……

……

17. Are you satisfied with the level of current benefit sharing from the forest resources? Mention reason for your answer

    Codes: 0 =No; 1=yes

18. In your opinion who benefits from managing forest resources

    Codes;(1) Committee members only; (2) entire community (3) Forestry department (4) Local influential person (5) Individual members.

19. What are your reasons for joining the local institutions? *Rank the most important four reasons*

    1. Increased access to forest products
    2. More forest benefits in future
    3. Access to other benefits e.g. Social forestry support
    4. My duty to protect the forest for the community and the future
    5. Being respected and regarded as responsible person in the village
    6. Social aspect (Meeting people fear of exclusion etc)
    7. Forced by institutional leaders
    8. Others, Specify

20. What institutional incentives motivate you to participate or not to participate in forest management in relation to:

    1. Characteristic of forest resources ……
    2. Characteristics of rules governing the resources ……
    3. Characteristics of the community managing the resources……

21. If you don't participate in local institution why? Answer with reference to Characteristic of forest resource to Characteristics of rules governing the resources, Characteristics of the community managing the resources.

    ……

    ……

22. Do you have any local forest intuitional design principles for effective forest management in your village? Which principles are available *Tick whichever available in the village*

    - ✓ *1=Ownership rights of the forest resources……..*
    - ✓ *2=Equitable benefit sharing ……*
    - ✓ *3=Clearly defined boundaries for forest areas……*

- ✓ *4=Appropriation and provision rules……*
- ✓ *5=Monitoring of forest resources……*
- ✓ *6=Graduated sanctions……*
- ✓ *7=Conflict resolutions mechanism……*
- ✓ *8=Other specify……*

23. Which institution design principles are effective in managing forest resources?

    Rank the best five principles

    - ✓ *1=Ownership rights of the forest resources……*
    - ✓ *2=Equitable benefit sharing ……*
    - ✓ *3=Clearly defined boundaries for forest areas……*
    - ✓ *4=Appropriation and provision rules……*
    - ✓ *5=Monitoring of forest resources……*
    - ✓ *6=Graduated sanctions……*
    - ✓ *7=Conflict resolutions mechanism……*
    - ✓ *8=Other specify……*

24. How do you compare the ability of the local institution in mobilizing communities to participate in forestry resources management before or after decentralization? Explain reasons for your answer

    Before ……..

    After…….

    Codes: *1= poor; 2= fair 3= good 4= very food 5= Excellent*

25. Overall how has the process of decentralization affected your household ability to access benefits from the resources?
26. *Codes: (1) Large negative effect; (2) Small negative effect ;(3) No effect; (4) Small positive effect (5) Large positive effect*
27. How has been the level of the following forest components when you compare before or after decentralization process

    - ✓ 1=Seedlings produced/yr……..
    - ✓ 2=Seedlings planted/yr……
    - ✓ 3=Number of existing woodlots in the area……
    - ✓ 4=forest cover ……
    - ✓ 5=Number of people participating in the forest…….
    - ✓ 6=Tree species composition……
    - ✓ 7=Type and number of institutions managing forest woodlots……

Codes *1=Declined 2 = about the same 3= Increased*

28. How effective have these institutional incentives been for community participation?

……

Codes: *1= poor; 2= fair 3= good 4= very food 5= Excellent*

Part 4: Enabling conditions for community participation

29. Do you think the local institutions provide enabling conditions for community participation by having the following factors in place?
    - ✓ *1=Existence of operation institution arrangements……..*
    - ✓ *2=Management plan in line with Forestry Policy and Act……..*
    - ✓ *3=Land tenure and property rights of the resource by the community…..*
    - ✓ *4=Control of the forestry management and utilization ……..*
    - ✓ *5= Control of encroachment ……..*

    Codes: (*0) Non-existence of conditions; (1) Yes but not effective (2) Effective ;(3) Yes very effective*

30. How do you compare existence of the above factors before and after decentralization? Use codes below
    - ✓ *1=Existence of operation institution arrangements……..*
    - ✓ *2=Management plan in line with Forestry Policy and Act……..*
    - ✓ *3=Land tenure and property rights of the resource by the community…..*
    - ✓ *4=Control of the forestry management and utilization ……..*
    - ✓ *5= Control of encroachment ……..*

    Codes: (*0) Not-existing (1) existing but poor (2) Quiet effective; (3) highly effective*

Part 5: Existence of the institutional incentives

31. What institutional incentives do the local institutional have to promote participation of the local communities?

……

……

32. How effective have these institutional incentives been for community participation?

……

Codes: *1= poor; 2= fair 3= good 4= very food 5= Excellent*

Part 6: Institutional framework for forest management

33. How effective is each of the following factors within the local institutional framework? *Use codes below*

- ✓ Number and adequacy of institutional to support forest management

Codes:(1) Not existing (2) existing but not adequate (3) Adequate but not effective (4) Adequate and effective (5) Highly effective

- ✓ Number and adequacy of trained individuals (members) within the community

Codes:(1) Not existing (2) existing but not adequate (3) Adequate but not effective (4) Adequate and effective (5) Highly effective

- ✓ Number and adequacy of forest extension in the area

Codes:(1) Not existing (2) existing but not adequate (3) Adequate but not effective (4) Adequate and effective (5) Highly effective

- ✓ Level of community participation

Codes (0) No participation (1) Low participation (2) Intermediate participation (3) high participation

Part 7: Forest resource security

34. In your opinion do you think the local institution have established a secure and stable forest status to meet the needs of the present and future generation? Give reasons for your answer

Codes: 0= no; 1= Yes

35. 42. Which forest protection measures have been put in place by the local institutions to ensure sustainable forest management for the present and future generation?

36. Which forest problems do you think those protection measures would guard against *List them in order of priority*
37. Were these problems existent before the decentralization process? Explain your answer

Codes: 0= no; 1= Yes

38. 45. What were the causes of these problems?

……
……

39. How do you compare the present forest security status by the local institution to the security status before the decentralization process?
Codes: (*0) No security in place (1) not effective (2) Quiet effective; (3) highly effective*

Part 8: Forestry planning

40. Do you as a community have woodland? If so, do you have management plan for the woodlands?

……
……

41. Do you know the objectives of the management plan?

Codes*: 0= no; 1= Yes*

42. At what level are you involved in formulating and implementing a forest management plan?

Codes: (1) Full involved; (2) Partial involved (3) Not involved

43. Was there a forest management plan before decentralization process?

Codes: 0= no; 1= Yes

44. What are the differences between management plans used before decentralization and after decentralization process?

……
……

45. What is your overall assessment, do you think community empowerment to manage forest resources was successful or not?

    ……

    ……

THANK YOU FOR YOUR COOPERATION AND YOUR TIME

Appendix 3: Checklist for key informants

Name of the respondent……. Surveyors name……..

Date……. Code of the respondents…….

1. What forest management practices are currently being conducted in the forest reserves where decentralization took place?

   ……

   ……

   ……

2. What activities did you embark in the process of decentralization?

   ……

   ……

   ……

3. Mention the local institution that your office established in Tembwe and Mpango villages?

   ……..

4. Are the local institutions that were established still functioning?

   Codes (0) No (1) Yes

5. What activities have the institution been involved?

   ……..

6. What is the current level of participation of the local communities in forest management?

   ……

   ……

7. What has been the trend of people's participation in forest management since decentralization

   Codes: *0= Number of people has been constant 1= Number of people has been decreasing 2= Number of people has been increasing 3= others specify*

8. How were the institutions established?

   ……

   ……

   ……

9. What institutional arrangements are put in place to ensure effective management of forest resources in the area?

……

……

10. What institutional incentives motivate you to participate or not to participate in forest management in relation to:
    1. Characteristic of forest resources ……
    2. Characteristics of rules governing the resources ……
    3. Characteristics of the community managing the resources……
11. What rights do the communities have for the effective management of the forest resources?

    ……

    ……

    ……
12. What benefits are the communities getting from the forest resources?

    ……

    ……
13. How have the livelihoods of the local communities changed after the implementation of decentralization?
14. What is the current status of the following forest outputs?
    1. Extent of the forest cover
    2. Seedling production
    3. Woodlot and plantation establishment
    4. Management of the VFAs
    5. Availability of firewood, poles etc
15. What is your relationship with the local institution in managing forest resources?

    ……

    ……

    ……
16. How do you compare this relationship before and after establishment of community powers?

    ……

    ……

    ……

    ……

17. Is the access to wood resources between the communities that participate in forest institutions and those that do not participate different?

    ……

    ……

18. Is there any difference in 17, what are they?
19. what has been the change in the extent of forest cover in the area since the establishment of local powers?

    Codes: (0) constant; (1) Decreasing; (2) Increasing

THANK YOU FOR YOUR COOPERATION AND TIME