

**ENVIROMENTAL CONSERVATION AWARENESS AND  
PARTICIPATION IN COMMUNITY BASED FOREST  
MANAGEMENT (CBFM) PROJECT**

**ENVIRONMENTAL CONSERVATION AWARENESS AND  
PARTICIPATION IN COMMUNITY BASED FOREST  
MANAGEMENT (CBFM) PROJECTS**

**By**

**Mariam Mohamed Mulula**

**A Dissertation Submitted to the School of Business in Partial Fulfillment of the  
Requirements for the Award of Master of Business Administration (Corporate  
Management) Degree of Mzumbe University.**

**2013**

## CERTIFICATION

We, the undersigned, certify that we have read and hereby recommend for acceptance by the Mzumbe University, a dissertation entitled; ‘**Environmental Conservation Awareness and Participation in Community Based Forest Management (CBFM) Projects: A case study of Unyampana and Mughunga Villages (Mgori Forest Reserve) in Singida District**’ in partial fulfillment of the requirements for the award of the degree of Master of Business Administration (Corporate Management) of Mzumbe University.

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**CHAIRMAN, SCHOOL OF BUSINESS BOARD**

## **DECLARATION**

I, Mariam M. Mulula, declare that this dissertation is my own original work and that it has not been presented and will be presented to any other University for a similar or any other degree award.

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**Candidate's Signature**

**Date**\_\_\_\_\_

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## **ACKNOWLEDGEMENT**

In accomplishing this study, I received extensive and integrated cooperation, coordination, contribution in terms of moral support, deliberate commitment, proper encouragement, moral and material assistance from a substantial number of people whom I am indebted to thank.

First and foremost, I wish to acknowledge with much gratitude my Supervisor, Prof. D.S.R.M. Muna for guiding and assisting me during the process of formulating my research topic, proposal development and report writing.

My thanks are also due to the management and individual households of Singida district council for availing me with the information I needed for positively responding to my questionnaires and interviews.

I wish also to express my sincere appreciation to Mr. Desmond Damas, who devoted himself in assisting me to set this work of the dissertation by using SPSS data base during the data analysis.

Although it is not possible to acknowledge those people who in one way or another provided assistance to me, special thanks go to my class Coordinator Mr. Mnzava, my sister Mrs. S. Muna, my family, my young sister Mrs. Mwanahamisi M. Juma, my colleague and family friend Mrs. Mwamvua Jilumbi (RAS-Simiyu Region) for their encouragement, moral support as well as their tolerance and my family during the whole period of my absence. I have nothing to say, but I hope God will bless all of them forever.

### **DEDICATION**

This dissertation is dedicated to my beloved daddy Mr. Mohamed Mulula Kibwanda, my young sister Mrs. Mwanahamisi M. Juma who cares for our daddy kindly, sympathetically humanity and very committed on behalf of our family as well as my young daughters Ms Aysha, Asia ,Faima, Zakia, Rahma, Saumu, my young son Mr. Hamza, my beloved grandson Mr. Razack Adamu and my aunt Mr. Fadhili Omari for their moral and financial support. I can't forget all of them for their infinite kindness and humanitarian support. I have nothing to say but GOD – “bless them every second and for ever...”.

## **LIST OF ABBREVIATIONS**

|        |   |                                                                      |
|--------|---|----------------------------------------------------------------------|
| CBCGs  | - | Community Based Conservation Groups                                  |
| CBF    | - | Community Based Forest                                               |
| CBFM   | - | Community Based Forest Management                                    |
| CBOs   | - | Community Based Organization                                         |
| CFR    | - | Community Forest Reserve                                             |
| CRDB   | - | Cooperative Rural Development Bank                                   |
| DBO    | - | District Beekkeeping Officer                                         |
| DFO    | - | District Forest Officer                                              |
| DPLO   | - | District Planning Officer                                            |
| DMWTs  | - | District Multidiscipline Working Teams                               |
| ELCT   | - | Evangelical Lutheran Church of Tanzania                              |
| FAO    | - | Food and Agriculture Organization                                    |
| FBD    | - | Forestry and Beekeeping Division                                     |
| Ha     | - | Hectare                                                              |
| IMDAs  | - | Interim Disciplinary Development Activities                          |
| IUCN   | - | International Union for Conservation of Nature and Natural Resources |
| JFM    | - | Joint Forest Management                                              |
| LAFRs  | - | Local Authority Forest Reserve                                       |
| LAMP   | - | Land Management Programme                                            |
| LGRP   | - | Local Government Reform Programme                                    |
| MF     | - | Mgori Forest                                                         |
| NGOs   | - | Non-Governmental Organizations                                       |
| NTFPs  | - | Non-Timber Forest Products                                           |
| PFs    | - | Private Forests                                                      |
| PFM    | - | Participatory Forestry Management                                    |
| SACCAs | - | Savings and Credit Cooperative Associations                          |
| SACCOs | - | Savings and Credit Cooperative Organizations                         |
| SEMA   | - | Sustainable Environmental Management Action                          |
| SFM    | - | Sustainable Forest Management                                        |

|         |   |                                                             |
|---------|---|-------------------------------------------------------------|
| SIDO    | - | Small Industries Development Organization                   |
| SPSS    | - | Statistical Package for Social Sciences                     |
| TCCIA   | - | Tanzania Chamber of Commerce Industries and Agriculture     |
| VBFM    | - | Village Based Forest Management                             |
| VCs     | - | Village Councils                                            |
| VEOs    | - | Village Executive Officers                                  |
| VFCs    | - | Village Forest Committees                                   |
| VFMA    | - | Village Forest Management Areas                             |
| VNRCs   | - | Village Natural Resources Committees                        |
| WEO     | - | Ward Executive Officer                                      |
| WG-CIFM | - | Working Group on Community Involvement in Forest Management |

## **ABSTRACT**

The study intended to evaluate community participation in Community Based Forest Management (CBFM), to assess the appropriateness of methodologies used in forest conservation, to assess the effects of community based forest management (CBFM) and to recommend strategies for improving community management of forest.

A case study design was adopted and a total of 150 respondents including individual household were interviewed. Both probability and non probability sampling techniques were employed. Data were collected through interviews, questionnaires, observation and documentary reviews.

The study revealed that despite all the efforts, processes, and legal procedures made to rescue/ restore the forest, the results of the study revealed beyond reasonable doubt that there have been many obstacles along the way or in the implementation of CBFM approach with respect to people's awareness and participation of the community based forest management (CBFM) projects.

Each obstacle has had to be overcome. Community forest management is a process. Each year it changes, grows stronger and develops. Community forestry involves the exchange of ideas, techniques and knowledge. The communities must not be treated as ignorant; they have extensive knowledge and skills in forest management.

Based on the findings, the study recommends that, in order to improve the contribution of the forestry sector to community poverty reduction, the government, the private sector, and NGOs need to do more to promote corporate social responsibility and outline the benefits and responsibilities of investors and communities. There is need for fostering formal community-private sector partnerships. Community institutions should receive the resources and support so as to secure access to their 20 percent royalties so as to be in a position to negotiate and form lasting mutually beneficial partnerships, when there are long delays in getting communities incorporated a Bank accounts should be opened and the local government administration at the district level should hold the funds on behalf of the communities.

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## CHAPTER ONE

### INTRODUCTION AND BACKGROUND INFORMATION

#### 1.0 INTRODUCTION

##### 1.1 Background to the Study

Out of Tanzania's land area of about 44 million hectares, which is about 50% of the total area, is made up of forests and woodlands. This means that the country is endowed with large and natural resources in terms of forests, wildlife and fisheries as well as minerals. Studies conducted by various authors have revealed that forest base income accounts for a large share of the economy of the rural population which comprises more than 75% of all Tanzanians (Hamza et al., 2002; Mlaki, et al., 1997).

Despite this vast endowment of natural forest reserves in Tanzania and other tropical countries, it is revealed that the resources are mismanaged for many years as a result of poor financing, lack of adequate personnel, poor policies, population increase, forest maladministration and uncontrolled deforestation practices (Hamza) at el, 2002). The ultimate result has been environmental degradation, loss of valuable tree species, such as *Pterocarpus angolensis* (Mninga), *Dalbengiamalanoxylon* (mpingu) and important medicinal trees and other plants (Ibid, 2002).

The Ministry of Natural Resources and Tourism (MNRT) in Tanzania and Kivumbi (2001) have noted that degradation of forests has brought the forest cover down to 38% (1999) from 44% (1997) at an estimated deforestation rate of between 130,000 and 150,000 hectares per annum. This occurs due to lack of sustainable supply of forest products and services ensured to meet the needs of local people and lack of effective forest sector contribution to local livelihoods and poverty reduction plans. Programmes and appropriate actions at the local level, have reported that in Singida district, people are pastoralists; they use fuel wood estimated at about 95% and also cultivate by using shifting methods of agriculture. All these activities do degrade the forest conservation, hence leading to desertification. As we all know, the causes of desertification are those which are caused by human activities and climatic factors. The human impacts are such as overgrazing, over cultivation, deforestation, and mismanagement of water sources. This has compelled for measures to be taken for

control and prevention of environmental degradation by encouraging the Community Based Forest Management (CBFM) an approach of community participation in management and utilization sustainably of forestry and forest products.

Community Based Forest Management (CBFM) is the overall outlay for sustainable management of available forestry resources in Tanzania. The provision of forest products and services for the rural population has a very significant importance in income generation and poverty reduction. Generally, the approach (CBFM) has an advantage whereby effective forest sector contribution to local livelihoods and poverty reduction is realized by community members and actions at local level. Also it deals with supply of wood and non-wood forest products from plantations and natural forests, so as to demand for subsistence and commercial purposes at acceptable levels. Moreover, there is a need for cost-sharing mechanisms in order to achieve the above objectives, particularly joint management between the project and private sector.

## **1.2 Statement of the Problem**

The Participatory Agriculture Development and Empowerment Project (PADEP) was introduced in 2003 because the majority of the people depend totally on agriculture for their livelihoods, which causes the deterioration of vegetation and other biodiversity problems. The economy of Singida district is dominated by small scale agricultural activities, lumbering and livestock keeping which have led to reduction of water catchment areas like forests due to land degradation.

According to Killahama (1988), there is poor adaptation of good environmental management and conservation as communities still continue practicing inappropriate agricultural practices such as monoculture, shifting cultivation, burning of remaining crops and overgrazing. On the other hand, poor harvest yields have forced the majority of the population to use forest resources to gain incomes from charcoal making and firewood business. The grazing systems used in Ilongero division has been observed to contribute to environmental degradation due to the fact that, about 90% of the community are practicing free range system hence, exploit vegetative cover thereby depleting forest cover (Mwacha, 2009).

Due to mismanagement of the forestry resources in Singida District, the villagers in Unyampana, Mughunga, Ngimu, Pohama and Nduamughanga have realized that high rate of forest degradation is a threat to their survival (Kivumbi, 2001). Illegal timber harvesting, overgrazing and forest fires have contributed to the current forest depletion which is estimated at 130,000 – 150,000 hectares per annum in Tanzania. In Singida region especially in Singida District Council over 95% of the inhabitants are agro-pastoralists who degrade the environment through overgrazing, shifting cultivation, lumbering, agricultural malpractices, as well as high rate of immigration of people especially the Sukuma from Shinyanga and Mwanza regions. The activity is suspected to be the major cause of forest cover depletion because the immigrants require more land for farming, livestock keeping, house building and charcoal for fuel. Therefore, this study assessed the performance and significance of CBFM in Mgori forest management and in enhancing the implementation of the environmental regulations, policies and environmental laws to avoid unnecessary environmental degradation.

### **1.3 Objectives**

#### **1.3.1 General objective**

The general objective of the study was to assess the awareness of the Community on management of Mgori Forest Reserve in Singida District Council.

#### **1.3.2 Specific Objectives**

- (i) To evaluate community participation in Community Based Forest Management (CBFM).
- (ii) To assess the appropriateness of methodologies used in forest conservation.
- (iii) To assess the effects of community based forest management (CBFM).
- (iv) To recommend strategies for improving community management of forest.

### **1.4 Research Questions**

The study was guided by the following research questions:

- (1) How does the community participate in the community Based Forest Management?
- (2) What are the methodologies used in forest conservation?
- (3) What are the effects of Community Based Forest Management?
- (4) What are the strategies needed for improving community management of forest?

### **1.5 Significance of the Study**

The output of this study will be used as a tool to mitigate the forest destruction and environmental deterioration to avoid unnecessary damage of the forest reserve and at the same time to establish environmental education to the community through workshops to mitigate deforestation and other processes of land degradation. The project will assist policy makers to focus on the protection of wildlife through inhibiting illegal hunting, preventing improper damages of forest, enhance afforestation and introduce a number of organisms through forest conservation and environmental rehabilitation. The project will ensure that, the community based forest management (CBFM) has to implement environmental regulations and laws in instituting a ban of the different activities done in the forest, like charcoal burning, casual burning, cutting of trees, farming, construction of settlement, extract tree barks for ropes, roots digging for medicine, grazing near the forest, lumbering and other illegal activities which have severe effect on the environment. The research has identified the challenges facing community based committees in dealing with most vulnerable groups and suggested forestation programmes toward eradicating the environmental problems.

### **1.6 Limitations of the Study**

The limitations which the researcher encountered during the research were many but the major ones are mentioned below:

First, the time limit hindered the researcher to cover all the aspects of the study topic. Second, was the financial constraint, in fact this was the leading limitation due to the fact that Singida District Council has minimal revenue collection from its own sources due to lack of permanent cash crops, drought, low per capita income and Low Gross Domestic Product (GDP).

Third, some respondents refused to respond to the questionnaires. However, the researcher persuaded them, and they agreed to respond.

Fourth, the two villages Nduamughanga and Mughunga are sparsely located which led to a lot of time consuming.

### **1.7 Scope of the Study**

The study was conducted in Singida District Council, specifically in Mgori Forest Reserve at Nduamughanga and Mughunga villages due to the associated domination of environmental degradation.

Also extreme poverty to the community and inadequate awareness of the community in CBFM due to lack of Participatory Forest Management(PFM), poor adaptation of environmental management as stated in the statement of the problem, hence it may not be generalized because of the situations/ circumstances of different aspects, for instance weather, climate and wealth culture.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents the literature review pertaining to the research topic. The chapter discusses both theoretical literature review and empirical literature review. Theoretical literature has been started with the definitions of the key concepts, and provided a discussion of environmental conservation presented by various experts on the topic. Empirical literature has been discussed based on recent studies conducted by other researchers regarding environmental conservation in various countries including Tanzania. Finally, a conceptual framework for this research has been given.

#### **2.2 Theoretical Literature Review**

##### **2.2.1 Definition of Concepts**

**“Authorized officer”**: Means any forest officer or other officer or person authorized by the Minister or Director to exercise any power or to discharge any duty or any subsidiary legislation made under the Act (Forest Act, 2002).

**“Chief executive officer”**: Means the chief officer or the administrative, professional and technical services of local authority.

**“Committee”**: Means the National Forestry Advisory Committee.

**“Community forest reserve”**: Means a forest reserve established as a community forest reserve under the provisions of part V (Ibid., 2002).

**“Declared Village Land Forest Reserve”**: Means an area of village land declared to be a village land forest reserve under subsection (2) of section 32 or section 33 of the Forest Act.

**“Fire wood”:** Includes parts of trees made up into bundles or leads, or cut up in a manner in which it is usual to cut wood for burning and refuse wood generally, but does not include sound straight timber logs or poles of any kind.

**“Forest”:** Means an area of land with at least 10% tree crown cover, naturally grown or planted and over 50% or more shrub tree regeneration cover and includes all forest reserves of whatever kind declared or gazetted including all plantations.

**“Forest produce”:** Means anything which is produced by or from trees or grows in a forest or is naturally found in a forest and includes bam books, bark, charcoal, earth fibers, fire wood, fruits, gums, honey, latex, laths, leaves, litter, natural vanish peat, plant, poles, reads, roots, rushes, sawdust, seeds, timber, trees, thatch, wax wood shes, wild silk, wood oil, and any other living or inanimate object declared by notice in the gazette to be forest produce (Forest Act, 2002).

**“Forest resources”:** Means forest and forest produce.

**“Gazetted village land forest reserve”:** Means a declared village land forest reserve gazetted under section 35 of the Forest Act.

**“General land”:** Has the meaning ascribed to it by the land Act, 1999”.

**“Group”:** Means a community forest management group established under section 42 or recognized under section 43 of the Forest Act.

**“Holder of right of occupancy”** Means holder of a right of occupancy described under the village Land Act, 1999 and the Land Act, 1999.

**“Joint Management agreement”:** Means the agreement refered to in section 16 of Land Act.

**“Livestock”:** Means cattle, horses, donkeys, mules, pigs, sheep, goats and camels.

**“Livestock Authority”:** Means a district authority or an urban authority

**“Local Authority forest reserve”:** Means a forest reserve declared under section 22 of the Forest Act to be a Local Authority Forest reserve.

**“Local user zone”:** Means local user zones referred to in paragraph (d) of section 11 of the Forest Act.

**“Minister”:** Means the must for the time being responsible for forests.

**“Ministry”:** Means the Ministry for the time being responsible for forests.

**“National Forest reserve”:** Means a forest reserve declared under section 22 of the Act to be a new right under section 25 of the Forest Act.

**“New right”:** Means a forest of not less than five hectares, which has been planted and is developed and managed by human agency.

**“Private forests”:** Means the forests referred to in part IV of the Forest Act and includes a plantation.

**“Right of occupancy”:** Means a title to the use and occupation of land by Tanzanian citizens of African descent or community of Tanzania citizens of African descent using or occupying land in accordance with customary law.

**“Sensitive area”:** Means a) catchments area, (b) an area renowned for its high biodiversity,  
(c) mangrove area.

**“Timber”:** Means any wood or tree which has felled or has been felled or cut off and all wood whether unsawn, sawn, hewn or machined, split, or otherwise cut up or fashioned and shall include lumber, flooring strips, shingles, and sleepers but does not include any article manufactured from such wood or firewood.

**“Tree”:** Includes palms, bamboos, canes, shrubs, bushes, climbers, forest seedlings, transplants, and the re-growth thereof all ages and all kinds and any part.

**“Trustees”:** Means in relation to a village assembly of that village.

**“Village council”:** Means in relation to a village council of that village.

**“Village forest Management area”:** Means the area established in accordance with the provisions of section 39 of the Forest Act.

**“Village land forest reserve”** Means a forest reserve declared under section 32 and 23 or gazette under section 35 of the Forest Act.

### **2.2.2 Community Based Forest Management**

Community Based Forest Management constitutes “a powerful paradigm that evolved out of the failure of state forest governance to ensure the sustainability of forest resources and the equitable distribution of access to and benefits from them”.

In the United Republic of Tanzania, the central tenet of forest management has inevitably come to focus on protection, with the forester having a key role. However, it is unrealistic to expect low-paid forest guards, recruited mainly from rural areas, to protect the forest resource effectively from fellow villagers who are in need of forest products for basic subsistence (Kajembe and Malimbwi, 1996). Furthermore, in the wake of declining budgets and the retrenchment of workers, government’s capacity to protect forests based on this model has progressively declined (Wily, 1995). More important, foresters in recent years have begun to question whether the “policing model” of forest management is the right way forward. These and other developments have led to a paradigm shift: the only viable alternative to forest protection is to make the people living adjacent to forests the guardians of the forest resource, and this has led to the birth of the concept of community based forest management (CBFM).

The Tanzanian Government’s capacity to protect forests and woodlands has progressively declined, with a reduction in budgets and retrenchment of

workers. Hence a question has emerged in recent years as to whether the main model of forest resource management involving protection by policing is the right way forward. One model that has emerged and gained ground is the community-based forest resources on their land. This builds on a rather unique and favorable situation in the United Republic of Tanzania, where decentralized governance allows the village to own property in its own right as a corporate entity. Communities at Duru-Haitemba exploited this situation and adopted the community-based forest management model.

The model at Duru-Haitemba came about as a result of local communities' discontent on the way the 9,000 ha of remaining woodlands are being managed by the government. The woodlands, which were in a state of acute decline before local community participation, with loss of area and species, have been transformed into woodlands with boundaries that are intact, where incursion is limited, flora and fauna are recovering, management and protection are effective and at minimum cost (Kajembe et al, 2002).

### **2.2.3 Environmental health**

Environmental health can be defined in an array of ways depending on what one is attending to address. It comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and physiological factors in the environment.

### **2.2.4 Climate change management**

The anthropogenic theory predicts that global warming will continue apace with Green House Gases (GHGs) emissions. The International Panel on Climate Change (IPCC) indicates that "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations.

Given the potential effects on human health and the economy, and their impact on the environment, global warming is a subject of major concern. We have

observed a number of phenomena linked to global warming. The decrease in snow cover, rising sea levels and meteorological changes are global warming consequences that can affect human activities and ecosystems.

The goal of combating climate change led to the signing of the Kyoto Protocol, an agreement encouraging the reduction of polluting emissions, mainly Carbon dioxide (CO<sub>2</sub>). But the protocol has been accused more than once of being inequitable, since traditionally the rise in emissions is associated with economic development, which means that following the protocol would primarily impact less developed regions. The protocol introduced legally based principles of solidarity between states, such as the principle of sharing the load. The third follow-up meeting and the 13th climate summit (COP13) took place in Bali, Indonesia in December 2007, focusing on questions linked to intensifying measures after 2012. According to Brundtland Report, however, there has been no improvement in the key which highlighted that CO<sub>2</sub> emissions have risen by 35% since 2000, when the Kyoto agreement was signed.

### **2.2.5 Biodiversity management**

The 20th century has witnessed increasingly fast biodiversity destruction. Estimates vary about the extent of extinction: between a few and 200 species disappear every day. However, the scientific community agrees that the proportion of species losses is higher than ever before in the history of humanity. In the plant world, it was estimated that around 12.5% of known species are endangered, including the direct destruction of plants and their habitat. There was also growing concern about the introduction by humans of exotic species into specific habitats, which modifies the trophic chain.

The Convention on Biological Diversity (CBD) was signed in Rio in 1992 to tackle the loss of biodiversity caused by human activities. The CBD's objectives are: "to conserve biological diversity, to use biological diversity in a sustainable fashion and to share the benefits of biological diversity fairly and

equitably.” The Convention is the first equitable global agreement that addresses all aspects of biological diversity: genetic resources, species and ecosystems. It recognizes, for the first time, that the conservation of biological diversity is “a common concern for all humanity” and an integral part of the development process. To achieve its objectives, the Convention follows the footsteps of the Rio Declaration on the Environment and Development and constantly encourages association between countries. Such association is based on measures for scientific and technological cooperation, access to genetic resources and the transfer of clean environmental technologies.

#### **2.2.6 Natural resources**

Natural resources occur naturally within environments that exist relatively undisturbed by mankind in a natural form. A natural resource is often characterized by amounts of biodiversity and geo-diversity existence in various ecosystems. Natural resources are derived from the environment. Some of them are essential for our survival while most are commonly used for satisfying our wants. Natural resources may be further classified in different ways. Natural resources are materials and components (something that can be used) and can be found within the environment. Every man-made product is composed of natural resources (at its fundamental level). A natural resource may exist as a separate entity such as fresh water, and air, as well as a living organism such as a fish, or it may exist in an alternate form which must be processed to obtain the resource such as metal ores, oil, and most forms of energy. There is much debate worldwide over natural resource allocations; this is partly due to increasing scarcity (depletion of resources) but also because the exportation of natural resources is the basis for many economies particularly for developed nations such as Australia (Wikipedia).

#### **2.2.7 Forest**

Forest refers to as a wood or the woods, which is an area with a high density of trees. As with cities, depending on various cultural definitions, what is considered a forest may vary significantly in size and have different

classifications according to how and of what the forest is composed. A forest is usually an area filled with trees but any tall densely packed area of vegetation may be considered as a forest, even underwater vegetation such as kelp forests, or non-vegetation such as fungi, and bacteria. Tree forests cover approximately 9.4 percent of the Earth's surface (or 30 percent of total land area), though they once covered much more (about 50 percent of total land area). They function as habitats for organisms, flow modulators, and soil conservers, constituting one of the most important aspects of the biosphere.

#### **2.2.8 Ecological Restoration**

Is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed to return to a former or historic (natural or original ) condition. It's the practice of re establishing the historic plant and animal communities of a given area or region and renewal of the ecosystem and cultural functions necessary to maintain these communities now and into the future.

#### **2.2.9 Soil deterioration**

Soil and land deterioration is an entropic process that has a negative impact on the land's capacity and efficient functioning within an ecosystem in terms of accepting, storing and recycling water, energy and food. It occurs when the soil loses major properties due to the unsuitable use of farming machines and equipment. The primary cause of deterioration is always the most visible: the reduced production of plant biomass. This problem also makes it difficult for the organic matter deposited on the soil to be incorporated due to the damage done to the fauna and micro flora. The main consequence of deterioration is that it makes plant rooting and access to nutritive elements difficult, whilst the quantity of water retained by the soil diminishes. In such conditions, fertilizers become less efficient, requiring greater quantities to achieve the same level of production. The increasing difficulties faced by farmers often results in farms being abandoned, which increases the risk of desertification of the areas concerned. Land deterioration causes farming productivity to drop in many

areas of the world. The causes are mainly anthracic and linked to farming. They encompass: deforestation, consumption of the soil's nutritive elements by agriculture, urbanization, irrigation and pollution. It is important to point out that desertification is soil deterioration that occurs in the planet's arid, semi-arid and sub-humid regions. These non-irrigated areas cover 40% of the earth's surface, endangering over a billion people who depend on these lands for their survival.

#### **2.2.10 Sustainability**

Is the capacity to endure. In ecology the word describes how biological systems remain diverse and productive over time. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. For human, sustainability is the potential for long-term maintenance of well being, which has environmental, economic, and social dimensions.

Healthy ecosystems and environments provide vital goods and services to humans and other organisms. There are two major ways of reducing negative human impact and enhancing ecosystem services and the first of these is environmental management. This approach is based largely on information gained from earth science, environmental science and conservation biology.

#### **2.2.11 Environmental Conventions**

The main convention, also known as Rio Conventions, are as follows: Convention on Biological Diversity (CBD) (1992–1993): aims to conserve biodiversity, in other words, to protect genetic resources, ecosystems and species, to use biological diversity in a sustainable fashion, to share the benefits of biological diversity fairly and equitably, especially through proper access to genetic resources and the transfer of appropriate technology and funding. The agreements linked to the convention include the Cartagena Protocol on bio-safety.

The United Nations Framework Convention on Climate Change (UNFCCC) (1992–1994), aims to stabilize concentrations of Green House Gases ( GHGs)

in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, and reach this level within a time scale that allows ecosystems to adapt naturally to climate changes without threatening food production, and enabling the pursuit of sustainable economic development; it incorporates the Kyoto Protocol.

The United Nations Convention to Combat Desertification (UNCCD) (1994–1996), aims to combat desertification and mitigate the effects of drought and desertification in countries seriously affected by these problems, particularly in Africa, thanks to effective measures at every level.

#### **2.2.12 Deforestation**

This is indiscriminate cutting of trees without replacement; UN is controlling burning of forests and other causes, the problem can be seen in high potential areas which lack arable land, fuel wood, and cash income. The negative impact of deforestation comes from elimination of the role that is played by tree and shrubs. Tree, shrubs and vegetation have positive impact to the microclimate, soil structure, and addition of organic matter.

#### **2.2.13 Rainforest Climate change**

Is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years .It may be a change in average weather conditions, or in the distribution of weather around the average conditions (that is, more or fewer extreme weather events). Climate change is caused by factors that include oceanic processes (such as oceanic circulation), variations in solar radiation received by Earth, plate tectonics and volcanic eruptions, and human-induced alterations of the natural world; these latter effects are currently causing global warming, and "climate change" is often used to describe human-specific impacts. Scientists actively work to understand past and future climate by using observations and theoretical models. Borehole temperature profiles, ice cores, floral and faunal records, glacial and per glacial processes, stable isotope and other sediment analyses,

and sea level records serve to provide a climate record that spans the geologic past. More recent data are provided by the instrumental record. Physically based general circulation models are often used in theoretical approaches to match past climate data, make future projections, and link causes and effects in climate change.

CBFM programme was developed in order to address the challenging responsibilities in the future and to increase contribution of the forest sector to the national economy and poverty reduction in general. The forest sector plays multiple roles in the population. For instance, the people of Singida district especially women and marginalized groups depend on food, energy supply and household subsistence from forest products. Forests are increasingly becoming important in the local and global environmental for biodiversity conservation.

CBFM is now a format objective of Tanzania forestry policy (URT, 1998) as articulated in the National Forestry Policy and Forestry Act No. 14 of 2002. The Act provides a legal provision for village based management of forests. The proposed legal framework empowers local communities to secure and manage forests and operate in three forms. The first is the Village Forest Management Areas (VFMAs), which refer to areas within existing National Forest Reserves (NFRs) and Local Authority Reserves (LAFRs) and the management of which is assigned to a specific village community. Two models of community - based management apply in these circumstances: either co-management through which the foresters and community manage the forest area together, or designated management, through which Forestry and Beekeeping Division (FBD) or the appropriate Local Authority agrees that a particular community should manage the estate on behalf of the owner the National Community or the District Community as appropriate.

The second form refers to the Village Land Forest Reserve (VLFR) which comprises all areas of forests within the land area that are particularly registered to villages and owned communally (that is, by all members of that

village) and is set aside, demarcated and declared as dedicated to the primary purposes of forestry.

The third one is, Community Forest Reserves (CFRs), which refers to an area that are part of a village community (such as a women's group, traditional society, or several village communities member, or any other group which does not coincide with the village community set aside, demarcated and declared as dedicated to the purposes of forestry (URT, 2001).

### **2.3 Importance of Forests**

According to Taylor (2004), rainforests currently provide sources for one-fourth of today's medicines, and 70 percent of the plants found to have anticancer properties are found only in the rainforest. The rainforest and its immense undiscovered biodiversity hold the key to unlocking tomorrow's cures for devastating diseases. Two drugs obtained from a rainforest plant known as the Madagascar periwinkle, now extinct in the wild due to deforestation of the Madagascar rainforest, have increased the chances of survival for children with leukemia (20 percent to 80 percent). When our remaining rainforests are gone, the rare plants and animals will be lost forever and so will the possible cures for diseases like cancer they can provide. No one can challenge the fact that we are still largely dependent on plants for treating our ailments. Almost 90 percent of people in Developing Countries still rely on traditional medicine, based largely on different species of plants and animals, for their primary health care. In the United States, some 25 percent of prescriptions are filled with drugs whose active ingredients are extracted or derived from plants. By 2000 sales of these plants – based drugs in the United States amounted to some \$4.5 billion annually. Worldwide sales of these plants-based drugs were estimated at \$40 billion in 1990. Currently 121 prescription drugs sold worldwide come from plants- derived sources from only 90 species of plants. Still more drugs are derived from animals and microorganisms. The U.S. National Cancer Institute has identified more than

3,000 plants that are active against cancer cells, and 70 percent of these plants are found only in the rainforest. In the thousands of species of rainforest plants that have not been analyzed are many, more thousands of unknown plant chemicals, many of which have evolved to protect the plants from diseases. These plant chemicals may well help us in our own ongoing struggle with constantly evolving pathogens, including bacteria, viruses, and fungi that are mutating against our mainstream drugs and becoming resistant to them. These pathogens cause serious diseases, including hepatitis, pneumonia, tuberculosis, and HIV, all of which are becoming more difficult to treat. Experts now believe that if there is a cure for cancer and even AIDS, it will probably be found in the rainforest (Taylor, 2004).

In November 1991, Merck Pharmaceutical Company announced a landmark agreement to obtain samples of wild plants and animals for drug-screening purposes from Costa Rica's National Biodiversity Institute (INBio); the program is still ongoing today. Spurred by this and other biodiversity prospecting ventures, interest in the commercial value of plant genetic and biochemical resources is burgeoning today. While the Merck-INBio agreement provides a fascinating example of a private partnership that contributes to rural economic development, rainforest conservation, and technology transfer, virtually no precedent exists for national policies and legislation to govern and regulate what amounts to a brand new industry.

Since wealth and technology are as concentrated in most of the North as biodiversity and poverty are in much of the South, the question of equity is particularly hard to answer in ways that satisfy everyone with a stake in the outcome. The interests of bio prospecting corporations are not the same as those of the people who live in a biodiversity "hot spot", many of them barely eking out a living. As the search for wild species whose genes can yield new medicines and better crops gathers momentum, these rich habitats also sport more and more bio prospectors. Like the nineteenth-century California gold rush or its present-day counterpart in Brazil, this "gene rush" could wreak

havoc on ecosystems and the people living in or near them. If done properly, however, bio prospecting can boost both economic and conservation goals while underpinning the medical and agricultural advances needed to combat disease and sustain growing populations. The majority of our current plant-derived drugs were discovered by examining the traditional use of plants by the indigenous people who lived where the plants grew and flourished. History has shown that the situation with the rainforest is no different, and bio prospectors now are working side by side with rainforest tribal shamans and herbal healers to learn the wealth of their plant knowledge and about the many uses of indigenous plants. According to Lugonilo (1995) observed that more than 70 percent of villagers reported decreasing rates of natural forest area, in Mtinko, Ilongero, Ihanja, Ikungi and Unyakumi villages.

Experience elsewhere has shown that greater success in conservation efforts occurs if the community is involved in the efforts. Villagers, who have for generations acted as custodians of natural resources adjacent to their settlements, tend to appreciate better initiatives to scientifically conserve natural resources if they are involved from the planning to the implementation stages. Among the complaints by most villagers visited in that although they strived to conserve either endangered tree species (timber) or normal trees (e.g. charcoal making), they were disappointed by the town dwellers who undertook the activities with impunity. Some villagers were unaware that a license is obtained to engage in charcoal making. However, on average a large proportion of villages had their subjects allowed to use natural forest poles for building and bee keeping. A relatively small proportion of villages had restrictions on timber exploitation, game hunting and charcoal making.

### **2.3.1 Challenges of the Forest in Amazon Forest**

According to Arnold (1991), one pulpwood project in the Brazilian Amazon consists of a Japanese power plant and pulp mill. To set up this single plant operation, 5,600 square miles of Amazon rainforest were burned to the ground and replanted with pulpwood trees. This single manufacturing plant consumes

2,000 tons of surrounding rainforest wood every day to produce 55 megawatts of electricity to run the plant. The plant, which has been in operation since 1987, produces more than 750 tons of pulp for paper every 24 hours, worth approximately \$500,000, and has built 2,800 miles of roads through the Amazon rainforest to be used by its 700 vehicles. More and more rainforest is destroyed to meet the demands of the developed world's paper industry, which requires a staggering 200 million tons of wood each year simply to make paper. If the present rate continues, it is estimated that the paper industry alone will consume 4 billion tons of wood annually by the year 2002. Once an area of rainforest that had been logged, even if it is given the rare chance to regroup, it can never become what it once was.

Only one to one percent of light at the top of a rainforest canopy manages to reach the forest floor below. Most times when timber is harvested, trees and other plants that have evolved over centuries to grow in the dark, humid environment below the canopy simply cannot live out in the open, and as a result, the plants and animals (that depend on the plants) of the original forest become extinct. Even if only sections of land throughout an area are destroyed, these remnants change drastically. Birds and other animals cannot cross from one remnant of land to another in the canopy, so plants are not pollinated, seeds are not dispersed by the animals, and the plants around the edges are not surrounded by high jungle humidity they need to grow properly. As a result, the remnants slowly become degraded and die. Rains come and wash away the thin topsoil that was previously protected by the canopy, and this barren, infertile land is vulnerable to erosion. Sometimes the land is replanted in African grasses for cattle operations; other times more virgin rainforest is destroyed for cattle operations because plants planted on recently burned land has a better chance to grow.

### **2.3.2 Community Based Forest Management (CBFM) Worldwide**

After the Amerindians discovered America, about twenty millennia before Columbus, all their clothing, food, medicine, and shelter were derived from the

forests. Those millennia gave the Indians time to discover and learn empirically the virtue and vices of the thousands of edible and medicinal species in the rainforest. More than 80 percent of the developed world's diet originated in the rainforest and from this empirical indigenous knowledge of the wealth of edible fruits, vegetables, and nuts. Of the estimated 3,000 edible fruits found in the rainforest, only 200 are cultivated for use today, despite the fact that the Indians used more than 1,500. Many secrets and untold treasures about the medicinal plants used by shamans, healers, and the indigenous people of the rainforest tribes await discovery. Long regarded as hocus-pocus by science, the empirical plant knowledge of the indigenous people is now thought to be the Amazon's new gold. Their use of the plants provides the bio prospector with the clues necessary to target specific species to research in the race for time before the species are lost to deforestation. More often, the race is defined as being the first pharmaceutical company to patent a new drug utilizing a newly discovered rainforest photochemical and, of course, to greater the profits.

Laboratory synthesis of new medicines is increasingly costly and not as fruitful as companies would like. In the words of none major drug company executive, "scientists may be able to make any molecule they can imagine on a computer, but Mother Nature is a infinitely more ingenious and exciting chemist." Scientists have developed new technologies to assess the chemical makeup of plants, and they realize that using medicinal plants identified by Indians makes research more efficient and less expensive. With these new trends, drug development has actually returned to its roots: traditional medicine. It is now understood by bio prospectors that the tribal people of the rainforest represent the key to finding new and useful tropical forest plants. The degree to which these indigenous people understand and are able to use this diversity sustainably is astounding. A single Amazonian tribe of Indians may use more than 200 species of plants for medicinal purposes alone.

Of the 121 pharmaceutical drugs that are plant-derived today, 74 percent were discovered through follow-up research to verify the authenticity of information concerning the medical uses of the plant by indigenous peoples. Nevertheless, to this day, very few rainforest tribes have been subjected to a complete ethno botanical analysis. Robert Goodland of the World Bank wrote, “Indigenous knowledge is essential for the use, identification and cataloguing of the (tropical) biota. As tribal groups disappear, their knowledge vanishes with them. The preservation of these groups is a significant economic opportunity for the (developing) nation, not a luxury.”

Since Amazonian Indians are often the only ones who know the properties of these plants and how they can best be used, their knowledge is now considered an essential component of all efforts to conserve and develop the rainforest. Since failure to document this lore would represent a tremendous economic and scientific loss to the industrialized world, the bio prospectors are now working side by side with the rainforest tribal shamans and herbal healers to learn the wealth of their plant knowledge. But bio-prospecting has a dark side. Indian knowledge that has resisted the pressure of “modernization” is being used by bio-prospector who, like oil companies and loggers destroying the forests, threaten to leave no benefits behind them.

### **2.3.3 Community-Based Forest Management in the Igboja Forest in Benin**

In most of the African countries, claims concerning community-based forest and natural resource management have arisen as a reaction to the repressive nature of natural resource laws inherited from Colonial times. Forestry laws in force in the post-Colonial period compromised local community rights to forest ownership. Licenses and other forms of taxes so far unknown to local communities were imposed to control the exploitation of forest products that the local inhabitants had free access to previously, either for their domestic consumption or for marketing.

With the increase in the population, the demand for arable land also increased. In the Igbodja region, four communities occupied the forest, mainly composed of Thebe peoples. These welcomed other people from the South and the North (the Fon, the Ahoussa and the Peulh), which in turn set up twenty more communities. The struggle for survival then became increasingly difficult. Forest destruction has been aggravated over the past years by the numerous populations seeking a means of living, without respecting minimum conservation rules. In order to initiate the population in community-based forest management and management of other natural resources, needs were identified and participation was planned and work was done on awareness building; visits to the stakeholders were made and agreements and protocols established with a view to obtaining the greatest local participation possible in this process. The identification of the real owners of the land was an important step. The local populations are going to carry out surveys to prepare a plan of the zone covered by community-based forest management. In the framework of the study on endogenous flora and fauna, the inhabitants participated in the plantation of 15,000 stands of Senegalese Khaya. The village of Igbodja, bearing the same name as the forest, will make available to the population a community space of 5,000 hectares to initiate true community-based forest management. The other four villages are still at the discussion stage but we believe that each village will have its own space integrated into community management. Additionally, all have their own nurseries. At present, latent conflicts are related with degradation of agricultural biodiversity. Large-scale, non-native roving farmers plant new areas every year, thus destroying more and more forest areas. The native inhabitants complain about the situation and threaten to throw them out. These roving farmers cannot plant trees as they are considered as tenants and tenants are not allowed to plant trees on other people's lands. In the framework of our task, all must have their own roles and nobody should be left out. The contribution of all two community-based forest management is a necessity.

#### **2.3.4 Unequal equality between community forests and logging companies in Cameroon**

According to Cameroonian law, both local communities and industrial logging companies have the right to obtain and manage a portion of a forest. However, this apparent "equality" is extremely unequal regarding the extension of forest lands and the legal obligations associated with tenure rights.

Regarding management obligations for instance, in the case of community forests the management plan has to be submitted before any activity starts. This constitutes a major constraint because communities face great difficulties to raise the funds to elaborate their management plans, and should therefore be authorized to at least cut a limited number of trees to finance the preparation of the plan.

For industrial logging companies the situation is totally different, as can be identified in the two existing concession models: "vents de coupe" and UFAs (Unite Forest ere d'aménagement). The former, defined as a logging area of a maximum size of 2,500 hectares to be logged within a maximum three years and requires no management plan at all. The latter are 15-years renewable concessions covering a surface area of up to 200,000 hectares, and in this case a management plan has to be submitted within the first three years. However, during this period the company has the right to already start logging --without any management plan at all-- in order to secure financing for preparing the management plan. To make things worse, not a single management plan has to date been approved by the administration, although the first concession allocations under the 1994 forest law date back to 1996.

Penalties for illegal activities show a similar pattern of inequality. For instance, illegal activities by logging companies can lead to different types of sanctions, such as fines, exclusion from future biddings, or suspension of operation. However, it has so far never happened that a valid logging title has been withdrawn from a company as a result of illegal activities. For the communities, the penalties are much more far-reaching, and any mistake or

infraction committed will lead to the cancellation of the community forest. The law thus appears to benefit industrial logging, in spite of the fact that community forests have a higher potential for sustainability than commercial logging. The promotion of community forests should hence be supported as a means to ensure social and ecological sustainability. The so-called "pre-emption right" could have helped to achieve this objective, because it would have given the communities priority in their access to forests against commercial logging. Yet the draft regulation which would have established this right to the benefit of the communities has not yet been signed.

In its study on the Cameroonian forest sector (October 1999), the World Bank's Operations Evaluation Department points at the same direction when it states that "the international logging companies that dominate the sector continue to have a free hand in the development and use of the forest resources of Cameroon. Local communities were left out of the reform process despite the declared objective to include them in forest resource management."

### **2.3.5 The sacred forest, a community protected area in Côte d'Ivoire**

The village of Zaïpobly is located in Southeast Côte d'Ivoire, in the western outskirts of Taï National Park. The park covers an area of 454,000 hectares and is the largest remnant of the original humid tropical forest in West Africa. It was designated a Biosphere Reserve by UNESCO in 1978 and was inscribed on the Natural World Heritage List in 1982, because of its extraordinary specific wealth and because of the numerous endemic species inhabiting it. At the beginning of the last century it was a uniform forest zone, but agricultural systems of cultivation introduced later and over-exploitation of the forest have reduced it to the present small forest islets. Most of these relict forests have survived because they are considered to be sacred. A sacred forest is a place that is venerated and reserved for the cultural expression of a community. Access and management are governed by traditional powers. The sacred forest of Zaïpobly is located in the eastern hinterland of Taï National Park. It covers an area of 12.30 hectares and is unrestrictedly accessible to all, and however

the flora and fauna are strictly protected. The forest is very much linked to life in the village of Zaïpobly, on the southern border of the forest. For village dwellers, the forest fulfils many functions: it serves as protection, provides them with medicinal plants and food and is a place for the conservation of flora and fauna. It creates a favourable damp microclimate for rural activities in the surrounding fallow lands, it is a place for important socio-cultural meetings and serves as a last living testimonial for future generations of what a true forest is. The main actors within the village society involved in conserving the sacred forest are: Kwi society, originally a jurisdictional and police institution, but lately more the latter, as a result of the disintegration of traditional structures, the introduction of new religions and changes in mentality; traditional authorities, depositories of knowledge; the grass-roots community, on which the success of the system depends.

The daily administration of the forest falls on the Kwi society; they also exert psychological discouragement over the population. Traditional authorities are the prolongation of the founding ancestors and they are responsible for deciding on a site being considered as sacred. They are finally responsible for the sacred site and are its moral guarantee. Impoverishment of society, progressive soil erosion, introduction of other ways of thinking and of production, and monotheist religions (Islamic and Christian) opposing the practice of traditional rites, judged to be diabolical, have contributed to weakening the sacred forests and therefore are factors threatening their existence, because the establishment and protection of sacred forests are mainly based on local cultural and religious beliefs. It has been shown that traditional systems of African culture, far from constituting an obstacle to environmental protection, are the best guarantee in the protection of ecosystems and conservation of biodiversity. And this experience shows that sacred places can become real biodiversity reserves in the African continent. For this reason many Africans are conscious of the importance of safeguarding and re-valuing the communities' cultural knowledge, showing that Africa knows how to organize itself to care for what is precious. At a time when

globalization is swallowing everything up and converting it into merchandise, is timely to look at these examples, where biodiversity, the forest, is seen in a wider dimension than that of its mere components. This makes it possible to establish a link and it would be healthy for each society to re-edit it, from the position of their history and culture (World Rainforest Movement, 2002).

### **2.3.6 Sustainable forest use threatened by government policies in Eritrea**

The Western Lowlands of Eritrea are the easternmost extension of the Sahel, lying between Eritrea's border with the Sudan and the Eritrean/Ethiopian highlands. Their hills and plains are mainly covered with semi-desert scrub and savannah woodland and interrupted by three river valleys clothed with remarkably dense woodland, some of it mixed acacia and dom palm and elsewhere almost pure stands of dom palm (*Hyphaene thebaica*).

Six ethnic groups live there, amounting to several hundred thousand people with their distinct survival systems characterized by flexibility to face the numerous natural and human-made plights which have played havoc in the past forty years. Major droughts and war have led to a collapse of the farming system, many deaths and mass exodus of the population as refugees. In 1998-2000, the Lowlands were invaded by Ethiopian armies (World Rainforest Movement, 2002).

At all times, forest products play a crucial role in people's livelihoods. All the tribes rely largely on the forest to meet their subsistence needs (housing, tools and some food) and dom palm fibre is the principal source of cash income for the majority of the Lowland population (belonging to the Tigre, the Beni Amer and the hidareb tribes). Also, in peacetime and when rainfall levels allow at least some cropping and herding, the poorer members of the community or those who cannot farm land --such as the many war widows-- make a living on cutting, weaving and selling palm. Also dom palm nuts are a food of last resort in the hungry season before harvests, and in drought years they become a staple food for many (World Rainforest Movement, 2002).

One ethnic group --the Kunama-- has a distinctly different approach to the forest. They cut very little palm for income, but collect food from twenty or more tree species. These include the dom palm and others that they value as food reserves for drought years when their crops fail: for them the riverine forests are their insurance, rather than a regular income source. The resilience of the farming system is given by forest harvesting which enables poor farmers to survive and entire communities to face bad years. However, the agricultural extension services of the Eritrean government have collided with the traditional system, partly because of the unfounded belief that palm leaf cutting is carried out in ways that damage the tree, but mainly because the government has other priorities: the forests occupy fertile land with high water tables, which is ideal for irrigated agriculture of cash crops such as onions and bananas. Increasing production of these is a high priority for the government, in order to raise hard currency through exports, and to attract investment (Ibid, 2002).

### **2.3.7 A case of Community Forest Management in Gambia**

Gambia used to be covered by very dense forests. However, the country has undergone a severe deforestation and degradation process. In 1981, about 430,000 hectares were classified as forests, 45% of the total land area. Seven years later, the forest area was reduced to about 340,000 hectares.

Gambian forests have also undergone a degradation process that implied the conversion of many closed forests into a poor quality tree and shrub savannah category, according to the national forest inventory of 1998. In 1990, the first community forestry interventions were implemented in what has been perceived as a process of confidence building and demand driven. Each village has to establish a Forest Committee, generally formed on the basis of the already existing village institutional structure, with representation from both the male and the female members of the community. Traditional leaders are involved from the beginning of the process, and their participation ensures the customary ownership of the forest land by the community, helping to stem any

future conflict between different villages which jointly manage community forests.

Gambian authorities recognize that the practice of community forest management is not without problems. The difficulty to create the sense of forest ownership among the villagers is the result of mistrust about governmental actions and policies. To build it up, the use of financial or material incentives is avoided. No compensations are given to the villagers for the protection and plantation work they are accomplishing in their forests. A task decided by the forest committee and executed by the villagers without external support strengthens the perception that they are the real owners of their work and therefore of their forest (World Rainforest Movement, 2002).

A long consultation process of the Gambian community forest management policy and legislation has reaffirmed the need to return authority for forest management to the local communities. The undertaking has contributed to an important extent to poverty alleviation within the project area --the entire Central River Division, one of five administrative regions of the Gambia-- by the sustainable improvement of the economic revenues of the local population. The empowerment of the communities as well as their support to the Forestry Department in the management of the forest will, in the long run, also contribute to and strengthen decentralization within the Gambia (World Rainforest Movement, 2002).

#### **2.3.8 Ancient tradition in Community Forest Management in Ghana**

A country with an annual deforestation rate of 1,71%, which in 17 years (1955-1972) lost one third of its forests and further 8.6 million hectares from 1977 to 2007, Ghana also holds ancient keys for a meaning model of forest conservation. However, government attempts at dealing with biodiversity loss have applied a reductionist approach which has implied the establishment of protected areas at the expense of people. Experience shows that this eventually fails to achieve the proposed goal. And the solution is out there, in old systems which until recently remained extremely effective. Long before official

organisations were established to carry out sustainable forest management and conservation, there were traditional community resource management systems. A prominent feature of such systems is the setting aside of patches of forest by traditional authorities for sustainable resource use and the preservation of vital biodiversity. These areas have different names in different cultures, but are often referred to as sacred groves, fetish groves, local forests or community forests. Some such forests are designated as burial grounds for chiefs or as the home of local deities. But in most cases they are intended to protect watersheds, fragile ecosystems, and plants and animals of conservation importance to local communities (World Rainforest Movement, 2001).

In such reserves, the community forests or sacred groves now support a much larger variety of plant and animal life than do surrounding areas, providing vital products and services such as building materials, timber products, fuel wood, fruits and nuts, bushmeat, snails, mushrooms, and most importantly, plants that are used as traditional medicines. Harvesting is strictly selective there, controlled and allowed only at time intervals that benefit and satisfy the entire community. On its part, the community adheres to traditional norms and regulations governing the management of these forests, as well as local norms and beliefs governing sacred or fetish groves which prohibit harvesting forest products. Entry is allowed only on specific days or periods for the performance of rituals. Most such groves are believed to contain the "earth god" or spiritual beings that promote peace and prosperity and check antisocial behaviour, and have resulted in remnant patches of primordial forest even in densely populated areas.

However, modernisation, urbanisation and the spread of Christianity and Islam have weakened once revered traditional religions and cultures, changing belief systems in most communities. Many of these sacred groves are being encroached upon and destroyed leading to a loss of livelihood for local communities that depended on forest resources for survival.

In Ghana, sacred and community forests that have contributed immensely to biodiversity conservation are also now under serious threat. Once found dotted throughout the different vegetation zones of the country, their presence ensured that endemic species restricted to that zone were protected from extinction. Remaining reserves include, to name a few, the Buabeng-Fiema Monkey Sanctuary, the Aketenchie Community Forest, and the Akyem Community Forest at Akyem Takyiman. The Buabeng-Fiema Monkey Sanctuary is a Ghanaian forest of global importance, home to the endangered Mona monkey and other endangered animal and plant species. It has also become a major tourist attraction, generating revenue for local communities and the nation (World Rainforest Movement, 2002).

### **2.3.9 International campaign for the Ogiek in Kenya**

The Ogiek people of Kenya constitute an ethnic minority community, which has lived basically from hunting and honey-gathering since time immemorial in the highland Tinet forest area, which are part of the vast Mau Forests in Kenya, about 250 km west of the capital Nairobi. Some of them also practice subsistence farming and livestock breeding. Even though they consider themselves as the guardians of such forests and have managed them in a sustainable way, they have been forced to defend themselves against the arbitrariness of both colonial and post-colonial governments, who have ignored them and wanted to get hold of their lands. They resisted official arm twisting and threats, and several times went to court in the defense of their rights. The last chapter of this unconcluded legal controversy has been the sentence of the Kenya Appeals Court of May 2000, which stopped the government's imminent resolution to evict the Ogiek from their homeland. Nevertheless, the authorities insist on trying to force them out of the forest alleging that it is a protected area included in the country's Forest Act. This argument is false for two reasons. From a legal point of view, the Forest Act establishes that indigenous peoples' territorial rights have to be protected (World Rainforest Movement, 2002).

### 2.3.10 Traditional knowledge in forest restoration in Tanzania

**Table 2.1: Distribution of Community Based Forest Management across different regions of mainland Tanzania**

| Region      | Number of Districts with CBFM | Number of villages with CBFM | Number of declared VLFRs | Number of gazetted VLFRs |
|-------------|-------------------------------|------------------------------|--------------------------|--------------------------|
| Tanga       | 4                             | 94                           | 22                       | 1                        |
| Morogoro    | 3                             | 38                           | 2                        | 0                        |
| Iringa      | 7                             | 122                          | 82                       | 50                       |
| Mbeya       | 3                             | 37                           | 0                        | 0                        |
| Lindi       | 4                             | 31                           | 0                        | 0                        |
| Tabora      | 3                             | 22                           | 22                       | 0                        |
| Kigoma      | 3                             | 32                           | 9                        | 0                        |
| Kilimanjaro | 1                             | 58                           | 8                        | 0                        |
| Mwanza      | 1                             | 101                          | 14                       | 0                        |
| Shinyanga   | 4                             | 348                          | 45                       | 0                        |
| Mara        | 2                             | 45                           | 37                       | 0                        |
| Manyara     | 2                             | 55                           | 28                       | 0                        |
| Arusha      | 1                             | 10                           | 3                        | 0                        |
| Pwani       | 6                             | 20                           | 19                       | 2                        |
| Kagera      | 1                             | 15                           | 8                        | 0                        |
| Mtwara      | 1                             | 25                           | 0                        | 0                        |
| Dodoma      | 2                             | 0                            | 12                       | 0                        |
| Singida     | 1                             | 35                           | 4                        | 0                        |
| Rukwa       | 1                             | 14                           | 14                       | 0                        |
| Total       | 50                            | 1,102                        | 329                      | 53                       |

Source: Ministry of Natural Resources Profile, 2010.

Forest restoration has become a necessity in many parts of the world, particularly where local communities are suffering from the social and environmental impacts resulting from deforestation. The success of this activity depends on the involvement of the communities themselves, based on their traditional knowledge regarding resource use and conservation (World Rainforest Movement, 2002).

The Shinyanga region lies in central Tanzania, south of Lake Victoria, and is occupied mainly by the agropastoral Sukuma people. They have provided a key tool for forest restoration, with their indigenous natural resource management system called "ngitili", which involves conservation of fallow and range lands by encouraging vegetation regeneration, particularly for browse and fodder. The Sukuma have had to deal with erratic and poorly distributed rainfall with high variability between seasons, so they have developed a response to acute fodder shortages caused by long and frequent droughts. The Shinyanga region used to be extensively forested with dense woodland and bushland species, and good cover of under storey grasses. But, massive clearing of forests to eradicate tsetse flies between 1940 and 1965, and impacts of intensive cropping leading to clearing of land for agricultural expansion, rapidly declining land productivity, and shortages of herding labour, have prompted the establishment of communal ngitilis --with an average size of 50 hectares which together with individual ngitilis now cover over 70,000 hectares of restored woodland. The traditional ngitili system of the Sukuma people provided a good entry point for forest restoration through local community efforts. Objectives of ngitili have been expanded to cover other wood products and services required by the community while retaining the original objective of providing fodder for the dry season. Currently, traditional and scientific experiences are shared in management of ngitilis to facilitate restoration of forests and improvement of community livelihood (World Rainforest Movement, 2002).

#### **2.3.10.1 Joint and Community-Based Forest Management in the Uluguru Mountains**

Recent changes in the Forest Policy of Tanzania (1998) and the forthcoming new Forest Act which further operationalises that Policy, have paved the way for several changes in the way that forest conservation might be achieved in Tanzania, including guidelines on the development of Community-Based Forest Management (CBFM) and Joint Forest Management (JFM). These changes also mean alterations in the potential roles of the Forestry Department, the local communities and various conservation NGOs.

These two reserves were the most important source of water in the country as they supplied water to Dar es Salaam and also held globally important biodiversity values. There are also Catchment Forest Reserves on the lower slopes of these mountains, and a few smaller forest reserves owned by the local authority and managed by the District Forest Officer through the District Council.

#### **2.4 Improving Forest Management through Joint Management with Communities**

Many independent states have shown little interest in revitalizing local level systems of authority, which were purposely destroyed by past colonial regimes. The new independent governments, just like past colonial regimes do not like very much the idea of local political forces challenging its legitimacy. Thus, many forests became the property of the state, as in the case of Tanzania. This responsibility was assumed by the Tanzanian state despite other pressing problems like: governance, economic development, self reliance and political stability. As such meager resources were mostly directed towards these causes and managing forests was not accorded priority and they were left to deteriorate.

Much attention to reform management of natural resources like forests has focused on both increasing powers and responsibilities on the government or privatization. Rarely has attention focused on management of resources by

communities or managing them as common property, been considered. Communities can achieve this aim with the help -rather than control- from the government. This is the idea being proposed in the new forest policy: making communities responsible for managing forest resources as common property, in Tanzania whenever possible.

Widespread people's participation in forest management, owning the forests as common property, is the current thinking towards forest management. Common property refers to a particular property rights arrangement in which a group of resources users share rights and duties toward a resource. This term therefore refers to social institutions, and not to any inherent natural or physical quality of the resource. In this arrangement, a particular group of individuals share rights to a resource, for instance, a forest. User rights are common to a specified group of individuals, not to all. Thus, common property is not access open to all but access limited to a specified group of users who hold their rights in common. When the group of individuals and property rights they share are well defined, common property should be classified as a form of shared private property. The property rights in a common-property regime can be very clearly specified, they are by definition exclusive to the co-owners (members of the user group), they are secure if they receive appropriate legal support from the government.

It can be noted that while the Tanzanian government and international agencies have overestimated their own capabilities for forest management, they have underestimated the value of local governance over those resources. Local communities who depend on forests for many commodities and services not just timber, are more sensitive to their protective functions and the wide variety of goods available from them in sustainable harvest. But when the governments overrule traditional use rights to forests, local communities and individual households are unable, and less willing to prevent destructive encroachment or overexploitation. In effect, these de jure state forests are turned into de facto open access. Environmental degradation can occur where

there is an increasing lack of synchrony between the community and its natural environment, and the implied solution is to restore harmony to environment-society relations.

Restoring or awarding such rights to local groups would induce them to attend to the possibilities of sustainable long term production from the forests. Sustainability of forests depends on local rules, use patterns, and incentives created by international, regional, national and local institutions. Indeed, if ecological conditions are the same, major structural and biological differences between local patches of forests may be almost completely the consequence of human rules and use patterns. Statements of intent on global environmental problems issued in the 1992 Earth Summit, including Agenda 21 and the Desertification Convention, strongly advocate as solutions a combination of government decentralization, devolution to local communities of responsibility of natural resources held as commons, and community participation. According to the new forest policy, to abolish open access in public lands, covering more than 19 million hectares in Tanzania, clear ownership for all forests and trees on those lands need be defined. The allocation of forests and their management responsibility to villages, private individuals or to government will be promoted. Central, local and village governments may demarcate and establish new forest reserves. Communities are best suited to manage and regulate resource use because of four main reasons, which are Empowering a community to manage and regulate the use of a resource will reduce the pressure on the resource because by the mere fact that it is owned by a certain community it will not be an open access. Potentially, there are many users of a resource e.g. a forest and if one group retain exclusive use of a resource there is high possibility that more sustainable practices are likely to be implemented. Secondly; a community living near a resource and depending on it for livelihood, and knowing that it will enjoy the benefits of the resource for a long time, is more likely to refrain from misusing it. People rooted in one locality which they call home, will use a resource more careful because if they deplete it they have nowhere else to go. They are different from a commercial

corporation which is always on the move and depletion of a resource in one place means moving to another place and continue with the same trend.

Thirdly; the limited resources of governments in terms of personnel and finance to police resources means that this task is better placed in the hands of local people which will do it for their own benefit with no burden of payment on the part of the government.

Fourthly; Traditional users of a biotic resource like a forest are more likely to have developed techniques which will enable them to use the resource sustainably. Other groups or companies with less knowledge of the resource are more likely to exploit the resource to extinction with the aim of short term gains.

#### **2.4.1 Development of Community Forests**

Community forests are a new kind of mechanism of progressive local community responsibility for forest and forest resource management. So far, thirty-five community forests have been allocated by the Ministry of the Environment. The results of management models developed so far have been discrete and limited, and experience is fairly recent. Most of them are still at a learning stage. On a social and cultural level, the model developed in community-managed forests in the region is one of partnerships. Following some questioning, this model has recently reached a certain degree of stability, with the exception of the Bimboué forest, where it is subject to conflicts that are progressively being solved. The main advantages of such a model are the following: the functionality of the partnership model, the beginnings of an improvement in the habitat, children's education, learning through action, dissemination of the activity, the capacity to defend their rights, the strengthening of minority communities.

However, problems do exist: the communities' model of organization, in spite of its relevance and functionality in the local sociological context, remains foreign to local social structures which hold attributions and power regarding

natural resource management (incompatibility of the present model of partnership with the endogenous form of representation and the social structure, much incomprehension due to the appearance of new structures in the villages as the communities do not recognize themselves in the model developed, non-integration of women in decision-making). From an economic standpoint, the management models developed had both positive and negative impacts. For example, they facilitated the creation of jobs in the village --with a subsequent reduction in rural exodus-- the payment of debts, the strengthening of a forum, the training of local experts and technicians, the beginning of a process towards improving the habitat, the construction of chapels, health help and care, the building of outpatient's clinics, etc.). However, various problems arose at that level: current financial management of income generated by community forests is not sustainable. It is not based on any scientific management system. Most of the activities undertaken with financial income generated by exploitation of community forests do not respond to income management planning prepared prior to the arrival of funds in the communities. Most of the actions undertaken so far were not initially foreseen in the simple management plans and are not always aimed at a community objective.

Finally, on a technical and ecological level, two technical approaches to exploitation have been used so far in the community forests: industrial exploitation and artisan exploitation.

Industrial exploitation has been carried out by the Bimboue community (East Cameroon) in collaboration with forestry companies selected by the directors of the association. Through this modality, they were able to exploit the timber potential of the community forest and generate funds for use in community works. However, this means of appreciation of community forest resources suffered many setbacks, mainly due to conflicts of interests and of power regarding the management of income from logging. It has been prohibited by the forestry regulations presently in force. Artisan exploitation is presently the

sole and unique form of exploitation practiced in community forests. For example, it is operational in five community forests in Lomié in East Cameroon. Most of these forests are implementing a second contract with the beneficiaries, however in some cases such as that of Ngola, they do not have a formal contract with the partner. The first contracts were not performed for various reasons: non-compliance with deadlines for payments, poor use of the timber logged, ridiculously low prices for the cubic meter of timber, insufficient training of local technicians.

#### **2.4.2 Advantages of CBFM**

According to URT, (2001) CBFM is noted possess many advantages such as it removes the long-standing conflicts between government and people as to who owns the resource manages sustainably and which has frequently driven degradation. Also, CBFM ‘closes down’ the open access problems associated with National properties (which people tend to treat as “free for all”) and particularly those considered wrongfully taken by the state by local people. Further it recognizes the land rights of citizens and communal ownership as a viable sustainable form of ownership for certain kinds of properties, which are not suited to subdivision into individual private plots. Moreover, it brings management to the most local level possible and through this increases coverage, reduces costs and links management responsibility with those with most vested interests in the forest. It also, allows trained foresters to use their technical and development skills through providing scientific advices, facilitation and advocacy of sustainable utilization the forest resources. CBFM also allows the forestry department to develop role as technical advisors, monitors of management and environmental watchdogs, which was difficult to achieve when foresters were at one and the same time managers and monitors. It supports devolutionary democratization and helps build local level capacity to manage society and its resources. In addition, it enables vast areas of forest which government cannot satisfactorily and management areas which have every sign of rapidly disappearing over especially the last timely years.

### **2.4.3 CBFM as an Evolving Approach**

Whilst low-cost and logical in its approach, CBFM is neither immediate nor necessarily easy. Because it involves a shift in authority from government to community, it entails many of the problems associated with such power-shift and democratization in general. Also, villagers are extremely poor and do not have the means to sustain high cost regimes. Nor often is their capacity well developed, many villagers at first find it difficult to set up and sustain simple systems for monitoring the forest's health, identifying appropriate quota regime for use and maintaining record-keeping and money management systems that are fully transparent. Nor have many committees yet left confident or able to develop commercial use of their forest resources. Nonetheless, capacity is gradually growing in these areas and will continue to do so with practice and experience (Williams, et al, 1996).

### **2.4.4 CBFM Forest Security and Economic Impact**

At this point, CBFM is mainly concentrated upon helping communities to secure the forest as their own property and to subject the resources to focused community control and sustainable utilization. In general, the current forest malpractices are illegal but on which the community depends on such as fuel, wood and other non-timber wood use and non-wood forest use, particularly including regulated grazing, beekeeping, fuel wood and pole use, wild food and medicinal plant collection. Related important developments include:- Halting use of the village forest by outsiders, thus often dramatically reducing encroachment, new cultivation, and numbers of livestock using the forest. Through clearer recognition of how limited resources really are, restriction on random entry at new settlers to the village area, with preference in allocation of new farm areas to children of existing village members. Adopting in many villages of associated communal pasture management areas and reduction in stock numbers in the village, through the reduction in areas of forest open to grazing. Improved rate of on-farm tree planting through individual and community efforts.

#### **2.4.5 CBFM International Initiatives**

Gilmour and Fisher (1970) note, that the early approach to community – Based Forestry (CBF) were referred to as “Social forestry” and were often limited to hiring local villagers to establish wood lots. The fundamental were usually beyond the mandate of the state sponsored project activity. But Gilmour and Fisher (1970) described CFM to emphasize issues of authority that are within CBFM that is the control and Management of forest resources by the rural people who use them especially for domestic purposes and as an integral part of their farming system (Wily, 2002).

Community-Based Forest Management (CBFM) represents a worldwide emerging strategy towards forest security and Management in the face of continuing forest loss under current institutional arrangements. The trend is now widely evident in Africa (Wily and Mbaya, 2001). More than twenty countries have recently made Community Forest Management (CBFM) an objective of new forest policies and laws. There are differences in approach. A dominant strategy in Southern African and West African States originally sought to buy the cooperation of forest-local committees by allowing them to harvest certain products or giving committees a share of income raised from the forest. This strategy has not shown capacity to significant improve the way the forest is managed, has not reduced costs to central or local governments, and has not reduced the underlying conflicts between state and people, the latter of whom resent their right over local resources being ignored. Many project that stated on this benefit sharing footing have begun to adopt more authority sharing such as practiced in Tanzania for instance, Nigeria, Ghana, Mozambique, Zimbabwe, Namibia, Kenya and Uganda (Wily, 2001).

According to the United Nations Framework Convention on Climate Change (UNFCCC) secretariat, the overwhelming direct cause of deforestation is agriculture. Subsistence farming is responsible for 48% of deforestation; commercial agriculture is responsible for 32% of deforestation; logging is responsible for 14% of deforestation and fuel wood removals make up 5% of

deforestation. Experts do not agree on whether industrial logging is an important contributor to global deforestation. Some argue that poor people are more likely to clear forest because they have no alternatives, others that the poor lack the ability to pay for the materials and labour needed to clear forest. One study found that population increases due to high fertility rates were a primary driver of tropical deforestation in only 8% of cases. Other causes of contemporary deforestation may include corruption of government institutions, the inequitable distribution of wealth and power, population growth<sup>1</sup> and over population and urbanization. Globalization is often viewed as another root cause of deforestation, though there are cases in which the impacts of globalization (new flow of labor, capital, commodities, and ideas) have promoted localized forest recovery.

The success of CBFM at Unyampana and Mughunga villages can be attributed to the following factors: clearly defined Environmental Management Act, Forest Act, Land Act; congruence between appropriation and service delivery (provision) rules and the local conditions; good collective choice arrangements; conflict resolution mechanisms; clearly defined resource property rights; villagers' ability to develop a community forest management rules. The following LAMP have been developed or documented were example models that can be adapted to be used in other areas:

- Model by-laws for community based forest management
- Financial regulations for Joint Management Committee
- Guidelines for harvest tendering process
- Harvesting contract
- Forest management plan

From a poverty reduction perspective, the forests can represent quite different approaches, while the organizational method deployed was one and the same. In order to be successful in conservation of the forests, a number of complementing activities must be necessary to avoid that people lost their

income during the time the forest was recovering. These were different depending on the local conditions, but included e.g. increased agricultural production, zero-grazing system, zoning of the forests to allow for collecting some forest products, efficient beekeeping, increased livestock productivity (to reduce the need to increase number of heads per hectare). Another key factor for success was the acceptance of the time that would be required to establish a reasonably sustainable system (10-15 years) and the need for outside support in capacity building, follow-up and technical assistance.

In 2000, the United Nations Food and Agriculture Organization (FAO) found that the role of population dynamics in a local setting may vary from decisive to negligible and that deforestation can result from "a combination of population pressure and stagnating economic, social and technological conditions." The degradation of forest ecosystems has also been traced to economic incentives that make forest conversion appear more profitable than forest conservation. Many important forest functions have no markets, and hence, no economic value that is readily apparent to the forests' owners or the communities that rely on forests for their well-being. From the perspective of the developing world, the benefits of forest as carbon sinks or biodiversity reserves go primarily to richer developed nations and there is insufficient compensation for these services. Developing countries feel that some countries in the developed world, such as the United States of America, cut down their forests centuries ago and benefited greatly from this deforestation, and that it is hypocritical to deny developing countries the same opportunities: that the poor shouldn't have to bear the cost of preservation when the rich created the problem. Some commentators have noted a shift in the drivers of deforestation over the past 30 years. Whereas deforestation was primarily driven by subsistence activities and government-sponsored development projects like transmigration in countries like Indonesia and colonization in Latin America, India, Java, and so on, during late 19th century and the earlier half of the 20th century ( Wikipedia ).

Conserve the forests but give people access to the benefits from forest production in the beginning of the 90's, forests in Tanzania were disappearing at an alarming rate. Problems were different in different forests: In Babati, the Duru-Haitemba forest of 13,000 ha was to be declared a National Forest Reserve, which would strip people around it of important income. In Kiteto, illegal logging in the Suledo forest of 167,000 ha and increased farming was rapidly depleting the forest, which is a traditional 'reserve' grazing area for the Maasai during dry spells. In Singida, illegal logging in this 40,000 ha forest and intruders were rapidly diminishing the forest (Monela et al, 2006). Step by step process enabling villagers to fully manage and control the Forests in order to empower the villagers to manage the forests themselves. An elaborate step-by-step procedure was followed see a step by step procedure in the Community Based Forest Management Guidelines in brief it includes:

- Starting with a land use management plan and settlement of land and boundary disputes
- Elaboration of a forest management plan
- Establishment of sub-village, village and inter-village forest management committees.
- Establishment of a patrolling system by the villagers
- Development and registration of Land Management by-laws

**Fig 2.1: Climate Change mitigation and poverty reduction at the same time**



**Source: Singida District Council, Profile, 2006**

When local people are responsible for managing their own forest, they enjoy many advantages. They can restrict access to members of their own community, for example, thus reducing random incursions by outsiders. They can welcome outsiders who can help them achieve their goals. They can limit the encroachment of agriculture into forest areas, encouraging farmers to explore possibilities for achieving higher productivity from smaller plots. As wood and non-wood products become scarcer and more difficult to obtain, both in their own forest and in the region, the value of having them immediately available on a regulated but sustained basis proves more and more appealing. Concomitantly, the incentives to manage wisely increase.

Although CBFM is still relatively new in development assistance circles, several of its components have been identified as essential. It is a prerequisite that there be broad-based, informed support for the idea in the local community. This requires awareness, which implies effective means of communication and education. Community members must have the desire and capacity to organize themselves and be free to do that. Legal and policy

support must either be in place or be anticipated in the near future. Of course, there must also be a forest area nearby that is somewhat productive, and usually perceived as threatened.

When a community decides that it wishes to manage its forest, it enters a planning stage. Planning can involve one or many communities. After asking a series of questions, a locally elected planning team carefully makes decisions. The resulting provisional forest management plan is taken to the larger community for further discussion, modification, and approval. The plan is tried for a while, perhaps a year. This trial either creates further awareness and increased support or signals the need to change or negotiate some of the plan's provisions. Often, this provisional management plan includes several "micro plans" within it, to provide for special interventions or management techniques. Once the provisional management plan has been tested in this way, it can be finalized and formalized by a binding legal agreement signed by local authorities, the forestry department, and the district, regional, and/or national governments.

The forest management plans created by communities do not look at all like the plans done by forestry departments. On the contrary, they cover access, use, sanctions, and responsibility as well as silvi culture treatments and inventory, but in unique and diverse ways. Some of the sanctions that I have seen imposed on those who break the rules governing local forests include the donation of a goat to a community festivity, banishment from the community unless the fine is paid, extended service to the community (e.g., patrolling the forest), and 10 betel nuts (*Areca catcecu*). Many aspects of CBFM concern me. I worry that it is too bureaucratic and often carried out at a pace that is faster than appropriate for local situations. A related concern is with the involvement of government forestry departments. In many instances, the individuals involved as participants in forest management in collaboration with local communities are the same technocrats who are most responsible for resource degradation in the same areas (Barraclough and Ghimire 1996). This

really raises the question of whether or not forestry departments are the best possible "partners" for communities. Nevertheless, CBFM is on the agenda of most forestry development programs and projects. This is definitely a time of change for forests and foresters, and for forest communities.

#### **2.4.6 CBFM implementation Strategies in Tanzania**

There have been several critical developments undertaken by district council in Tanzania support of CBFM as outlined below:- one is about assistance to village to more exactly defines the perimeter of their areas, sometimes with mapping. Two is cessation of issue of game and timber extraction licenses in areas declared under community management. Third is concerned with the awareness rising of the new land rights of villages to villages land as owners of communal land within the village area.

The fourth critical observation is that councils are expected that over the coming 10-20 years (2001) that CBFM will continue to mature and will become an increasingly effective and rooted management approach. All practitioners and districts full appreciate that it is learning by doing process, that each problem solved is a new step along the road to sound management". As communities prove themselves committed managers, they are likely also to receive more direct support from district councils in related support areas for example, help to adopt fuel wood saving technologies, help with more income generating opportunities, provision of seedlings for on-farm planting and the like (Wily, 2001).

#### **2.4.7 CBFM in Singida District Council**

In Singida District Council, the vast Mgori Forest (40,000 ha) has been under heavy pressure for years, being heavily logged and with extensive illegal hunting going on. Every year, shifting cultivators cleared vast areas of this Miombo forest, which is dominated by the general *Brachystegiaans Julbernardia*, for short term cultivation and gain, leaving behind a disturbed forest, Hamlets were emerging in different parts of forest and one could see

that committees were about to get a *foothold* in the forest. To save this forest, the government had a long-standing idea to establish a forest reserve, through traditional gazettement of the area. This never materialized, however, mainly because of lack of resources to put in place management structure require to manage this vast and remote area, vulnerable to *Incursion* from all sides. In addition, there was little local support politically for a forest reserve, which would prevent access to the forest by the local people. Instead, a different approach was pursued, involving the local communities fully in the management of the forest. This in little time turned Mgori from a forest under threat into one which today is well protected and sustainably utilized by five villages. From the above literatures, one can conclude that the performance of the CBFM in forest conservation affect negatively the environmental conservation due to the fact that people that is the majority of them depend on forests which results from heavy pressure from agricultural expansion, livestock grazing, wildfires, over- exploitation and unsustainable utilization of wood resources and other human activities mainly in the general lands.

## **2.5 Empirical Literature Review**

Participatory Forest Management (PFM) was introduced into law with the passing of the Forest Act of 2002, which provides a clear legal basis for communities, groups or individuals across Mainland Tanzania to own, manage or co-manage forests under a wide range of conditions. This act allows communities to sign joint forest management agreements with government and other forest owners (commonly referred to as “Joint Forest Management” or JFM). This difference is extremely important but not widely understood. The first form of PFM takes place on village land or private land, and the trees are owned and managed by either a village council (through a village natural resource committee), a group, or an individual. Most of the costs and benefits relating to management and utilization are carried by the owner. The role of central government is minimal and districts only have a role in monitoring. The second form of PFM, Joint Forest Management, takes place on “reserved land” - land that is owned and managed by either central or

local government. Villagers typically enter into management agreements to share responsibilities for the management with the forest owner.

Community-based forest management (CBFM) constitutes “a powerful paradigm that evolved out of the failure of state forest governance to ensure the sustainability of forest resources and the equitable distribution of access to and benefits from them”. The Philippine government adopted CBFM as a national scheme to promote sustainable forest governance, in recognition of the negative impacts occurring as a result of widespread forest loss across the country. The scheme stresses the importance of involving communities in sustaining the forest through projects such as timber harvesting, agro-forestry and livestock arising. CBFM, therefore, advocates an increasingly ‘bottom up’ – as opposed to the historically ‘top down’ and centralized - approach to sustainable forest governance involving a variety of stakeholders. By 2005, 5503 projects had been established across the country. For this reason the Philippines has been considered a pioneer within Asia for the successful implementation of CBFM as a nationwide tool of forest governance (Wikipedia).

According to Convention on Biological Diversity (2009), damage to forests and other aspects of nature could lower living standards for the world's poor and reduce global GDP by about 7% by 2005, a report concluded at the Convention on Biological Diversity (CBD) meeting in Bonn. Historically, utilization of forest products, including timber and fuel wood, has played a key role in human societies, comparable to the roles of water and cultivable land. Today, developed countries continue to utilize timber for building houses, and wood pulp for paper. In developing countries almost three billion people rely on wood for heating and cooking. The forest products industry is a large part of the economy in both developed and developing countries. Short-term economic gains made by conversion of forest to agriculture, or over-exploitation of wood products typically leads to loss of long-term income and long-term biological productivity. West Africa, Madagascar, Southeast Asia and many other regions

have experienced lower revenue because of declining timber harvests. Illegal logging causes billions of dollars of losses to national economies annually. The new procedures to get amounts of wood are causing more harm to the economy and overpower the amount of money spent by people employed in logging. According to a study, "in most areas studied, the various ventures that prompted deforestation rarely generated more than US\$5 for every ton of carbon they released and frequently returned far less than US\$1". The price on the European market for an offset tied to a one-ton reduction in carbon is 23 euro (about US\$35).

Rapidly growing economies also have an effect on deforestation. Most pressure will come from the world's developing countries, which have the fastest-growing populations and most rapid economic (industrial) growth. In 1995, economic growth in developing countries reached nearly 6%, compared with the 2% growth rate for developed countries. As our human population grows, new homes, communities, and expansions of cities will occur. Connecting all of the new expansions will be roads, a very important part in our daily life. Rural roads promote economic development but also facilitate deforestation. About 90% of the deforestation has occurred within 100 kms of roads in most parts of the Amazon (Convection Biological Diversity report, 2009).

Dependence on natural resources represents an opportunity for commercialization of forest products. Serra and Zolho (2003) found that among the charcoal suppliers to Beira there were more than 1000 small operators who transported 2-4 bags of charcoal per day from a distance of about 30 km on a bicycle. This means an average income of about USD 70-140 per month for those families involved in this transportation business. In addition, there were the charcoal makers. The charcoal market was the largest market for forestry products in Mozambican towns. However, other products that were marketed include wood for building materials, medicinal plants and food products.

Meeting the needs of rural people is an important aspect of CBFM. It is in the interest of local communities, especially in developing countries, to managed forests wisely because they often rely directly upon forests for subsistence and livelihood.

The provision of forest products and services for the rural population has a very significant importance in income generation and poverty reduction.

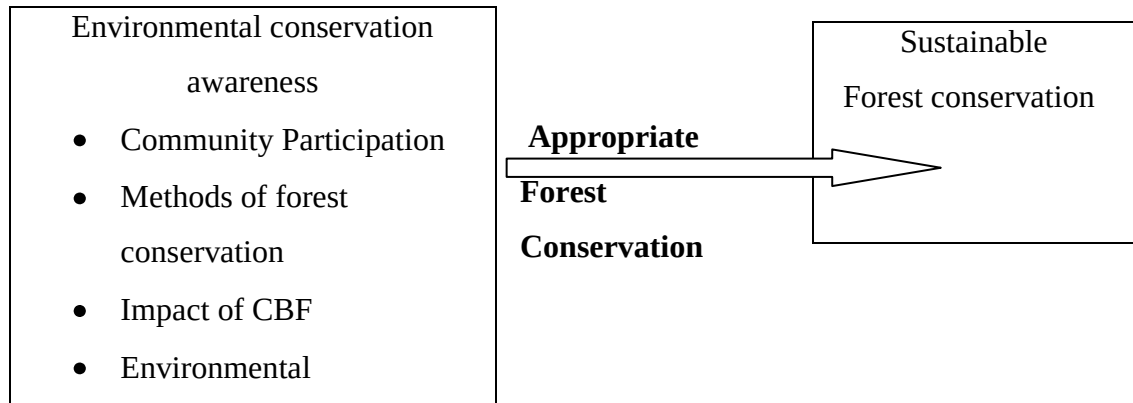
Nshubemuki (2009) investigated the impact of JFM in Ruvu North Forest reserve on the livelihoods of participating communities, who are allocated plots in the degraded part of the forest where they were practicing agroforestry, by planting trees suitable for firewood, timber and charcoal.. The aim was to reduce pressure on forests in the relatively less degraded part of the reserve. Results showed that each household in communities in four villages (Kongowe, Mwendapole, Msangani and Mkuza) around the reserve earned a total of TAS 310,329 in 2007 from selling charcoal, firewood, poles, agricultural crops and tree seedlings from JFM plots. This income, originating from JFM plots in the forest reserve, contributed significantly to total household income.

From the above empirical studies, the gap which can be seen is that, the performance of the CBFM in the forest conservation affect negatively the environmental conservation in Tanzania due to the fact that the majority of the people depend on forests which results from heavy pressure from agricultural expansion, livestock grazing, wildfires, over-exploitation and unsustainable utilization of wood resources and other human activities mainly in the general lands. Hence the need to research on environmental conservation awareness and participation of the community based forest management (CBFM) projects.

## **2.6 Conceptual Framework**

This study was guided by the following Conceptual Framework as indicated in Figure 2.2 below:

**Figure 2.2: Conceptual Framework on Environmental Conservation**  
**Environmental conservation**



**Source: Author's construction, 2013**

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY AND PROCEDURES**

#### **3.1 Introduction**

This chapter deals with the research methodology of this study. The chapter covers the study area, research design, sampling techniques and sample size, data collection and analysis methods.

#### **3.2 Description of the Study Area**

Mgori Forest is located in Singida District Council which is among the four districts in Singida region. The forest lies between longitudes  $35^{\circ} 05'$  and  $35^{\circ} 22'$  East and Latitude  $4^{\circ} 45'$  and  $4^{\circ} 58'$  South. It is situated approximately 50 kilometers East of Singida Municipality. It is not a forest in the traditional forest definition. The forest provides a variety of forest products and environmental function to the surrounding communities.

The forest boundaries are Kondoa and Hanang districts in the Eastern and Northern parts respectively. (See sketch map of emerging boundaries – Mgori forest reserve).

Currently, the forest reserve is managed by five (5) villages surrounding it. These are Unyampana (7,250 hectares), Mughunga 7,272 ha), Nduamughanga (16, 709 ha), Pohama (10,856 ha), Ngimu (1,966 ha), Pohama and Nduamughanga. Village Forest reserves (VFRs) cover more than three quarters of the total area. Ngimu has the smallest coverage. The major part of the forest is a plateau with gentle slopes without specific directions of indication. The geology of the area is typical for the whole of Singida region.

The dominant rock is granite developed from the basalt flow of the old volcanoes. The average rainfall is about 675 millimeters (mm) with maximum 1070mm and minimum 410mm. Temperature vary between  $15^{\circ}\text{C}$  and  $30^{\circ}\text{C}$  depending on season and elevation. There are no permanent river in the forest except seasonal streams which dry up during the dry season. The forest has

now catchments value. Small marshes and swamps apparently provide water sources for wildlife and domestic animals (LAMP, 2003).

### **3.3 Research Design**

In this study a cross-sectional research design was applied because of limited time, financial resources and facilities. Cross sectional research design was used, whereby data were collected once. Cross-sectional studies are observational in nature and are known as descriptive research, not causal or relational. Researchers record the information that is present in a population, but they do not manipulate variables. This type of research has been used to describe characteristics that existed in a population, but not to determine cause-and-effect relationships between different variables. These methods were often used to make inferences about possible relationships or to gather preliminary data to support further research and experimentation.

### **3.4 Sampling Procedures and Sample Size**

#### **3.4.1 Sampling Procedures**

Sampling is concerned with the selection of a subset of individuals from within a statistical population to estimate characteristics of the whole population.

Simple random sampling was used to get the villagers from households (from each village) who has provided information about CBFM while purposive sampling was used to get a number of technocrats involved in the research such as WEOs and VEOs.

#### **3.4.2 Sample size**

The sample size constituted 150 respondents, and both simple random sampling and purposive sampling techniques were used to get the respondents from two villages, that is, Unyampana and Mughunga villages. The two villages were selected using cluster sampling techniques. The table below provides the distribution of the expected number of respondents.

Table 3.1: The Distribution of Respondents by category

| S/No  | Category of Respondents | Number of Respondents | Expected Sample Size |
|-------|-------------------------|-----------------------|----------------------|
| 6.    | WEOs                    | 47                    | 20                   |
| 7.    | VEOs                    | 181                   | 10                   |
| 8.    | VILLAGERS               | 507,916               | 120                  |
| Total |                         | 508,149               | 150                  |

Source; Researcher's Construction, 2013

### 3.5 Data Collection Methods

Data collection is any process of preparing and collecting data, for example, as part of a process improvement or similar project. The purpose of data collection was to obtain information to keep records, to make decisions about important issues, or to pass information on to others. Data were primarily collected to provide information regarding a specific topic.

Two sources of data were used, which were primary and secondary data sources.

#### 3.5.1 Primary Data Collection Methods

This was the original data collection method. This was first hand information without any kind of editing. Data is pure and origin. Primary Data were collected through the use of structured interviews and questionnaire.

#### 3.5.2 Secondary Data Collection Methods

This was a collection of data whereby the information was second hand. The data were collected from Secondary data were obtained through reviewing different literatures such as books, documents (VEO's offices, WEO's offices and Singida district council office), published journals, magazines, environmental experts and websites.

### 3.6 Data Collection Methods/Instruments

In order to obtain information which related to the variables upon which the investigation of the study was based, four methods of data collection were used/employed by the researcher.

### **3.6.3. Questionnaires**

Questionnaire is the method, standard test of question relating to the particular investigation prepared. The questionnaire has comprised of both open ended and closed ended questions. A questionnaire consists of questions printed or typed in a definite order (Kothari, 2004). This method was used as it has lower cost in administering, free from the bias of the interview and respondents have adequate time to give well thought out answers. On the other hand, a questionnaire has limitations such as low response rates, reporting errors, completion of the questionnaire by wrong person, and lack of control over how respondents interpret questions or opportunity to probe or correct misunderstandings.

Each group of respondents responded to different questions as each had its own significance in this research process. The researcher distributed questionnaires to the respondents whereby the respondents filled in upon getting time to do so at their own convenient time. The researcher went and collected the questionnaires on another day. The questionnaires were used because other respondents did not have enough time or were not ready to be interviewed. It was expected that they filled in the questionnaire when they believed fit and convenient to do so. Also other respondents needed time to read and understand the questionnaires before they started filling in the same.

### **3.6.4 Interviews**

Interview is the two ways systematic conversation between an investigator and informant initiated for obtaining information relevant at as specific study. Interviews can be used for verifying, amending and extending data, and gathering facts and explanations (Burns, 2000:583). Interviews have been criticized for being time consuming. In addition, the outcome of the interview could also be determined by the personality of both the interviewer and the respondent. Regardless of these criticisms interviews have a number of advantages. Interviews have been characterized as the most effective way of

enlisting the co-operation of most populations (Burns, 2000:584). The quality of data is usually superior to that obtained by other methods (Burns, 2000:584).

The interviewer has to introduce the purpose of the interview for the purpose of getting the right respondents who are able and willing to answer the questions. Customers who use health care services were asked to respond on their level of satisfaction with the hospital service. The method was used simply because some of the staff/employees could not read and write in English or some of the respondents did not have time to sit down and fill the interview guide on their own. In that case, the researcher asked questions and recorded the responses from the respondents.

### **3.6.5 Direct Observation**

Observation may be defined as a systematic viewing of a specific phenomenon in its proper setting for the specific purpose of gathering data for a particular study. This technique is a useful tool for crosschecking information obtained during the key informants' survey. The observational method concerns the planned watching, recording, and analysis of observed behavior as it occurs in a natural setting.

Observation was used by the researcher during interview sessions and during the time of administering the questionnaires in order to verify authenticity of the respondent's statements. Issues such as appearance of the forests and environment, hectares of land each individual household possessed, trees cultivated by the households either in the farm or around their residential area and number of livestock(s) each individual household has was being recorded through observation.

### **3.7 Data Processing and Analysis**

Data collected were edited, coded and summarized, and analysis was done by using the Statistical Package for Social Sciences (SPSS). Cross-tabulation was done to present the findings based on the objectives of the study. Both descriptive and quantitative analyses were used to quantify and describe the data.

### **3.8 Accuracy of Data**

The integrity and consistency of data was ensured because of the values, methods, measures, principles, expectations, and outcomes of the respondents conducted. Questionnaire was designed in such a way that accurate data were collected

### **3.9 Reliability of Data**

Reliability is chiefly concerned with making sure that the methods of data gathering leads to consistent results. To ensure reliability, data/informations collected were reasonably complete, accurate, met the intended purposes, and were not subject to inappropriate alteration.

### **3.10 Ethical Issues**

In ethics, integrity is regarded as the honesty and truthfulness or accuracy, informed consent, beneficiary – do not harm, respect for ambiguity and confidentiality and respect for privacy. The researcher adhered to all ethical issues during the execution of the study.

## **CHAPTER FOUR**

### **PRESENTATION, ANALYSIS AND DISCUSSION OF THE FINDINGS**

#### **4.1 Introduction**

This chapter discusses the research findings. The data collected in this study were coded, analyzed using descriptive statistics i.e. frequencies and percentages, interpreted and discussed. The findings have been presented in tabular and figure forms.

The analysis was based on the secondary and primary data collected from the field through interviewing household members of Unyampana and Mughunga Villages in Singida District Council. The findings were meant towards answering issues that were raised in the objectives and research questions of the study in chapter one.

This study expected to involve a sample size of 150 respondents. However, questionnaires were distributed to 150 respondents, but only 136 respondents returned the dully filled questionnaires. Therefore the response rate for this study was  $136/150 \times 100 = 90$  percent, which is considered as satisfactory, hence warrants further analysis.

#### **4.2 Demographic Characteristics of the respondents**

This section shows the breakdown of respondents in terms of gender, age, main occupation, education level and their positions in case of the Singida district council household members.

The findings in Table 4.2 below show the distribution of respondents by gender. More than seventy two percent (72.8%) of the respondents were males and 26.5% were females. Males were the ones taking more care of the families; they were participating heavily in community based forest activities/ projects i.e. agriculture, collecting wood and non wood products, honey, fruits, timber in order to generate income for the livelihood of their families.

**Table 4.1: The Distribution of the Respondents by Sex**

| Sex     | Frequency | Percent |
|---------|-----------|---------|
| Male    | 99        | 72.8    |
| Female  | 36        | 26.5    |
| Missing | 1         | .7      |
| Total   | 136       | 100.0   |

Source: Study Findings, 2013

The findings in Table 4.3 below reveal that, 49.3% of the respondents were aged between 26-40 years, 26.5% of the respondents were aged between 41-50 years, 13.2% of the respondents were aged between 15-25 years and 10.3% of the respondents were aged above 51 years.

**Table 4.2: The Distribution of the Respondents by Age Group**

| Age Groups | Frequency | Percent |
|------------|-----------|---------|
|            | 1         | .7      |
| 15-25      | 18        | 13.2    |
| 26-40      | 67        | 49.3    |
| 41-50      | 36        | 26.5    |
| Above 51   | 14        | 10.3    |
| Total      | 136       | 100.0   |

Source: Study Findings, 2013

The findings revealed that the majority of the respondents had completed STD IV (39%) followed by no formal education (25%), while 22.1% of the respondents had secondary education, and 13.2% of the respondents had attained primary education (Table 4.4 below).

**Table 4.3: The Distribution of the Respondents by Level of Education**

| Level of | Education of Respondents | Frequency | Percent |
|----------|--------------------------|-----------|---------|
|          | No formal education      | 34        | 25.0    |
|          | Primary Education        | 18        | 13.2    |
|          | Secondary Education      | 30        | 22.1    |
|          | Std IV                   | 53        | 39.0    |
|          | Missingi                 | 1         | .7      |
| Total    |                          | 136       | 100.0   |

Source: Study Findings, 2011

On the other hand, the findings revealed that 81.6% of the respondents were farmers/ livestock keepers, 13.2% were entrepreneurs and only 4.4% were employed (Table 4.5 below).

**Table 4.4: The Distribution of Respondent's by Main Occupation**

| Main Occupation of the respondents | Frequency | Percent |
|------------------------------------|-----------|---------|
| Employed                           | 6         | 4.4     |
| Farmer/ Livestock Keeping          | 111       | 81.6    |
| Entrepreneur/ businessmen          | 18        | 13.2    |
| Missing                            | 1         | .7      |
| Total                              | 136       | 100.0   |

Source: Study Findings, 2013

The findings in this study also revealed that, 62.5% of the respondents had a family size of 5-8 people/ dependants, while 25.7% of the respondents had a family size comprised of 8 people and above. Eleven percent of the respondents had a family size ranging from 2-4 people/ dependants (Table 4.6 below).

**Table 4.5: The Distribution of the Respondent's on the Size of the Family**

| Family Size of Respondents | Frequency | Percent |
|----------------------------|-----------|---------|
| 2-4                        | 15        | 11.0    |
| 5-8                        | 85        | 62.5    |
| Above 8                    | 35        | 25.7    |
| Missing                    | 1         | .7      |
| Total                      | 136       | 100.0   |

Source: Study Findings, 2013

Furthermore, the findings also revealed that, 39.7% of the respondents were married, 39.7% were single, 17.6% of the respondents were separated and 2.2% were widowed (Table 4.7 below).

**Table 4.6: The distribution of the Respondent's by Marital status**

| Marital Status of Respondents | Frequency | Percent |
|-------------------------------|-----------|---------|
| Single                        | 54        | 39.7    |
| Married                       | 54        | 39.7    |
| Widow                         | 3         | 2.2     |
| Separated                     | 24        | 17.6    |
| Missingil                     | 1         | .7      |
| Total                         | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.3 Community Participation in the Community Based Forest Management**

Mgori forest is a 44,000 ha woodland managed as five VLFRs (Village Land Forest Reserves) with each village recognised as the owner and manager of their respective reserve. Before 1995, Mgori forest was administered by central government. When the FBD demarcated the forest, the community demanded that the western part be excluded for their use. This was granted but it was soon realised that neither the FBD nor the Singida District Council could manage the reserve. The government consequently allowed the communities in the five villages and Singida District Council to manage the whole forest. Between 1995 and 1997 the forest was managed using a joint management approach. The Mgori community comprising Pohama, Ngimu, Unyampana, Mughunga, and Nduamughanga villages later followed/emulated the management approach used in Duru-Haitemba – namely apportioning individual shares of the forest to individual village governments.

The findings in this study indicated that, the forest products industry is a large part of the economy both in developed and developing countries. Short term economic gains made by conversion of forest to agriculture, or over exploitation of wood products typically leads to loss of long term income and long term biological productivity. In developing countries almost 3 billion people rely on wood for heating and cooking.

The findings revealed that, 75.1 percent of the respondents responded no, disagreed that life could not be possible without forest products i.e. timber and non timber

products while 19.1% of the respondents responded yes, that is life could be possible without timber and non timber products (See table 4.16 below).

#### **4.3.1 Responses on the average income per month**

This study researched for an understanding of to what extent CBFM is an important aspect in meeting the needs of rural people who directly rely upon forests for subsistence and livelihoods.

The findings revealed that the majority of the respondents depended largely on the income generated from forest products and services. Responding to this aspect, 30.1% of the respondents had an average income per month of 20,000 Tshs, 27.9% of the respondents had an average income per month of 30,000 Tshs, 20.6% of the respondents had an average income of 50,000 Tshs per month, 14% of the respondents had an average income of 100,000 Tshs per month while 6.6% of the respondents had more than 100,000 Tshs per month (Table 4.8 below).

**Table 4.7: The Distribution of the Respondent's views on Average income per month**

| <b>Respondent's<br/>month</b> | <b>Average Income per</b> | <b>Frequency</b> | <b>Percent</b> |
|-------------------------------|---------------------------|------------------|----------------|
|                               | 20,000                    | 41               | 30.1           |
|                               | 30,000                    | 38               | 27.9           |
|                               | 50,000                    | 28               | 20.6           |
|                               | 100,000                   | 19               | 14.0           |
|                               | 100,000 and above         | 9                | 6.6            |
|                               | Missing                   | 1                | .7             |
| Total                         |                           | 136              | 100.0          |

Source: Study Findings, 2013

#### **4.3.2 Responses on the total harvest last season**

The performance of CBFM in forest conservation affect negatively the environmental conservation due to the fact that the majority of people depend on forests which result from heavy pressure from agricultural expansion, livestock

grazing, wildfires, over-exploitation and unsustainable utilization of wood resources and other human activities.

The findings of this study revealed that through agricultural activities as a one of the forests based activities, the respondents who depended largely on agricultural activities, total harvest last season per a number of sachets as far as the following crops are concerned i.e. Millet, Sunflower, Groundnuts, Maize, Beans etc were, 25.7% of the respondents/ farmers harvested 1-3 sachets last season while 25% of the respondents harvested more than 15 sachets last season, and 18.4% of the respondents/ farmers harvested 3-5 sachets last season (Table 4.9 below).

**Table 4.8: Distribution of the Respondents on the Total harvest last season**

| Total harvest last season |                      | Frequency | Percent |
|---------------------------|----------------------|-----------|---------|
|                           | 1-3 sachets          | 35        | 25.7    |
|                           | 3-5 sachets          | 25        | 18.4    |
|                           | 5- 10 sachets        | 13        | 9.6     |
|                           | 10- 15 sachets       | 22        | 16.2    |
|                           | More than 15 sachets | 34        | 25.0    |
|                           | not applicable       | 6         | 4.4     |
|                           | Missing              | 135       | 99.3    |
| Total                     |                      | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.3.3 Responses on the size of the farm the individual household possessed/ had either for cultivation or settlement as far as the CBFM was concerned**

Community based forest management (CBFM) is an approach to natural resource management that takes into account the human communities living around or within a resource. CBFM has become more common in both developed and developing countries since the 1980s. Generally, CBFM focuses on interdependent ecological, economic, and social elements, and has therefore been categorized as one form of sustainable development.

Although CBFM projects have grown in number, the success of such initiatives varies widely. This is due to a number of factors that are influenced by the local, national, and global context within which a project is situated.

There have been several critical developments undertaken by district councils in Tanzania in support of CBFM i.e. Singida district council as outlined below:- one, is about assistance to village which exactly defines the perimeter of their areas, sometimes with mapping. Two is cessation of issue of game and timber extraction licenses in areas declared to be under community management. Third, is concerned with the awareness raising of the new land rights of villages to villages land as owners of communal land within the village area.

The findings revealed that, 89% of the respondents acquired the land for cultivation and settlement, while only 10.3% of the respondents said no on this aspect. Further the findings also revealed that, 50% of the respondents possessed/ had 1-5 hectares of the land for cultivation/ settlement while 27.2% of the respondents possessed/ had a land of 5-10 hectares for cultivation/ settlement. On the other hand the findings also revealed that only 24 (17.6%) of the respondents possessed 10-20 hectares of the land for cultivation and settlement as one of the strategy to implement/ manage the CBFM (Table 4.10 below).

**Table 4.9: The Distribution of the Respondents on “What is the size of your farm?”**

| Size of the Farm      |     |      | Frequency | Percent |
|-----------------------|-----|------|-----------|---------|
| 1- 5 heceters         | 68  | 50.0 |           |         |
| 5-10 heceters         | 37  | 27.2 |           |         |
| 10-20 heceters        | 24  | 17.6 |           |         |
| More than 20 heceters | 6   | 4.4  |           |         |
| Missing               | 135 | 99.3 |           |         |
| Total                 |     |      | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.3.4 Responses on Institutional Rights the respondents has over farm/land holding**

In Singida district council, the cast Mgori Forest (40,000 ha) has been under heavy pressure for years, being heavily logged and with extensive illegal hunting going on. Every year shifting cultivators clear vast areas of this Miombo forest, which is dominated by the general Brachystegiaans Julbernardia, for short- term cultivation and gain, leaving behind a disturbed forest. Hamlets are emerging in different parts of forest and one could see that committees are about to get a foothold in the forest. To save this forest, the government has a long standing idea to establish a forest reserve, through traditional gazettelement of the area. This never materialized, however mainly because of lack of resources to put in place the management structure required to manage this vast and remote area, vulnerable to incursion from all sides. In addition there was little local support politically for a forest reserve, which would prevent access to the forest by the local people .Instead a different approach is pursued, involving the local communities fully in the management of the forest. This in a short time turned Mgori from a forest under threat into one which today is well protected and sustainably utilized by five villages.

From the above discussions one can conclude that the performance of the CBFM in forest conservation affect negatively the environmental conservation due to the fact that people is the majority of them depend on forest which results from heavy pressure from agricultural expansion, livestock grazing, will fires, over-exploitation and unsustainable utilization of wood resources and other human activities mainly in the general lands.

The findings of this study revealed that, 49.3% of the respondents were granted the institutional right of farm expansion over farm holding, while 37.5% of the respondents were granted the institutional right of improving farm/ livestock keeping method over their farm/ land holding (Table 4.11 below).

**Table 4.10: The Distribution of the Respondents' views on Institutional rights**

| Institutional Rights over Farm holding      |    | Frequency | Percent |
|---------------------------------------------|----|-----------|---------|
| Expansion of farm holding                   | 67 | 49.3      |         |
| Improving farming/ livestock keeping method | 51 | 37.5      |         |
| Diversification of enterprises              | 10 | 7.4       |         |
| not applicable                              | 7  | 5.1       |         |
| Missing                                     | 1  | .7        |         |
| Total                                       |    | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.3.5 Response on “How do you acquire land for agricultural activities and settlement?”**

According to the new forest policy, to abolish open access in public lands, covering more than 19 million hectares in Tanzania, clear ownership for all forests and trees on those lands need to be defined. The allocation of forests and their management responsibility to villages, private individuals or to government will be promoted. Central, local and village governments may differentiate and establish new forest reserves. Communities are best suited to regulate resource use for two main reasons. Firstly, is to empower the community to manage and regulate the use of a resource which will reduce the pressure on this resource because by the mere fact that it is owned by a certain community it will not be an open access. Potentially, there are many users of a resource e.g. forest and if one group retains exclusively use of this resource there is high possibility that more sustainable practices are likely to be implemented. Secondly, a community living near a resource and depending on it for livelihood, and knowing that it will enjoy the benefits of the resource for a long time, is more likely to refrain from misusing it. People rooted in one locality which they call home, will use a resource more careful because if they deplete it they have nowhere else to go. They are different from a commercial corporation which is always on the move and depletion of a resource in one place to another place and continue with the same trend. Widespread people's participation in forest

management, owning the forest as common property, is the current thinking towards forest management. Common property refers to a particular property rights arrangement in which group of resource users share rights and duties toward a resource. This term refers to social institutions, and not to any inherent natural or physical quality of the resource. In this arrangement, a particular group of individuals share rights to a resource, for example, a forest.

Responding to this question, 54.4% of respondents interviewed said that they acquired the land from Singida District Council, 23.5% of respondents said they acquired the land/ or the land was provided by the Village Social Welfare office and 13.2% of the respondents said they acquired the land or the land was provided by the Government (Table 4.12 below).

**Table 4.11: Distribution of the Respondents' views on "How they acquired land for agricultural activities and settlement**

| <b>Respondents' Views</b>                | <b>Frequency</b> | <b>Percent</b> |
|------------------------------------------|------------------|----------------|
| Village Social Welfare Office            | 32               | 23.5           |
| Provided by the government               | 18               | 13.2           |
| Provided by the Singida District Council | 74               | 54.4           |
| not applicable                           | 11               | 8.1            |
| Missing System                           | 1                | .7             |
| Total                                    | 136              | 100.0          |

Source: Study Findings, 2013

#### **4.3.6 Responses on "Planting of Trees by the Community"**

According to Taylor (2004), rainforests currently provide sources for one-fourth of today's medicines, and 70% percent of the plants/ trees found to have anticancer properties are found only in rainforest. The rain forest and its immense undiscovered biodiversity holds the key to unlocking tomorrow's cures for devastating diseases. Two drugs obtained from a rainforest plant known as the Madagascar periwinkle, now extinct in the wild due to deforestation of the Madagascar rainforest, have

increased the chances of survival for children with leukemia (20 percent to 80 percent). When our remaining rain forests are gone, the rare plants/ trees and animals will be lost forever and so there will not be possible cures for diseases like cancer which they can provide. No one can challenge the fact that we still largely dependent on plants/ trees for treating ailments. Almost 90% of people in Developing Countries still rely on traditional medicines, based largely on different species of plants/ trees and animals, for their primary health care.

This study researched for an understanding of the willingness of the community/ indigenous people to plant/ cultivates trees as an approach to CBFM. Responding on this matter, 36.8% of the respondents said they cultivate trees around their residential places/ areas, 24.3% of the respondents responded that, they cultivate trees around their residential places and in the farms as well while 19.9% of the respondents responded that, they cultivate trees in their farms (Table 4.13 below).

**Table 4.12: Distribution of the respondents' view on how they acquired land for agricultural activities and settlement**

| Respondents' Views                      | Frequency | Percent |
|-----------------------------------------|-----------|---------|
| Around residential area                 | 50        | 36.8    |
| in the farm                             | 27        | 19.9    |
| Around residential area and in the farm | 33        | 24.3    |
| not applicable                          | 25        | 18.4    |
| Missing                                 | 1         | .7      |
| Total                                   | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.3.7 Responses on the individual household need/ importance/ reason for planting trees**

The CBFM projects analyzed in this study were based on six main economic activities using miombo products: charcoal production and sale; building materials harvesting and sales; honey production and sales; fuel wood collection and sales; hand-sawing for timber; and wooden furniture production. The contribution of the

forestry sector is invaluable, particularly because much of the population (about 75 percent) live in rural areas where poverty and dependence on forestry resources is high. Rural communities depend exclusively on firewood for cooking, while in urban areas charcoal is the major source of energy for cooking. A study carried out in Beira, Mozambique shows that even in the urban areas, where electricity and gas are available, a significant number of inhabitants (50 percent) use charcoal for cooking (Serra and Zolho, 2003).

Dependence on natural resources represents an opportunity for commercialisation of forest products. Serra and Zolho (2003), found that among the charcoal suppliers to Beira there were more than 1000 small operators who transported 2-4 bags of charcoal per day from a distance of about 30 km on a bicycle. This means an average income of about USD 70-140 per month for those families involved in this transportation business. In addition, there are the charcoal makers.

The charcoal market is the largest market for forestry products in Mozambican towns. However, other products that are marketed include wood for building materials, medicinal plants and food products.

Many tree species of the miombo woodlands have multiple uses. Some of them are protected by local communities because of their importance in traditional beliefs. Many trees are left in the agriculture fields ("machambas") or simply not cut for firewood because they produce fruits or medicines, or have spiritual values. Some trees are protected because it is believed that they "produce water". The use of a variety of forest products by local communities constitutes an 'invisible economy' that aids the state by reducing expenses to the order of millions of dollars to the government that has no capacity to otherwise provide medicines, or produce energy and other forest-based products for such rural communities (Williams, 1993; Nhantumbo and Soto, 1994).

The findings in this study revealed that, (24.3%) of the respondents plant/ cultivate trees in order to conserve the environment, 12.5% of the respondents cultivate trees

so that they can harvest Timber when trees grow up while 14.7% of the respondents responded by saying they cultivate trees so that they can get food products i.e. fruits and timber as well (Table 4.14 below). Therefore this study shows that people depends largely or to great extent on forest and forest products for their livelihood.

**Table 4.13: The Distribution of the Respondent's views on reasons for planting trees**

| Reasons for Planting trees                   | Frequency | Percent |
|----------------------------------------------|-----------|---------|
| Environmental Conservation                   | 33        | 24.3    |
| Environment Conservation, Timber and Fruits, | 14        | 10.3    |
| Wood and Fruits                              | 6         | 4.4     |
| Timber                                       | 17        | 12.5    |
| To control great wind blowing (Dunes)        | 10        | 7.4     |
| To control desertification                   | 6         | 4.4     |
| Timber and Fruits                            | 20        | 14.7    |
| not applicable                               | 29        | 21.3    |
| Missing                                      | 1         | .7      |
| Total                                        | 136       | 100.0   |

**Source: Study Findings, 2013**

#### **4.3.8 Responses on the types of livestock kept by the livestock keepers**

As one of the strategies to CBFM i.e. to control over grazing and to control land degradation respondents were interviewed for the understanding of the type of livestock they keep in their respective areas, specifically for this activity either by the Singida district council or the Government etc.

The Ministry of Natural Resources and Tourism (MNRT) and Kivumbi (2001), have noted that degradation of forests has brought the forest cover down to 38% (1999) from 44% (1997) at an estimated deforestation rate of between 130,000 and 150,000 hectares per annum. This occurs due to lack of sustainable supply of forest products and services ensured to meet the needs of local people and lack of effective forest sector contribution to local livelihoods and poverty reduction plans. Programmes and appropriate actions at the local level, have reported that in Singida district council, people are pastoralists, they use fuel wood estimated at about 95% and also cultivate

by using shifting methods of agriculture. All these activities do degrade the forest conservation, hence desertification process. As we all know, the cause of desertification are those which are caused by human activities and climatic factors. The human impacts include over grazing, over cultivation, deforestation, and mismanagement of water sources. This has compelled for measures to be taken for control and prevention of environmental degradation by encouraging the Community Based Forests Management (CBFM) to device an approach of community participation in management and utilization sustainably of forestry and forest product.

The findings revealed that, 33.1% of the respondents keep two types of animals/ livestock i.e. Cows and Goats, while 28.7% of the respondents keep three types of livestock i.e. Goats, Cows and Poultry as one of the income generating activities, 8.1% of the respondents keep four types of animals i.e. Cows, Goats, Poultry and Dunks and 7.4% of the respondents responded by saying they keep four types of animals also, which are Cows, Goats, Poultry and Sheeps (Table 4.15 below).

Moreover through observation, the researcher was able to see/ know the number of animals / livestock kept by the livestock keepers as the strategy to CBFM i.e. to control over grazing and for control and prevention of environmental degradation. Majority of respondents kept 1 to 20 each type of livestock kept by the individual's household.

**Table 4.14: Distribution of the Respondents’ View on type of livestock kept**

| Type of livestock kept by household | Frequency | Percent |
|-------------------------------------|-----------|---------|
| Cows and Poultry                    | 45        | 33.1    |
| Goats, cows and poultry             | 39        | 28.7    |
| Sheeps, Donkeys and porks           | 3         | 2.2     |
| Goats and Cows                      | 16        | 11.8    |
| cows, poultry, sheeps               | 3         | 2.2     |
| Cows, goats, poultry and sheeps     | 10        | 7.4     |
| Cows, Goats, Poultry and Dunks      | 11        | 8.1     |
| not applicable                      | 8         | 5.9     |
| Missing                             | 1         | .7      |
| Total                               | 136       | 100.0   |

**Source: Study Findings, 2013.**

Further, the findings in this study revealed that 27.2% of the respondents got milk from their livestock keeping while 24.3% of the respondents said they got milk and eggs as the livestock products from their livestock keeping and 13.3% of the respondents responded by saying they get Milk, Skin and Eggs as the livestock products from their livestock keeping.

#### **4.3.9 Responses on “Whether life could be possible without timber and non timber products?”**

Historically, utilization of forest products, including timber and fuel wood, has played a key role in human societies, comparable to the roles of water and cultivable land. Today, developed countries continue to utilize timber for building houses, and wood pulp for paper. In developing countries almost 3 billion people rely on wood for heating and cooking. The forest products industry is a large part of the economy both in developed and developing countries. Short term economic gains made by conversion of forest to agriculture, or over exploitation of wood products typically leads to loss of long term income and long term biological productivity.

Responding to this aspect, 75.1 of the respondents responded no, disagreed that life could not be possible without timber and non timber products while 19.1% of the respondents responded yes, that, life could be possible without timber and non timber products (Table 4.16 below).

**Table 4.15: Distribution of the Respondents' views on "Whether life be possible without NTFPs?"**

| Respondents' Views | Frequency | Percent |
|--------------------|-----------|---------|
| Yes                | 26        | 19.1    |
| No                 | 103       | 75.7    |
| not applicable     | 6         | 4.4     |
| Missing            | 1         | .7      |
| Total              | 136       | 100.0   |

Source: Study Findings, 2013.

#### **4.3.10 Response analysis on continuity of the forest in terms years in providing timber and non timber forest products**

Today Mgori Forest has been saved. In February 1995 it was disappearing. Many areas were being cleared by shifting cultivation. Nearly all the good timber had gone. Fires damaged the forest every dry season. In April, 1999, the forest was in very good condition. Game returned in big numbers and species that had disappeared have returned. Now, instead of having no wild meat, villages have a new problem – elephant damage to their fields. They are now trying to decide how to deal with this.

All five villages are now very cautious about letting new people settle in their villages. Because of the village forest reserve, they now understand that this could lead to future land shortages.

Villagers now engage in land use planning. Each village now tries to limit grazing to grazing zones. Some of these are in the forest, some are outside.

Some village forest committees now manage other parts of the village area, and make new rules for those areas (e.g. grazing land, dam areas).

The legal and administrative arrangements that have been made include:

- producing the village forest management plan;
- Turning village rules into village by-laws; and helping each village to obtain title over its land, including the village forest reserve.

The control mechanisms at the village level include:

- Regular meetings of the village forest committee;
- Reporting to the village government and village general assembly;
- Every villager can see the accounts book;
- The liaison officer can intervene if there is a problem; and villages watch each other and keep each other in order.

The forest service monitors community forest activities by compiling regular reports on the state of the forest and changes observed, which include game spotted. The condition of the forest is so healthy that bees are returning to the hives. More honey is being produced every year.

Responding to this aspect, 36.8% of the respondents said the forest will continue providing timber and non timber forest products for more than 10 years if all of these plans are in place as mentioned above and also if the institutions or agencies responsible for managing the forest are committed and fulfill their duties and responsibilities accordingly while 30.9% of the respondents interviewed also said the forest if managed carefully will continue providing timber and non timber forest products for 10 years (Table 4.17 below). On the other hand 22.1% of the respondent responded saying that, the forest will continue providing timber and non timber forest products for 5 years.

**Table 4.16: The Distribution of the Respondents' Views on the duration they think the forest will continue providing Timber and Non-Timber Forest Products**

|                    | Frequency | Percent |
|--------------------|-----------|---------|
| 5 years            | 30        | 22.1    |
| 10 years           | 42        | 30.9    |
| 10 years and above | 50        | 36.8    |
| not applicable     | 13        | 9.6     |
| Missing            | 1         | .7      |
| Total              | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.3.11 Responses to the Question- “Are there any Institutions for resources regulating Forest use in the Village?”**

Responding to this aspect, 79.4% of the respondents said/agreed that, there are institutions for regulating forest resources use in the village and this institutions are Singida district council, the Government, Sungusungu, The Social Welfare committee, MJUMITA (Mtandao wa usimamizi wa misitu- Tanzania), VEO's, Village Forest's committee and SUA-Morogoro while 14.7% of respondents responded no, saying/ disagreed that, there are no any institutions for regulating forest resources use in the village (Table 4.18 below).

**Table 4.17: The Distribution of the Respondents' views on availability of institutions for regulating forest resources use in the village**

| Respondents' Views | Frequency | Percent |
|--------------------|-----------|---------|
| Yes                | 108       | 79.4    |
| No                 | 20        | 14.7    |
| not applicable     | 7         | 5.1     |
| Missing            | 1         | .7      |
| Total              | 136       | 100.0   |

Source: Study Findings, 2013

#### **4.4. Methodologies used in Forest Conservation**

Forests are increasingly contested properties where different groups aim to make use of the forest in often incompatible ways or struggle to be the first to acquire finite benefits.

The findings in tables 4.13, and 4.14 revealed that, to control over grazing and prevention of land degradation, and to conserve the environment, majority of the respondents cultivate trees either around their residential areas or in their farms, went further saying that they are planting or cultivating trees in order to conserve the environment.

On the other hand, through observation the researcher was able see the number for different livestock/ animals i.e. cows, goats, sheeps, poultry, ducks etc each individual household kept as the income generating activity ranging from 1 to 20 animals.

The result of the findings in Table 4.11 also revealed that, majority of the respondents were granted the institutional right of farm expansion over farm holding, while the rest of the respondents were granted the institutional right of improving farm/ livestock keeping method over their farm/ land holding.

Further the result of the findings in Table 4.10 revealed that, majority of the respondents possessed/ had 1-20 hectares of the land for cultivation/ settlement cultivation and settlement as one of the strategy to implement/ manage the CBFM approach.

The present study is a subsequent attempt following the study conducted at Singida District Council in October, 2012 and provides an additional perspective to corporate policy makers, Singida District council and other researchers. It is hoped that further studies will follow to lend a hand in providing actionable guidance to the government and Singida District Council management to achieve the country's long-term vision.

The study analyzed and summarized the major findings and attempted to answer the research questions. The researcher studied deeply the assessment of the community on management of Mgori forest reserve in Singida District council by interviewing a sample of 150 household of Unyampana and Mughanga villages.

#### **4.5 Effects of Community Based Forest Management**

The results in tables 4.8, 4.9, 4.10, and 4.15 indicated that, community based forest management (CBFM) is the overall outlay for sustainable management of available forestry resources in Tanzania. The provision of forests products and services for the rural population i.e. Unyampana and Mughanga villages in Singida district council has a very significant importance in income generation and poverty reduction. Generally, the approach (CBFM) has an advantage in which:- effective forest sector contribution to local livelihoods and poverty reduction is realized by community members and actions at local level. Also it deals with supply of wood and non-wood products from plantations and natural forests, so as to demand for subsistence and commercial purposes at acceptable level. Moreover, there is a need for cost-sharing mechanisms in order to achieve the above objective particularly, joint management between the project and private sector.

#### **4.6 Strategies Needed to Improve Community Management of Forest?**

The findings in this study during interviews indicated that, CBFM strategies implementation faced many obstacles along the way. Each has had to be overcome.

A list of problems faced include the following;

- It was difficult to persuade the government to allow the villagers to become the managers and owners of the forest.
- The villagers drafted by-laws but the district council has not yet approved them, so the rules being applied do not have legal backing.
- A neighbouring district is jealous and is now claiming one-third of the forest as its own.

- The district council is not always supportive. Often the liaison officer does not have the resource he needs to move around the area to help the villagers, who are poor.
- El Niño floods made the local people poorer and many of the patrolmen were too weak to patrol the forest. One village found its forest being plundered by hungry intruders who were felling trees from deep inside the forest and selling them. However, the villagers did not act quickly enough to catch them.
- The forest is very large. It takes the patrols a full day to reach the middle of a village forest reserve. The patrolmen have no money for boots and whistles and bows and arrows to protect themselves. One has been bitten by a snake.
- Now that the villagers want to start harvesting some trees, the district council is hinting that it wants control over the harvesting.
- A clear tax system that is fair to both the village and the council needs to be worked out.

Many senior officers are against villages managing forests.

- One village leader used the new local control over the forest for his own benefit and decided to clear part of the forest for himself. He accepted bribes from outsiders and did private pit sawing.
- Although the villagers were aware of this, they feared him. It took many meetings to reduce his power. Today, the village has a new committee. Even now the former village leader tries to intervene but fewer people listen to him than before.

To overcome all these obstacles concerning community management of forests, the study suggested the following in order to improve the situation as follows;

- The arrangement is best when the government gives the people the chance to be the guardians and the real managers, getting technical support from government foresters (the district council).
- The enabling institutional changes have given the villagers the chance to become owners and managers of forest: national policy has been revised, and colonial forest laws and ways of thinking have been discarded.
- Attitudes among the population and in government have changed. The government is growing accustomed to giving villagers responsibility for forest land without fear that the forest will disappear.
- At present no new structure has been put in place to meet community forestry needs. More direct support is needed to promote community forestry.
- There is no taxation system specifically for community forestry products. What tax or royalty the villagers should pay if they start to use trees for timber needs to be worked out with the district council and with the government.
- Community forestry holds out the prospect of reducing or completely halting the environmental degradation now occurring in the district and country. The example of Mgori shows what can be achieved
- Community forestry is sustainable and can be implemented other villages are now planning to follow the Mgori Forest initiatives. The area now receives visits from many villagers from outside the district and country who wish to learn about community forestry from the Mgori village forest reserve managers/ owners.

- The external support needed includes promoting ecotourism in the area, building communication infrastructures (roads, bridges) and establishing a market for the community forest products, which include honey and wax.
- Through efforts at Mgori and elsewhere, community forestry now means something quite different from ten years ago.

The Mgori Forest developments helped a great deal in this process. The 1957 Forest Ordinance is now being redrafted into a new and better Forest Act. This law will fully support village ownership and management of forests and will encourage the government to designate local people as the managers of many of its own forest reserves.

- Study tours are frequently conducted to see how the Mgori villages manage the vast forest. In return, the researcher has also been given a chance to see how community forestry operates elsewhere.
- Experts who can provide guidance at local level have been brought in. This is often possible only where there is a donor project.

As in many other countries, in Tanzania it is impossible to provide sufficient field-based government staff and working budgets; this results in continual battles between government officers and the community. In most cases the result is forest loss, both in terms of area and quality.

The only remaining solution is to involve local communities with participatory management, as in this case study.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Summary**

The overall objective of the study was to assess the Environmental Conservation Awareness and Participation of Community Based Forest Management (CBFM) projects. The study aimed at answering four research questions as follows:

- (i) How does the community participate in the community based forest management?
- (ii) What are the effects of community based forest management?
- (iii) What are methodologies used in forest conservation?
- (iv) What are strategies needed to improve community management of forest?

Considering the research questions, the study has successfully answered all the research questions. Regarding question one, the study revealed that, the forest products industry or the forest sector is a large part of the economy both in developed and developing countries. Short term economic gains made by conversion of forest to agriculture, or over exploitation of wood products typically leads to loss of long term income and long term biological productivity. In developing countries almost 3 billion people rely on wood for heating and cooking.

The findings in Table 16 also revealed that, 103 (75.1) of the respondents responded no, disagreed that life could not be possible without forest products that is, timber and non timber products while 19.1% of the respondents responded yes, that, life could be possible without timber and non timber products.

Regarding research question two, the study revealed that community based forest management (CBFM) is the overall outlay for sustainable management of available forestry resources in Tanzania. The provision of forests products and services for the rural population that is, Unyampana and Mughanga villages in Singida district council has a very significant importance in income generation and poverty reduction. Generally, the approach (CBFM) has an advantage in which:- effective forest sector contribution to local livelihoods and poverty reduction is realized by

community members and actions at local level. Also it deals with supply of wood and non-wood products from plantations and natural forests, so as to demand for subsistence and commercial purposes at acceptable level. Moreover, there is a need for cost-sharing mechanisms in order to achieve the above objective particularly, joint management between the project and private sector.

This was evidenced by the respondents in section 4.4.2 and the data in tables 4.8, 4.9, 4.10, 4.11 and 4.15.

Regarding research question three, the findings in tables 10, 13, and 14 revealed that, to control over grazing and prevention of land degradation, over cultivation and to conserve the environment, majority of the respondents cultivate trees either around their residential areas or in their farms, went further saying that they are planting or cultivating trees in order to conserve the environment.

On the other hand, through observation the researcher was able to see the number for different livestock/ animals that is:- cows, goats, sheep, pouting, dunks, etc each individual household kept as the income generating activity ranging from 1 to 20 animals.

Regarding research question four, the findings during interviews indicated that, CBFM strategies implementation faced many obstacles along the way. Each has had to be overcome.

A list of problems faced includes the following;

- It was difficult to persuade the government to allow the villagers to become the managers and owners of the forest.
- The villagers drafted by-laws but the district council has not yet approved them, so the rules being applied do not have legal backing.
- A neighboring district is jealous and is now claiming one-third of the forest as its own.

- The district council is not always supportive. Often the liaison officer does not have the resource he needs to move around the area to help the villagers, who are poor.
- El Niño floods made the local people poorer and many of the patrolmen were too weak to patrol the forest. One village found its forest being plundered by hungry intruders who were felling trees from deep inside the forest and selling them. However, the villagers did not act quickly enough to catch them.
- The forest is very large. It takes the patrols a full day to reach the middle of a village forest reserve. The patrolmen have no money for boots and whistles and bows and arrows to protect themselves. One has been bitten by a snake.
- Now that the villagers want to start harvesting some trees, the district council is hinting that it wants control over the harvesting.
- A clear tax system that is fair to both the village and the council needs to be worked out. Many senior officers are against villages managing forests.
- One village leader used the new local control over the forest for his own benefit and decided to clear part of the forest for himself. He accepted bribes from outsiders and did private pit sawing.

## **5.2 Conclusion**

This research has attempted to explain how CBFM as an approach to natural resource management that takes into account the human communities living around or within a resource in the forest products industry could be used as a tool towards improving community management of forests.

Four years ago, this forest was on its way to extinction because of clearing for charcoal burning, shifting cultivation, overexploitation of timber tree species and illegal hunting of both small and big game. Today Mgori Forest has been saved. In

February 1995 it was disappearing. Many areas were being cleared by shifting cultivation. Nearly all the good timber had gone. Fires damaged the forest every dry season. At the time of writing (April 1999), the forest was in very good condition. Game has returned in big numbers and species that had disappeared have returned. Now, instead of having no wild meat, villages have a new problem – elephant damage to their fields. They are now trying to decide how to deal with this.

Despite of all the efforts, processes, and legal procedures made to rescue/ restore this forest, the results of the study have revealed beyond reasonable doubt that, There have been many obstacles along the way or in the implementation of CBFM approach with respect to people's awareness and participation of the community based forest management (CBFM) projects.

Each has had to be overcome. Community forest management is a process. Each year it changes, grows stronger and develops Community forestry involves the exchange of ideas, techniques and knowledge. The communities must not be treated as ignorant; they have extensive knowledge.

Local knowledge can be incorporated into the new, “imported” knowledge to improve the condition of forests. The community has the power to accomplish things or bring about change. By involving the communities the government can reduce its costs, as the local people can do the necessary work cheaply and effectively.

### **5.3 Recommendations**

Referring to data analysis and previous discussion and interpretation, recommendations have been drawn from the factors which seem to be leading to CBFM implementation at the local level.

Although the legal regime for CBFM can be seen as progressive, a major outstanding problem relates to its implementation (Nhantumbo et al., 2002) where it remains vague on pertinent aspects of community involvement, including the extent of community rights, powers and benefits in relation to those of other stakeholders (Salomão, 2002).

There also are still gaps and obscurities that seriously undermine any possibility of meaningful implementation of the provisions already approved and these gaps mainly relate to a lack of the legal and procedural mechanisms to promote community conservation (Anstey, 2001; Salomão 2002). The existence of such gaps sees many projects being implemented on an ad-hoc basis.

At the same time, while forests form an important facet of the Tanzanian economy it is clear that mechanisms put in place for communities to economically benefit from the commercialization of forest resources occurring in their areas are not adequately and effectively delivering on the envisioned benefits. In order to improve contribution of the forestry sector to community poverty reduction, it is recommended that:

- The government, the private sector, and NGOs need to do more to promote corporate social responsibility and outline the benefits and responsibilities of investors and communities.
- There is need for fostering formal community-private sector partnerships.
- Community institutions should receive the resources and support so as to secure access to their 20 percent royalties, and so as to be in a position to negotiate and form lasting mutually beneficial partnerships.
- When there are long delays in getting communities incorporated and bank accounts opened, the local government administration at the district level should hold the funds on behalf of the communities;
- Research is needed on alternatives to bank accounts (such as community trust funds), to overcome organizational problems at the community level.
- Adequate time for preparatory discussions and community consultations should be allowed during the planning phase of concessions and in doing the simple license agreements.

- The efficacy of the current regimes of royalties in reducing poverty should be reviewed as the royalties seem patently low.

A list of common recommendations to further improve the enabling environment for community participation in forestry resources management have been made by several researchers (Anstey, 2001; Nhantumbo, 2002; Salomão, 2004; Serra, 2004; Calengo, 2004, Durang and Turner 2004). For purposes of brevity these are listed in abbreviated format below:

- Need to expand the scope of community land rights to include other resources and promote their use for commercial purposes;
- Need to clarify substantive community decision-making powers in CBFM areas;
- Need to define the powers and limits of State intervention in areas where natural resource management powers have been delegated to local communities;
- Need of clear guidelines for private sector (corporate), social and environmental responsibility in CBNRM areas, including guidelines for community-private sector partnerships;
- Need to institutionalize and support CBFM as a rural development mechanism.

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## APPENDICES

### APPENDIX 'I'

The aim of this research was to assess “**The Awareness of the Community on Management of Mgori Forest Reserve in Singida District Council**”. The information gathered or provided by the respondents as well as you being honestly and transparency in answering the questions or filling the questionnaires has been helped the researcher in fulfilling her Masters Degree in Business Administration- Corporate Management at Mzumbe University. The information/data/opinions/suggestions that has been provided by the respondents have been for academic purposes only and has been treated with greatest confidentiality possible. Any answer was a correct answer. Please choose the correct answer from a list of answers provided and the respondents were free to choose any answer from a list of answers provided as well as not answering any question at all as long as he/she not aware of the situation/issue or doesn't have enough knowledge concerning the issue/question presented/asked to him/her and this has been taken into account and respected too by the researchers.

### SINGIDA DISTRICT COUNCIL

Questionnaire for household survey. Please put a tick for the correct answer in the boxes provided.

Respondent's name: ..... Date .....

2012 – 2013

District: ..... Division ..... Village  
name .....

1. Age: ..... Years

2. Sex

(a) Male [     ]

(b) Female [     ]

(b) Ethnic group: .....

(c) Marital status [ ]

1. Married [ ]

2. Single [ ]

3. Widowed [ ]

4. Divorced [ ]

5. Separated [ ]

(d) Level of education:

1. None formal [ ]

2. Adult education [ ]

3. Secondary education [ ]

4. Others, (specify) [ ]

(e) Family size:

1. Two to four [ ]

2. Five to eight [ ]

3. Eight and above [ ]

(f) Occupation:

1. Employed [ ]

2. Farmer [ ]

3. Business [ ]

4. Others, (specify) [ ]

(g) Length of residence in the village

.....

(h) Average income per month

.....

**B: MAIN ACTIVITIES IN RELATION TO FOREST:**

(i) Do you cultivate your own crop(s)?

1. Yes [       ]
2. No [       ]

(j) If yes, what type(s) of crops do cultivate?

| Types of crop grown | Total harvest last season | Amount consumed | Amount stored | Amount sold | Price per unit |
|---------------------|---------------------------|-----------------|---------------|-------------|----------------|
|                     |                           |                 |               |             |                |
|                     |                           |                 |               |             |                |
|                     |                           |                 |               |             |                |
|                     |                           |                 |               |             |                |
|                     |                           |                 |               |             |                |

(k) If no, where do you get food crop(s) for your family?

1. Given [       ]
2. Shop(s) markets [       ]
3. Others, (specify) [       ]

(l) What is the size of your farm? ..... Ha.

(m) Where is your farm located? .....

(n) What institutional rights do you have over farm holding?

1. Expansion of farm holding
2. Improving farming method
3. Diversification of enterprises

(o) How do you acquire land for cultivation and settlement?

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

(p) Do you acquire land for cultivation and settlement?

1. Yes

2. No

(q) If yes, what type of three species do you plant?

1. Local

2. Exotic

(r) Where do you plant trees?

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

(s) Why do you plant trees?

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

(t) Do you keep livestock?

1. Yes

2. No

(u) If yes, what type of livestock do you keep?

| Types of livestock | Total | Amount sold | Amount consumed | Price per unit |
|--------------------|-------|-------------|-----------------|----------------|
|                    |       |             |                 |                |
|                    |       |             |                 |                |
|                    |       |             |                 |                |
|                    |       |             |                 |                |
|                    |       |             |                 |                |

|      | Total | Amount sold | Amount consumed | Price per unit |
|------|-------|-------------|-----------------|----------------|
| Milk |       |             |                 |                |
| Eggs |       |             |                 |                |
| Skin |       |             |                 |                |
|      |       |             |                 |                |
|      |       |             |                 |                |

(v) How many do you have for each?

\_\_\_\_\_

(w) Where do you graze your livestock?

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

(x) Is the available land for grazing adequate?

1. Yes

2. No

☐

(y) If no, why?

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

(z) At what time of the year do you experience shortage of pastures for your livestock?

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

(aa) Do you have accessibility to the forest?

1. Yes
2. No

☐

(bb) How do you get access to the forest?

**B: INFORMATION ON NTFPs:**

(cc) What type(s) on NTFPs do you collect?

(dd) Could life be possible without NFPs?

\_\_\_\_\_

(ee) How far is the forest from which NTFPs are collected

\_\_\_\_\_

(ff) This distance is increasing/ decreasing/ constant with time

\_\_\_\_\_

(gg) Can you rate your frequency for collecting NFPs?

1. Daily
2. Weekly
3. Monthly
4. Occasionally

☐

| Types of NTFP | Frequency of collection | Reason |
|---------------|-------------------------|--------|
|               |                         |        |
|               |                         |        |
|               |                         |        |

(hh) Which NTFPs do you collect with difficulties from the forest?

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

(ii) Is there any taboo on the harvesting, processing, storing and using of NTFPs?

1. Yes
2. No

☐

(jj) If yes, please mention and explain

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

(kk) Is there any indigenous knowledge associated with NTFPs conservation?

1. Yes
2. No

☐

If yes, what are they and for which specie(s)?

.....  
 .....

(ll) Could life be possible without forests?

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

(mm) For how long do you think the forest will continue providing NTFPs?

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

(nn) Is there any attempt of domesticating some of the NTFPs?

1. Yes

2. No

If yes, for which species and why

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

(oo) Where does your customer come from?

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

(pp) Why do you decide to use NTFPs? (social-cultural factor):

.....  
.....

(qq) Do you have institutions for regulating resource use in this village?

1. Yes

2. No

(rr) If yes, what are these institutions?

.....

.....

.....

**“THANK YOU VERY MUCH FOR YOUR CO OPERATION”**