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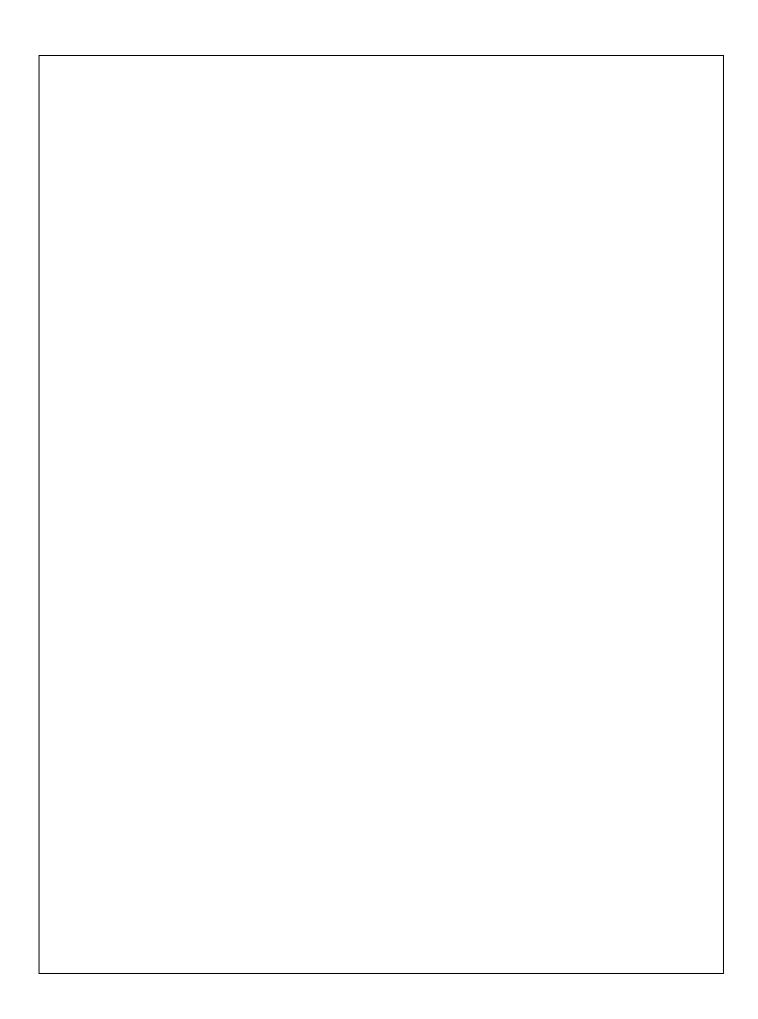

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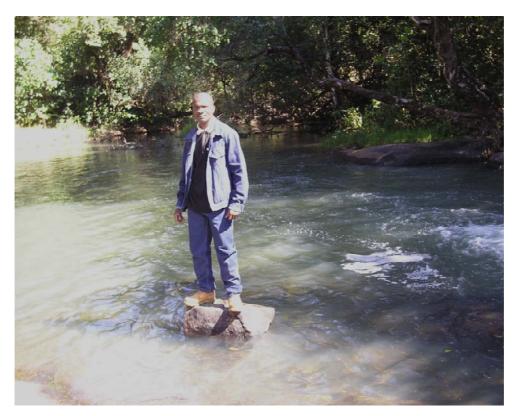
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DECLARATION

I, **SHITIMA MWEPYA EPHRAIM** declare that this thesis was composed and written by me and that all the work presented in it is mine. Unless otherwise indicated, I personally took all the photos shown in this thesis, drew all the tables and other graphics. All the materials used from other sources are duly appreciated and properly acknowledged. This thesis has never been presented anywhere else for any academic award.

If nature so surrounds us, and we are in it and also part of it, can we afford to, or not to impact on it, or it on us?

SHITIMA MWEPYA EPHRAIM

_____

FOREST CONSERVATION AND PEOPLE'S LIVELIHOODS: EXPLAINING ENCROACHMENT ON ZAMBIA'S PROTECTED FOREST LANDSCAPES - THE CASE OF MWEKERA NATIONAL FOREST, KITWE, COPPERBELT

ABSTRACT

The conflicts between conservation objectives and the livelihood needs of local communities are intricate and difficult to resolve and yet the success of any conservation effort hinges on their solution. This is particularly true in forest conservation in Third World countries like Zambia, where rural populations depend directly on forest resources, which are in many cases protected.

Forest reserves in Zambia have undergone drastic changes over the years due to encroachment by such human activities as agriculture, charcoal burning and even settlements. This has led to the deforestation of most of them including Mwekera National Forest in Kitwe on the Copperbelt province. The Forest Department has attempted to involve the people in the management of these resources in a bid to redress the trend. But the fundamental causes for the encroachment and deforestation are not clear. This study was focused on unearthing the underlying causes of encroachment and the subsequent deforestation of Mwekera National Forest. This was done through a qualitative ethnographic approach employing individual interviews, focused group discussions, observations and pictures of relevant phenomena. The target groups included the forest communities living in and around Mwekera National Forest as well as government forestry officials at both local and national levels. The study was based on nature-culture theory, knowledge systems theory as well as the participatory approach.

The study reveals that macro-economic policies such as privatisation of the mines has undermined people's livelihoods while the inefficient and bureaucratic land delivery system made "vacant" protected forest land an attractive option. The policy contradictions between the forest sector and other sectors such as energy, agriculture and land have not helped matters. Organisational constraints on the Forest Department such as its inadequate human, financial and other resources coupled with the delay in its transformation to a more autonomous Forest Commission have not secured protected forests. Its old centralist management approach has made participation by local people difficult to effect despite being provided for under new forestry policy and law. This has meant that decisions made by officials lack meaningful involvement and support of the local people, thereby seriously hindering effective forest protection. Herein lies one major cause of encroachment.

DEDICATION

I wish to dedicate this work to my kids; Nancy, Charles and Christabel Shitima for depriving them my loving presence when they needed it most. This is for the mutual pain and anguish we went through during my long absence from home and for the numerous pieces of home work and school reports I missed signing!

Also to my long-suffering and loving wife Sharon Mulenga Shitima for being such a pillar that held our family together for so long! Thank you for covering up for me, I could never ask for a better you. I can only promise to be a more present than absentee husband to you and father to our kids.

Finally, to my parents, Mr. Chabala Shitima Ephraim and Mrs. Violet Kaunda Shitima for laying a firm foundation during my childhood, you are such an adorable pair. Despite the long years of not seeing you, I never loose you in my fondest thoughts!

Acknowledgements

Undertaking an academic task of this magnitude requires support of one form or another from several institutions and individuals. I now wish to acknowledge these valuable contributions that were rendered to me during this arduous academic trip.

LIST OF ACRONYMS

BSA	British South African Company
CAC	Command And Control
CBNRM	Community Based Natural Resource Management
CBO	Community-Based Organisation
CBU	Copperbelt University
CCJP	Catholic Commission for Justice and Peace
CFM	Community Forestry Management
CSO	Central Statistical Office
DFID	Department For International Development
DFO	District Forestry Office
ECZ	Environmental Council of Zambia
EPPCA	Environmental Protection and Pollution Control Act
FAO	Food and Agriculture Organisation of the United Nations
FGDs	Focused Group Discussions
FPCs	Forest Protection Committees
FRA	Forest Resource Assessment
GDP	Gross Domestic Product
GMA	Game Management Areas
GRZ	Government of the Republic of Zambia
HIPC	Highly Indebted Poor Countries
IMF	International monetary Fund
IPCC	Inter-Governmental Panel on Climate Change
ITCZ	Inter-Tropical Convergence Zone
ITK	Indigenous Technical Knowledge
IUCN	World Conservation Union
JCTR	Jesuit Centre for Theological Reflection
JFM	Joint Forest Management
JFMC	Joint Forest Management Committees

LME	London Metal Exchange
MENR	Ministry of Environment and Natural Resources
MINDECO	Mining Development Corporation
MTENR	Ministry of Tourism, Environment and Natural Resources
NCS	National Conservation –Strategy
NGOs	Non-Governmental Organisations
NWFP	Non-Wood Forest Products
PFAP	Provincial Forestry Action Programme
PFM	Participatory Forestry Management
PRSP	Poverty Reduction Strategy Paper
PSRP	Public Sector Reform Programme
SEI	Stockholm Environmental Institute
SI	Statutory Instrument
SLA	Sustainable Livelihoods Approach
SOEs	State Owned Enterprises
TEK	Traditional Ecological Knowledge
TK	Traditional Knowledge
UDI	Unilateral Declaration of Independence (Zimbabwe 1971)
UNEP	United Nations Environmental Programme
USA	United States of America
USAID	United States of America International Development Agency
WCED	World Commission on Environment and Development
WCMC	World Conservation Monitoring Centre
WRI	World Resources Institute
WRM	World Rainforest Movement
WWF	World Wide Fund for Nature
ZCCM	Zambia Consolidated Copper Mines
ZFAP	Zambia Forestry Action Plan
ZFC	Zambia forestry College
ZMK	Zambian Kwacha
ZNAP	Zambia National Action Programme for combating desertification

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CHAPTER ONE

1.0 GENERAL INTRODUCTION

1.1 Introduction

This study was intended to uncover the underlying causes of encroachment by agriculture, settlements and other human-induced land uses on Mwekera National Forest in Zambia. These land uses and other human activities have resulted in the deforestation of this protected national forest. The study was focused on the conflict between conservation and the local people's need for viable livelihoods. It was conducted in the Copperbelt Province of Zambia where the Mwekera National Forest is located. In this chapter I first give a general overview of the process of deforestation and outline the genesis and basis of conservation in general. I then focus on conservation in Zambia before narrowing down to the study area.

1.2 Background to the Study

The process of deforestation is the clearance or destruction of indigenous forests and woodlands. It is the conversion of the forest to another land use or the long-term reduction of the tree canopy cover below the minimum ten percent threshold (FAO 2001b; IPCC 2004, 3). This loss of forest cover has been on the increase world wide for sometime now particularly during the nineteenth and twentieth centuries. Historically, deforestation started with the advent of sedentary agriculture, prior to which 40 percent of the world's land area or 6000 million hectares were covered with forests. This was over 8000 years ago and since then farms, pastures and settlements have claimed most of the world's forest lands (Roberts and Rodger 1999). At the beginning of the Christian era, removal of forests was well advanced in Mesopotamia and the Mediterranean Basin.

Later the industrial revolution in Europe put tremendous pressure on forests as a source of fuel and railway sleepers and this occurred further wherever industries were introduced in the world.

As Rowe (1992) explains, between 1850 and 1980 15 percent of the world's forests and woodlands were cleared. In modern times, this destruction of forests has even intensified and become widespread. For example in its latest ten-year periodical assessment of world forests, the Food and Agriculture Organisation (FAO) in 2000 estimated that the global loss of natural forest cover during the 1990s was 16.1 million hectares per year of which 15.2 million hectares per year were being lost in the tropics. During the decade under review, deforestation is said to have been highest in Africa and southern America and individual countries with the highest net loss during the same decade included Argentina, Brazil, Democratic Republic of Congo (former Zaire), Zambia and Zimbabwe. FAO further estimated that 56,000 hectares of tropical forests are destroyed each day worldwide and if this rate continued, it would only take 177 years to clear all tropical rain forests (FAO 2001b).

Most of the world's forests are in open landscapes with no restrictions on use as only around 8 to 12 percent of the world tropical forests are in parks and reserves (FAO 2001b, UNEP-WCMC 2005). In its Forest Resources Assessment 2000 referred to above, FAO estimated that the world forests cover by 1999 had been reduced from 6000 million hectares in the 1850s to 3500 million hectares. This loss is attributed to human exploitation, and most of this clearance occurred in the latter half of the twentieth century (FAO 2001a). The global distribution of deforestation is such that it is generally more serious in developing countries of Latin America, Asia and Africa than in the developed world (Anon 1996). FAO concluded in its report that the net loss of forests had slowed down by 20 percent during the 1990s decade as compared to the 1980s (WRI 2001).

However, this conclusion has been questioned by other sources. For example, the World Resources Institute (WRI) argued that deforestation rates increased in tropical Africa and other parts of the Third World countries during the 1990 decade. Together with the World Wide fund for Nature (WWF), WRI is critical of FAO's definition of forests which include plantations. According to FAO (2001b), a forest is vegetation with a minimum of 10 percent crown cover and this includes both natural forests as well as plantations.

But WRI and WWF contend that this definition is misleading because when plantations are excluded, the rate of natural forest loss is higher during the 1990s than the previous decade, particularly in the tropics (WRI 2001). This debate about deforestation rates highlights the contested nature of environmental issues and the significance of who tells the story or produces the knowledge about it.

1.3 The Causes of Deforestation

The causes of encroachment on protected forests and deforestation can be divided into direct and indirect or underlying causes. A major immediate or direct cause of this landscape change is generally the conversion of forests to some other form of land use. This includes agriculture, particularly shifting cultivation, overexploitation of forest products for industrial or domestic use such as lumbering and charcoal manufacturing, settlements and overgrazing. The liberalised global trade in timber is also an important cause of deforestation, particularly in developing countries. It is fashionable for studies to focus on these direct causes of deforestation while neglecting the underlying causes. According to the World Rain Forest Movement, (WRM), this is mainly because it is easier to blame ignorant peasant farmers or poverty than to deal with multiple and often interrelated underlying causes. But as the WRM emphasises, it is by dealing with these underlying causes that the problems can be fully understood and hopefully, the forests saved (WRM, 2002).

The underlying causes of deforestation and encroachment on protected forests often include international macro-economic strategies, deep-rooted social structures such as inequalities in land tenure, discrimination against indigenous people or the poor in general and political factors including lack of participation in decision-making processes (WRM 2002). According to the WRM, it is at this level of underlying factors that solutions to deforestation and encroachment on protected forests should be found. FAO (2001b, 14) indicates that "economic and policy factors may be more important in the deforestation process." This is because the poor are driven to their unsustainable practices by national and international forces with interests different from theirs.

It is simplistic to just identify the activities that the poor are involved in as the causes of deforestation as this would be treating the symptoms and not the disease, the underlying causes.

1.4 The Effects of Deforestation

The effects of deforestation range from ecological or environmental to socio-economic. Ecologically, deforestation not only results in the disturbance of ecological cycles such as the hydrological cycle but also contributes significantly to the extinction of species and loss of biodiversity (Mayfield 1999). Environmentally, loss of trees results in increased soil erosion as the soil loses its holding power for plant roots, leading to general land degradation and siltation of water bodies. Most importantly, deforestation deprives the forest-dependent people who live in forests of their means of livelihoods (Dudik 1992). This is because forests provide these communities with edible plants, fruits, honey, shelter firewood and many other tangible goods and intangible services such as cultural and spiritual values (WRM 2002). Broadly, these goods and services are classified as wood and non-wood forest products (NWFPs).   Deforestation also robs the local people of their orientation and identity as cherished landscapes are altered irreversibly. In fact, the loss of forests changes landscapes to the extent that they can no longer perform most of their original processes or functions. The effects of deforestation are so profound that they may not yet be fully understood. A number of countries in the tropics in Latin America, Asia and Africa including Zambia are seriously affected by deforestation.

1.5 Deforestation in Zambia

Zambia is said to be losing 200,000 hectares of her forest cover annually (Chipungu and Kunda 1994, 27). But other sources put this at even a higher rate of 250,000 or even 900,000 hectares per year (PFAP 1998; Chidumayo 1996; FAO 2001b, 137). The variability of this figure reflects the lack of available up to date data. However, deforestation is a serious issue in Zambia and it is ranked as the country's number one environmental problem (MTENR 2002; GRZ 2002, and ECZ 2001). This is blamed on poverty or the poor in a country where over 70 percent of the population is classified as poor (GRZ 2002, 21).

4

Some of the immediate causes of this deforestation in Zambia include felling for wood, charcoal production, expansion and overexploitation of agricultural land and timber, not to mention clearance for new settlements (Chipungu 2000). Notably, one form of shifting cultivation (Citemene) practised in Northern, Luapula and to some extent Central provinces of Zambia, is particularly responsible for deforestation. The practice involves the lopping of trees and the collection of branches at a central place where they are burnt to provide ash as fertilizer (WRM 2002). Although perceived as an efficient means of using tropical forests by indigenous people, the practice can only support sparse populations sustainably and must be entirely for subsistence; otherwise it results in widespread deforestation (Yudelman 1964).

The manufacturing of charcoal by individuals is also an important cause of deforestation, particularly around the urban areas of Zambia such as those on the Copperbelt province and the capital, Lusaka. Roberts and Rodgers (1999) cite Lusaka city together with Niamey in Niger as two well-known African cities around which there is a long ring of denuded land that has been stripped of all its combustible material by people trying to meet their basic needs. This is worsened by the fact that only about 10 percent of the Zambian population has access to electricity, meaning that the majority of the people rely on one form of wood or the other for their energy requirements, especially for domestic use (Chipungu and Kunda 1994, 32). These livelihood activities are what are normally investigated and identified by scholars as well as recognised by officials as the causes of Zambia's deforestation, neglecting underlying factors.

As the World Rainforest Movement (WRM 2002) states, there are a number of underlying causes related to the Zambian government's economic liberalisation policies that have not been adequately investigated. WRM concludes that these are the forces that may influence forest conversion to agriculture and clearance for charcoal production. This challenge of investigating the underlying causes of deforestation as well as encroachment on protected forests is what this study was set out to deal with. The effect of this loss of forest resources in Zambia like elsewhere has been more severe on forest–dependent communities who scratch their living from these forest landscapes.

The global response to the loss of resources in general and deforestation in particular has been conservation, and this has resulted in a vibrant conservation movement.

1.6 Conservation: A Global Response to Declining Natural Resources

The response to the perceived threat to the world's natural resources, particularly forests and wildlife, was conservation. This involves the scientific planning and wise use of the resources to ensure that they are not depleted. Conservation therefore arose out of the concern that the world would run out of its vital resources if wanton exploitation was not arrested. It became popular particularly in the first decade of the twentieth century (Samuel 1959). Traditionally, this involved setting aside selected sites as reserves and restricting or forbidding use of resources in those 'natural' areas. In effect, this meant fencing off such reserves and ensuring that resources of interest there such as forests or wildlife and the general biodiversity were conserved.

1.6.1 History of Conservation

The concerns about the effect of human over-exploitation of natural resources spearheaded the interest in conservation. In general, three kinds of environmental problems captured public attention, particularly in the United States of America, at the beginning of the 20th century. These problems included the fear that the world would one day run out of vital resources, especially wood, the fate of the 'wilderness' or undeveloped lands of great 'natural' beauty which ought to be protected and finally the effect of pollution on human health. As an applied science, conservation emerged in the late nineteenth century but only became popular in the first decade of twentieth century (Rowe 1992). The expressed aim of the early conservation movement was to protect the world's natural resources from short-sighted over-exploitation. But as Samuel (1959) argues, the real motivation among the first conservationists was a commitment to scientific management of resources by experts. Their philosophy was that "the public good was best served through the protection of forests and water resources, even if this meant displacement of local communities" (Pretty 2002).

This has been the general practice in conservation even now where scientific practices are preferred to local knowledge and the local people are excluded from decision-making. The conservation movement has been characterised by the dominance of experts, mostly far removed from the landscapes and resources they intend to protect. Lately, there has been a shift of emphasis in the conservation movement from strict preservation of the wild and natural resources to concerns about local people's livelihoods and participatory management of protected landscapes. In the past conservation meant setting particular areas aside and restricting peoples' entry and use of the resources in there. The first such protected areas to be designated included Yosemite in 1864 (Olwig 1996, 381) and Yellowstone National Park in 1872, both in the United States of America. In terms of forestry, the Adirondacks, again in the USA, with an area of 290,000 hectares was designated in 1885 (Pretty 2002, 61). This was the beginning of nature conservation through designation of selected protected areas world wide. "Parks and Nature Reserves have since become the predominant way of preserving nature, both for wildlife and for whole landscapes" (Pretty 2002, 61).

By 1992, the World Resources Institute estimated that worldwide there were 8163 protected areas covering around 750 million hectares of maritime and terrestrial ecosystems (WRI 2001). By 2000, this had increased to about 102,102 sites covering more than 18.8 million square kilometres. This represents 12.65 percent of the earth's land surface or the equivalent of the combined land area of China, South Asia and Southeast Asia. The terrestrial extent of protected areas without the marine component accounts for 11.5 percent of the total land surface of the earth or 17.1 million square kilometres, a size equivalent to the entire continent of South America (Chape et al 2003, 21; FAO 2001b, 63). Often, the establishment of such protected areas ignites conflicts with the local people due to the restrictions in access to resources that are introduced.

The most controversial characteristic of this 'barbed wire' management approach is the exclusion of local people from these protected landscapes. This results in misery to local communities who are denied access to the resources they depend on. In most countries, such reserves are protected by law and people's entry and use of resources is restricted.

In other cases some people have to leave their settlements where such areas are established and therefore become 'protected' (Kamugisha et al 1997, 4). This displacement and restriction of people from resources undermines their livelihoods and leads to the disintegration of established communities .In most cases such communities face problems of integration in new areas where they are relocated to, as these landscapes may be strange to them with different resources from what they were used to. Although society or a country as a whole may benefit from the protected areas, it is local communities dependent on those landscapes who bear the social, cultural and economic costs. Therefore, people often feel unfairly treated and deprived of their resources. This is particularly the case in natural resource management regimes that exclude the communities from decision making.

1.6.2 Conservation in Zambia

Zambia maintains a protected area system for both forests and wildlife. There are 481 forest reserves comprising 173 national forests and 308 local forests. The national forests to which Mwekera National Forest, the study area belongs, are generally larger and are under a more strict protection than the local forests. Under the Forest Act No. 39 of 1973, "all land comprised in a national forest shall be used exclusively for the conservation and development of forests with a view to securing supplies of timber and other forest produce, providing protection against floods, erosion and desiccation and maintaining the flow of rivers" (GRZ 1973, 11). These are called national forests as they are regarded to be of national, even international importance. The local forests are smaller and serve local interest such as catchments for local river systems.

In general both national and local forests are loosely referred to as forest reserves. For wildlife conservation, there are nineteen (19) National Parks and thirty four (34) Game Management Areas (GMAs). The total land area under protection in the country constitutes 40 percent of the country's land area while forest reserves account for 10 percent of that total protected area. Zambia therefore meets the 10 percent global minimum target for forest protection (FAO 2001b, 64).

The management of national and local forests is vested in the Forest Department, a state run institution, under the Forest Act No. 39 of 1973, which is still in force. Under this arrangement, the community has little say as to how forest resources are to be managed as the institutional and legal framework has little or no provision for their involvement. In the case of open forests, local authorities may regulate the use of forest products by local inhabitants. But these local authorities are legally powerless to control the use by outsiders, provided they have licenses issued by the Forest Department, (Chundama et al 2004; GRZ 1973). The new forestry policy of 1998 and new Forest Act, not been yet implemented for reasons explained in subsequent chapters, provide for community participation through Joint Forest Management (JFM).

Under this arrangement, local communities, forestry officials and other stakeholders can form Joint Forest Management Committees (JFMCs) which can formulate management plans for a forest designated to a be JFM area. This community participation through JFM is supposed to take effect after transforming the Forest Department into an autonomous institution, the Forest Commission (GRZ 1998). Despite being provided for in the 1998 Forest policy and enshrined in the new Forest Act. No. 7 of 1999, this institution had not taken off at the time of this study. The reasons advanced include lack of adequate financial resources for the separation of workers under the Forest Department and other logistical constraints.

Another limitation to this community participation is that under the current forest law in the country, only local forests can be declared as JFM areas and not national forests like Mwekera and yet, national forests too are equally degraded and needed people's participation (GRZ 1998, 1999). One reason for the deforestation and degradation of these protected forests has been the encroachment of settlements in them as shown in Fig. 1.0 below.

Zambia Protected Areas
Forest Reserves and Settlements Relationships

Legend:
- Settlement clusters
- Major roads
- Gravels roads
- Motorable tracks
- Major rivers
- Forest Reserves

100 0 100 200
Kilometers
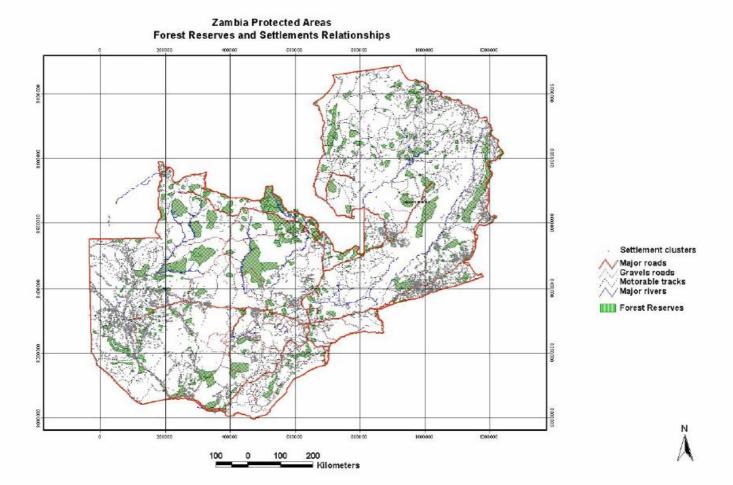
Fig. 1.   Zambia's Forest Reserves in Relation to Human Settlements
Source: MTENR 2004. Reclassification of Protected Areas Project Report

Zambia formulated and adopted the National Conservation Strategy NCS in 1985 whose aim was to "define and establish policies, plans, organisation and action, whereby sustainability of natural resource use will be integrated with every aspect" (GRZ 1985, 63). This strategy recommended engendering community participation in the running of the forest sector. The NCS also resulted in the enactment of the first broad environmental legislation; the Environmental Protection and Pollution Control Act (EPPCA) No. 12 of 1994 which established the Environmental Council of Zambia (ECZ), an institution that is in charge of environmental legislation in the country. But the country lacks a comprehensive environmental policy that harmonises activities in different sectors such as land, forestry, water, energy and others. As a result, there are a number of sectoral contradictions among different sectors (Zimba 2003; GRZ 2002).

But this may change as efforts were being made to formulate the national environmental policy at the time of this study. According to the Issues Paper produced at the First National Consensus-Building Workshop on the Environmental Policy development held in May, 2004, one objective of this policy when finalised will be to "provide a broad policy framework for harmonisation of sectoral and cross-sectoral objectives and strategies" (MTENR 2004, 7).

1.7 Statement of the Problem

There has been rampant encroachment on Zambia's protected forest landscapes including Mwekera National Forest in the last few years. This has resulted in the loss of substantial parts of the forest cover through clearing for agriculture, settlements, charcoal manufacturing, logging and other human activities. This encroachment on Mwekera National Forest has intensified during the last two decades and the damage has been extensive. Previously, people respected the boundaries of this protected forest landscape and encroachments of human activities in it were minimal. It is not clear what the underlying causes of this problem are although several reasons have been advanced ranging from poverty to increasing population in the area. The policy and legal framework for the management of forests in the country are in place but do not seem to be working effectively. There is need to investigate the underlying causes of the rapidly changing protected landscapes in the country, particularly the Copperbelt province where Mwekera National Forest is located.

1.7.1 Aim and Objectives of the Study

This study is aimed at contributing to effective and participatory forest resource management which is in harmony with peoples' livelihoods. Its objectives include to identify the underlying causes of deforestation and encroachment of Mwekera National Forest, examine existing institutional and legal framework/s for regulating forestry in the country and assess their effectiveness and to establish the local people's views regarding the value of the forests in relation to their livelihoods. The following were the research questions that the study sought to provide answers to:

- What are the major factors underlying the encroachment and deforestation of Mwekera Protected Forest in the Copperbelt Province? (Factors that were paid attention to under this question included, among others, the socio-economic changes in the province brought about by the privatisation of the mines which resulted in massive job losses for people).
- Are the forestry policy of 1998 and Forest Act No. 7 of 1999 achieving their stated objectives including addressing people's livelihoods?
- How strong is the role of the local community in management of forest resources in the area?
- What values do the local people attach to the forests as a basis for their livelihoods? (Do local people value forests for ecological, economic or subsistence functions, and which values are more important to their livelihoods and inform their relation to forest resources?)

1.8 Structure of the Thesis

This thesis is made up of seven chapters. The current chapter sets the stage by introducing the study and giving a general global overview of conservation. A brief historical development of global conservation is also outlined before focusing on Zambia and stating the study problem and its objectives.

In chapter two, a more detailed background to the study is given. The chapter gives the geographical setting, as well as the physical, social and economic profile of the country in order to reveal the context within which the study was undertaken. Chapter three gives the study the conceptual and theoretical framework for the study and also serves to survey relevant literature to the theme under study. The two major theories employed in this study are the Nature-Culture theory as well as the Knowledge Systems theory. The former is used to discuss the practice of excluding humans and their activities from the areas demarcated for protection while the latter theory interrogates the knowledge system applied in conservation, and who produces that knowledge. The participatory approach is used to assess the degree to which the local communities in the area are actively participating in the management of forest resources.

The methodology used and actual techniques employed in data collection, analysis and presentation of findings are outlined in chapter four. This chapter also reveals the challenges and constraints faced in the field which may result in its limitations. Chapter five presents the research results and my interpretation in relation to the institutional and legal framework as well as official views on the study subject. In chapter six, the views of the forest-dependent community in Mwekera National Forest are presented and interpreted. The concluding chapter summarises the salient findings of this study and gives recommendations. It also throws a challenge to other researchers to follow up on identified gaps of knowledge.

CHAPTER TWO

2.0 DESCRIPTION OF THE STUDY AREA

2.1 Introduction

This chapter provides background information to the study area. It begins by giving a broad overview of Zambia's country profile with emphasis on those aspects that are relevant to the project theme. It then focuses on the Copperbelt, the province in which the study area falls, before presenting Mwekera National Forest, the study area itself.

2.2 Country Profile

2.2.1 Geographical Location and Climate

Zambia is located in Sub-Saharan Africa between latitudes 8 and 18 degrees south of the Equator and longitudes 22 and 34 degrees east of the Greenwich Meridian. With a mean altitude of 1200 meters above sea level, the country has a total area of 752,614 square kilometers. It is landlocked and surrounded by eight neighboring countries; namely Botswana, Namibia and Zimbabwe in the south, Mozambique to the south-east, Malawi in the east, Democratic Republic of Congo (former Zaire) and Tanzania in the north as well as Angola in the west (Fig. 2). The study area lies in the Copperbelt province indicated by its provincial headquarters, the city of Ndola.

Zambia enjoys a sub-tropical climate characterized by three distinct seasons; a cool dry season lasting from May to August, a hot dry season between September and November and a warm wet season between December and April. The average annual temperatures are between 18 and 20 degrees Celsius with the highest annual mean temperature of 32 degrees and the lowest temperature averaging 4 degrees Celsius. The annual rainfall decreases from an average of 1000 mm or more in the northern parts (including Copperbelt) to an average of 600 mm in the southern parts (ECZ 2001, 2). The climate of Zambia is affected mostly by the Inter-Tropical Convergence Zone (ITCZ) and altitude. The movement of the ITCZ north to south and back to north in each rain season causes moist Congo air to prevail over the northern parts more than the southern parts of the country, explaining the variation in amounts of rainfall received (GRZ 2002, 10).
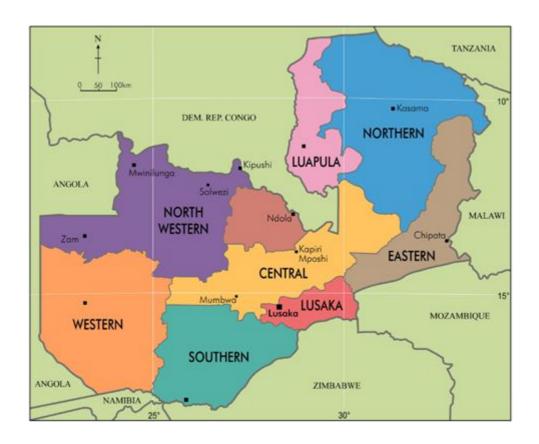
Fig. 2. Zambia's Geographical Location, Administrative Boundaries and
      Neighboring Countries

Source: Explorations Consultants Limited, 1995

2.2.2 Relief and Drainage

The elevation of land in the country ranges from 900 meters above sea level to 1500 meters with the average altitude being 1200 meters above sea level. The country is situated on the great Central African plateau. Zambia has two major river basins; the Zambezi and Congo basins and all river systems discharge their waters into these basins. The main river systems in the country include the Zambezi, Kafue, Luangwa, Luapula and Chambeshi. The Kafue River passes through the Copperbelt and forms the drainage system for the Mwekera stream after which the forest reserve under study is named. The country also has three major natural lakes and one man-made lake. These lakes include Bangweulu, Mweru and Tanganyika while the man-made lake is the Kariba near the Victoria Falls, which separates Zambia from Zimbabwe and forms one of the Seven Natural Wonders of the World, (Wonder Club 2004).
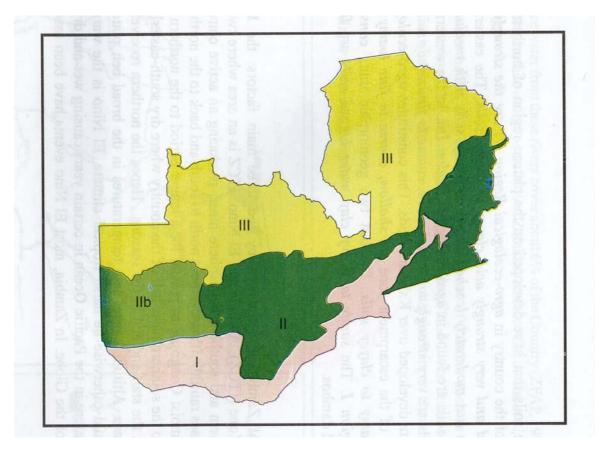
All these water bodies are important for different purposes such as irrigation, hydro electric power generation, fishing, tourism and as a basis for forest conservation where forests form headwaters or sources for them.

2.2.3 Agro-Ecological Zones

Zambia is divided into three ecological zones or regions I, II and III shown in Fig. 3 on the next page. Region I includes the southern parts of Western and Southern Provinces while region II covers the plateau zone of Central, Eastern, Lusaka and Southern Provinces. Region III is part of the Central African Plateau and covers Northern, Luapula, Copperbelt (including the study area) and Northwestern provinces. This region has an annual average rainfall of over 1200 mm and has the longest growing season of up to 190 days. This is the largest zone with an area of 40.6 million hectares; some of it is set aside for national parks, game management areas and forest reserves. Only 52.7 percent of the land in this region is suitable for cultivation as the soils are highly leached (ECZ 2001, 4; GRZ 2002, 8). The study area, which is on Copperbelt, lies in zone III.

2.2.4 Vegetation Types and Status

The country's vegetation is divided into four major categories (Storrs 1995; Fanshawe 1971). These are closed forests, open forests (woodlands), terminaria and grasslands. The closed forests are limited in extent covering only 6 percent of the country while open forests are the most dominant vegetation covering 66 percent of the land. The savannah woodlands in these open forests, including the miombo woodlands, account for the larger part of the vegetation in Zambia. The most important species in these woodlands include *Brachystegia*, *Julbernadia* and *Isorberlinia*. Terminaria or woodland vegetation covers about 3.23 percent and is present in all parts of the country. Grasslands cover 27 percent and range from pure grassland to grassland with scattered trees (GRZ 2002, 13). These different types of Zambia's vegetation are depicted in Table 1 overleaf:

Key to Map

Region	Annual Rainfall
I	*Less than 700 mm*
IIa	*800 mm to 1000 mm*
IIb	*800 mm to 1000 mm*
III	*1000 mm to 1500 mm*

Fig.3. Zambia's Agro-ecological Zones

Source: MTENR (2002, 9), ZNAP

Table 1: Vegetation Types of Zambia

Vegetation Type	Area 1000 hectares	Proportion -%
1. Closed Forests		
Parinari	420	*0.06*
Marquesia	430	*0.06*
Lake Basin	15,560	*2.07*
Cryptoseplum	15,210	*2.00*
Baikiaea	6,830	*0.91*
Itigi	1,900	*0.25*
Montane	40	*0.01*
Swamp	1,530	*0.20*
Riparian	810	*0.11*
2.Woodland(Open Forests)		
Miombo	311,460	*41.41*
Kalahari	85,460	*11.36*
Mopane	38,700	*5.15*
Munga	32,600	*4.34*
Termitaria	24,260	*3.23*
3. Grassland	206,350	*27.44*
4. Open Water	10,500	*1.40*
TOTAL	*752,060*	*100.00*

Source: GRZ 2002, 12

2.2.5 Forest Coverage and Status

The coverage of the country by forests is estimated between 55 percent and 60 percent (ECZ 2001, 58; Zimba 2003, 28). However, other sources put the forest coverage as high as 70 percent (World Conservation Union IUCN 1987, 41). The uncertainty in the exact forest coverage in the country arises from the lack of a recent comprehensive forest inventory as most of the estimates are based on the last comprehensive national forestry inventory conducted from 1952 to 1967. This inventory put the total forest area at 61.2 million hectares (ECZ 2001, 63). There has been no comprehensive national forest inventory since then (Chipungu and Kunda 1994).

Therefore, the current estimates are to be taken with caution as they are based on projections of observed trends. At the time of this study, the European Union had funded a Forest Resource Assessment (FRA) project intended to establish the actual status of forests in the country before the transition from the state-run Forest Department to a semi-autonomous body, the Forest Commission. The findings of this survey were not ready at the time of this study and tentatively the projected figures will be employed in this study. Some of the commercially important tree species found in Zambian forests includes *Baikioea phrifuga*, Zambezi teak (Mukusi) and *pterocorpus angloeusis* (Mukwa).

It is generally agreed that deforestation in Zambia is very high but the actual rate of deforestation is also not precisely known due to the lack of an up-to-date inventory as explained above. The rates given range from 250,000 or 300,000 hectares per year to 900,000 hectares per year (Chidumayo 1996; PFAP 1998). As the 2000 State of Environment in Zambia report puts it, "the variation in estimates shows the uncertainty of the real situation due to the non-availability of reliable data" (ECZ 2001, 62). However the rapid decline of forests in the country particularly close to large urban centers is not debatable as it is so serious that it is even officially ranked as the country's first environmental problem, followed by wildlife depletion, land degradation, air and water pollution as well as inadequate sanitation, (ECZ 2001, 11).

2.2.6 Socio-economic Situation

(a) Population

Zambia's population was estimated at 10.3 million persons (10,285,631) in the 2000 Census of population and housing. It is growing at an annual rate of 2.9 percent and the projection for 2004 was 10,462,436 million persons. The country's population grew at an average annual growth rate of 2.9 percent between 1990 and the year 2000 (CSO 2000). With the total surface area of the country at 725,614 square kilometers, the population density is 13.7 persons per square kilometers. The distribution of the population is such that there are more people living in urban areas, particularly in Lusaka and the Copperbelt, than in rural areas. Apart from the natural increase, the concentration of people in urban areas has been due to in-migration fueled by a search for job opportunities.

(b) Economic Profile

Zambia's economy has been heavily dependent on copper mining with copper exports accounting for as much as 95 percent of export earnings and 45 percent of government revenue. It was a major source of employment in the 1990s (CSO 1992; GRZ 2002, 73). However, the decline of copper prices on the international market (London Metal Exchange LME) coupled with low re-investment and a downward trend in production has affected the country's economy drastically.

The country's economic policy management in the post-independence era can be divided into four distinct periods (ECZ 2001, 9). From independence in 1964 to 1974, government rather than the private sector was the key player in economic matters through several State Owned Enterprises (SOEs), including the Mining Development Corporation (MINDEO) which managed the copper mines. This period was also characterized by high revenues arising from high copper prices on the international market.

The second phase was from 1975 to 1982 during which the country's revenue fell drastically due to several factors. These included the world fuel crisis of the early 1970s, decline in copper prices and the closure of the country's access to sea ports when the settler regime under Ian Smith in Southern Rhodesia (Zimbabwe) made a Unilateral Declaration of Independence UDI from Britain in 1971. Zambia, under President Dr. Kenneth Kaunda, as a member of the Frontline States, vehemently opposed the move. The civil war in Angola that broke out at independence in 1975 also cut off the Benguela railway route to the sea. Zambia, a landlocked country, had to airlift her imports and exports. Internal factors included government failure to adjust to new economic realities but instead imposing state controls through exchange and price controls, employing subsidies on essential goods and heavy borrowing to offset its negative balance of trade. This plunged the country deeper into debt.

The third phase is from 1983 to 1991 during which government policy fluctuated between bold economic reforms and re-imposition of state controls at the slightest sign of public discontent with the economic austerity measures.

The fourth and current phase started in 1991 with the advent of multi-party politics and a full return to implementation of radical economic reform programs spearheaded by the World Bank and the International Monetary Fund IMF. This has included broad economic liberalization, particularly the privatization of most State Owned Enterprises (SOEs) including mines. This reached a climax in 2000 when the mining conglomerate was unbundled and sold off. Over 13000 people lost their jobs on the Copperbelt (GRZ 2002, 73). These people had to search for alternative sources of livelihoods and they had limited options in an economy that was not experiencing significant growth.

The country has since embarked on diversifying its economy from reliance on copper mining, and emphasis is now placed on agriculture, tourism and manufacturing as engines of economic growth. However, the benefits from these programmes to date have been modest at best as the economy of the country has mostly shown negative growth rates, its external debt stands at over six billion United State Dollars (US $6 billion), unemployment rates are at their highest at 50 percent and poverty is increasing rapidly. The country is under the Highly Indebted Poor Countries Initiative (HIPC), a World Bank and International Monetary Fund (IMF) plan, whose completion point it is striving to achieve although the imposed conditions make it elusive.

(c) Poverty Situation

The ultimate consequence of these economic realities has left the majority of the Zambian people poor. By 1998, 73 percent of the population was classified as poor or their monthly incomes fell below the poverty datum line. According to Zambia's Central Statistical Office, this poverty datum line is the amount of monthly income required to purchase basic food to meet the minimum calorific requirement for a family of six (CSO 1998). The Poverty Reduction Strategy Paper (PRSP) of Zambia is critical of this datum line as it fails to capture the entire national poverty picture (GRZ 2002). The situation is worse than the statistics show as this 'food basket' is too modest and is based on very minimum calorific requirement that is mostly vegetarian and excludes meat, chicken and fish. Most importantly, the Zambian poverty measurement has not factored in such basic needs as shelter, education, health care and clothing.

This definition of poverty also ignores human freedoms which are important aspects of human development and the antithesis of poverty (GRZ 2002, 23). As a result of these deficiencies in the official definition of poverty, the civil society in Zambia such as the Jesuit Centre for Theological reflection (JCTR) and the Catholic Commission for Justice, Development and Peace (CCJP), both religious advocacy organizations, put the poverty figure as high as 80 percent. The incidence of poverty is higher in Zambia's rural and peri-urban areas at 83 percent while it is 56 percent among urban dwellers.

It is also more serious among the most disadvantaged groups of society including subsistence farmers, unemployed, women children and the disabled (GRZ 2002, 16). There is a lot of concern about the high poverty levels in Zambia and its impact on the environment. In third world countries, where most of the people, particularly rural dwellers, depend entirely on natural resources, poverty exacerbates the pressure they exert on the environment and leads to its degradation including deforestation. The relationship between poverty and environmental degradation has been emphasized since the publication of the World Commission on Environment and Development (WCED) or Bruntland report in 1987 (WCED 1987). However, this relationship is complex and not a simple one-directional causal one. It can be characterized as being a vicious cycle or a downward spiral (GRZ 2002). This means that poverty may lead to environmental degradation, which in turn will push the poor even further down into poverty.

2.2.7 The Contribution of Forestry to the National Economy

The contribution of the forestry sector to the economy in Zambia is often understated due to a money-based national accounting system. Although official figures put the contribution of the sector to the Gross Domestic Product (GDP) between 0.9 percent and 3 percent (MENR 1997), the reality is totally different. This is because the bulk of transactions involving forestry resources go undetected by the official accounting system. For example, wood fuel from the country's forests and woodlands accounts for 71 percent of the country's energy consumption and 96 percent of household energy consumption (MENR 1997; Queiroz 1997).

This is because less than 20 percent of the country's population has access to the hydro-electric power grid, the predominant source of electricity (ECZ 2001, 126). Other important uses of forest resources in the country include wood for poles in construction, fencing, curios, mine shaft supports and even railway ties. Forest beekeeping is also a principal source of livelihood in parts of the country such as some districts in North Western province. At the national level it is estimated that national honey production is around 1500 tons per year (MENR 1997). Therefore the forest sector can potentially make a major contribution to national and rural household economies as well as to poverty reduction. For example in 1991 the charcoal industry alone accounted for 2.3 percent of GDP (GRZ 1995).

It is estimated that charcoal production provides full-time employment for about 41,000 people in rural and peri-urban areas; another 45,000 are employed in charcoal transportation, marketing, and distribution (Chidumayo 1996). However most of these activities are treated as illegal and therefore not recognized officially and do not appear in official statistics such as when estimating the contribution of the sector to the GDP. In vast areas within Zambia, non-agricultural and non-timber forest and woodland products are important sources of livelihood to rural households. For example, in North Western and portions of Western Province as well as parts of the Copperbelt, the bulk of household needs are met by forest products such as honey, other non-wood products as well as wood products including fuel wood.

2.2.8 Zambia's Land Tenure System

According to the Land Act No. 29 of the Laws of Zambia, all land is vested in the president of the Republic of Zambia who holds it in perpetuity on behalf of the Zambians. Zambia inherited a land tenure system based on two principles, customary and statutory land tenure, from the British colonial rulers (GRZ 1995, 2002, ECZ 2001). The customary land tenure system is the traditional one under which land is held in common by the community through their chiefs. While individual members of the community have rights to use the land and even transfer it to their relatives or friends, no monetary transactions, until recently could be conducted. Most of the land in the country falls under this category of land tenure.

However, section 8 of part II of the Land Act of 1995 now provides for the conversion of customary tenure into leasehold tenure by obtaining title to it. This literally converts customary land to leasehold land. The other land tenure system is the statutory or leasehold tenure under which an individual can own land by obtaining a lease title to it for a period not exceeding 99 years (GRZ 1995, Zimba 2003). Such land becomes private property and access to it is restricted by law. After the expiry of the 99 years, regarded as an average lifetime, the leasehold can be extended. This system is widely practiced along the railway line where the white settlers were concentrated on prime well serviced land, but it forms the smallest form of tenure in Zambia. It is the most favored system in terms of agriculture development and housing where land ownership can be used as collateral to obtain loans from banks. In terms of land use in Zambia, agriculture and the direct exploitation of the country's abundant natural resources are the most dominant. A significant amount of land, roughly 40 percent of the total land area, is allocated to protected areas including national parks, Game Management Areas and forest reserves as shown by table 2 below. Notably, most of the forest reserves are on traditional land (8 percent of the total 9 percent) as indicated in table 2 below, this is land that should be open for community use.

Table 2: Land Use Types in Zambia

Nature of Land Use	Percentage Coverage	Comments
Agriculture (22% Arable Land)	45	3% for commercial farming; 20% smallholder farming and 22% is unused land
Wildlife Development	30	National Parks take 8% and Game Management Areas 22%
Forestry Development	9	8% is protected forest areas which is on traditional land and 1% is forest reserves which are on state land
Urban Development	2	
Unspecified areas	12	

Source: Adapted from the 2000 State of Environment Report, ECZ 2001, 17

2.3 The Copperbelt Province

The Copperbelt province, with an area of 3,101,400 hectares, is the second smallest region in Zambia after Lusaka province which has 2,187, 571 hectares. However, it has the highest proportion of the population of 1,657,646 persons, followed by Lusaka province with 1,432,401 persons. Below (Fig.4) is the map showing the Copperbelt province with Mwekera study area astride the river network between the two cities of Ndola and Kitwe where the railway line crosses the bigger Kafue River towards Kitwe. Mwekera National forest lies to north of Kamfinsa stream, bordered by the Ndola-Mufulira road to the east.
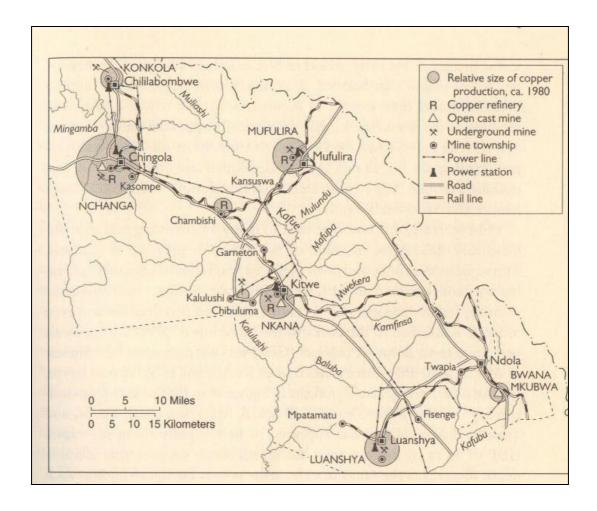
Fig. 4.   The Copperbelt Province showing Study Area between the
     Cities of Kitwe and Ndola.
Source: Ferguson 1999, 5

The Copperbelt province also has the second highest population density of 58.2 persons per square kilometers after Lusaka which has 69.7 persons per square kilometers. This high population density of the Copperbelt has environmental consequences as it is associated with increased pressure on the environment especially when people rely on the direct exploitation of natural resources for their livelihoods. The region is also one of the wettest provinces in the country after Luapula receiving rainfall around 1500 mm. As a result the province has abundant vegetation including forest woodland. It has the highest number of protected forests with Kitwe, the district in which Mwekera National forest lies, having six forest reserves.

Economically, the Copperbelt has been the backbone of Zambia's economy. Its mining history dating as far back as the 1890s when the British South African Company (BSA) from South Africa started its operations. However, most of the current mines in the province were opened in the 1930s by the British colonial settlers. The one in Kitwe was opened in 1941. These mines together with related industries which sprang up in the province contributed significantly to the country's GDP as well as employment. But the economic changes that affected the industry leading to its privatization in the mid 1990s, completed in 2000, have resulted in high unemployment (13,000 miners losing their jobs in the province) and high poverty levels in the province. Although mining now contributes only 6 percent to the Gross Domestic Product (GDP), it still remains the greatest generator of government revenue and source of foreign exchange (MENR 1994).

2.4 Mwekera National Forest No. 6

Mwekera National Forest was established in 1946 through a statutory instrument number 72 of 3rd May, 1946 with an original size of 27,500 acres. The purpose of the reserve was the conservation of the forest which formed a catchment area for Mwekera stream. This stream drains into the more important Kafue River. Later the location of the Zambia Forestry College within the National Forest made it an important part of the practical training of foresters in the country. The Mwekera stream also forms the catchment for the national aquaculture or fish farming centre which is also located within the Mwekera National Forest.

It is the only forest reserve that has legal human settlements within it in the form of the Forestry College students, staff and their families as well as staff for the national Aquaculture Centre of the Fisheries Department and their families. This unusual official location of human settlements in form of staff members and students within a protected forest reserve makes Mwekera an interesting case in the study of illegal settlements or encroachment on protected forest reserves. The sketch map below (FIG. 5) shows the location and extent of the Mwekera National Forest bordered in the north-east by Congo D. R (Democratic Republic of Congo) and Misaka in the south.
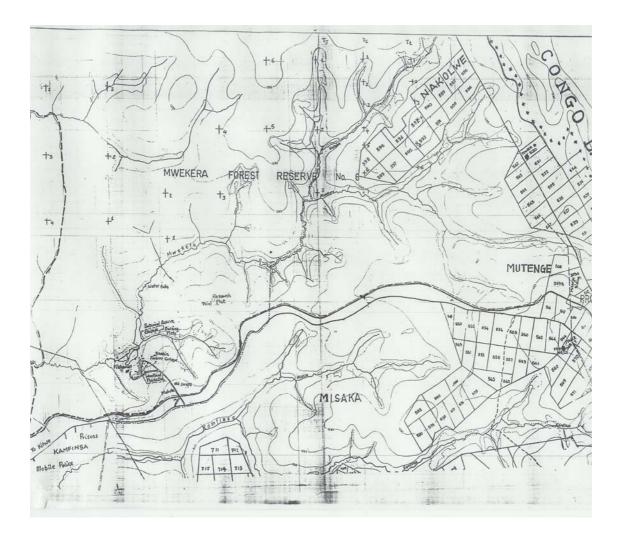
FIG.5   Sketch of Mwekera National Forest No. 6
Source: Adapted from Gondwe 1999.

During the years after its establishment, the size of the forest was progressively increased through adding more area to it. For example in 1951, it was increased by 3,100 acres to 30,600 acres through statutory instrument number 23 of 1951. The last registered official alteration was in 1957 when it was increased to 44,200 acres or 17,887 hectares through government notice number 268 of 1957 (GRZ 1965). This seems to be the size of the forest that remained until it started declining through human activities in the late 1980s and more especially after 1997. The current size of Mwekera Forest Reserve is not known precisely but there is consensus among foresters both within the reserve and the School of Natural Resources (formerly school of Forestry) at the local Copperbelt University that the reserve has lost so much of its tree cover that whatever remains constitutes less than then 10,000 hectares. This is based on their surveys with students in the forest reserve. The School of Natural Resources of the Copperbelt University were conducting a comprehensive inventory of the forest reserve at the time of this study. According to their preliminary findings, Mwekera National Forest is heavily deforested and encroached.

2.5 Summary

The chapter has provided the background to the study by stating the characteristics and conditions under which the study was conducted. It gives Zambia's profile on topics relevant to the study such as climate, vegetation, land tenure, socio-economic and other parameters. It then considered the Copperbelt province in general and Mwekera National Forestry in particular. In this chapter the establishment, purpose and changes that the Mwekera National Forest has undergone are discussed. Its current status in terms of forest coverage is also estimated. The chapter is intended to put the study in the broader national framework in order to put into context some of the aspects dealt with in the entire research.

CHAPTER THREE

3.0 THEORETICAL FRAMEWORK

3.1 Introduction and Definition of Concepts

This chapter places the study within the tradition of geographical enquiry by presenting theories that have been used in explaining deforestation and encroachment. It starts with definitions of the main concepts which form the conceptual framework of this research. The main theory that has been applied is the Nature-Culture theory which underlies the practice of conservation restrictive of human presence and activities. The knowledge systems theory which identifies the dominant knowledge system applied in scientific forest management is discussed and "alternative ways of knowing' presented. Participatory approaches within the broad field of Alternative Development are also employed in relation to Joint Forest Management (JFM). Finally the whole conservation practice is cast in the context of people's livelihoods to interrogate the interactions between people and their environment.

3.1.1 Conservation

The term conservation is often used in two related ways. One way is that it refers to the efficient and non-wasteful utilisation of resources while the other is that it means preservation or protection of species for their own sake without utilisation in view. The first perception of conservation is also termed as protection and wise use of natural resources (Georgia Forestry Association 2000). It is premised on the belief that conservation is intended to provide the greatest social and economic value for the present and future generations.

Preservation is more radical as it implies management and protection of resources but not utilisation (Johnston et al 2000, 106; The Ramsar Forum 1999). This is the view taken by deep ecologists. The official definition of conservation adopted by the Zambian government in its National Conservation Strategy (NCS) is that "conservation is taken to mean wise management of natural resources" (GRZ 1985, 63). There is even a broader view of conservation as referring to protection of the environment or landscape and not only individual resources.

3.1.2 Deforestation

Deforestation refers to the change of land cover with the depletion of tree crown cover to less than 10 percent (FAO 2001b, 364). It negatively affects the stand or site and in particular, lowers the production capacity of the forest. Deforestation is therefore the conversion of forest to non-forest land cover or land use. It also refers to the conversion of forest to either agriculture, pasture land, crop land, urban areas or other managed land uses (IPCC 2000; FAO 1999). It is the removal of trees from a habitat previously dominated by forest (FAO 2001b).

3.1.3 Encroachment

Encroachment broadly refers to entry into some area or property without permission from the property owner or authorities. It denotes an illegal activity as one where the person who encroaches is not deemed to have any legal right to do so. It can also mean to enter another person's property by gradual steps, or exceed accepted boundaries set by the authorities. In forestry, encroachment refers to the infringement or extension of other activities or land uses into the boundaries of protected forest areas (Dudik 1992). The most common forms of encroachment activities or land uses include settlements and agriculture. But this definition is complicated by claims of communities already settled in areas prior to their declaration as protected forest areas. The argument then is that it is the protected forest which has 'encroached' on people's settlements. This shows how complex the issue of encroachment can be, particularly in management regimes based on exclusion of people and their activities.

3.1.4 Livelihoods

A livelihood comprises the capabilities, assets (including material and social resources) and activities required for a means of living. Under the Sustainable Livelihoods Approach (SLA) five basic capital assets are identified; these are natural, social, human, physical and financial capital for a livelihood. These assets are interrelated and access to them is an important part of sustainability and resilience of people's lives (Ashley and Hussein 2000). It is important to emphasise that access to these livelihood assets is mediated by public processes and institutions and this sometimes affect individual livelihoods. A sustainable livelihood is one which is able to cope with, and recover from stresses and shocks and still maintain its capability.

Some combination of these assets is required by people to achieve a positive livelihood outcome, or improve their quality of life significantly on a sustainable basis. The natural capital asset of livelihoods refers to nature's goods and services. Therefore, livelihoods refer to the means of living or of supporting life and meeting individual and community needs. It is about achieving a quality of life that is embedded within the rich local cultures of the community and within the means of nature (SEI 2001). The SLA emphasises the importance of identifying and understanding the livelihood circumstances of marginalised and excluded groups in society. It also links environmental sustainability to social sustainability, recognising the important link between people and their environment and how a holistic approach is necessary in dealing with them (DFID 2004).

3.2 The Nature - Culture Theory and Conservation

3.2.1 Introduction

The relationship between society or humans and nature has been of great interest to geographers and other scholars for a long time. The very basis of conservation is the notion that there exists part of the earth or its resources 'out there', which is untouched by humans. This 'external nature' is regarded as pristine, untouched, god-given and desirable to preserve in that natural state untainted by human influence (Castree 2001, 6). According to this view, nature is distinct from what is human or cultural and therefore certain 'wilderness' areas must be set aside in order to protect them from human influence. This explains the practice of excluding or at least restricting humans from protected areas. The nature-culture theory is a broad one and can not fully be surveyed in this report.

Therefore, focus is placed on those components of the debate relevant to this inquiry such as the perception that nature is separate and distinct from humanity and the contested location of man in this natural scheme of things. This is because whatever side is taken on this issue influences conservation policy and practices implemented such as excluding people and their activities from areas to be conserved. This gives rise to such concepts as encroachment, squatting and illegal settlements.

Alternatively, people are left within 'nature' which is to be conserved as they are regarded as integral and legitimate components of nature and their activities are mere natural processes that have always been in tune with nature. This view implies that human activities should not be regarded as external impacts on nature but are within the natural realm of nature and therefore can not constitute impacts on it (Aitken 2004). Most local communities intuitively take this approach in the management of their resources such as forestry and do not set any areas aside.

3.2.2 Defining Nature

The Dictionary of Human Geography gives three meanings of nature. These include nature as the essence of something, nature as areas unaltered by human action and finally nature as the physical world in its entirety (Johnston et al 2000, 538). It is the last two definitions that are relevant to this discussion. The perception that nature refers to areas unaltered by humans implies that nature is non-human and therefore humans and their activities are not natural but cultural. Culture is the concept of 'otherness' to nature in this environmental discourse. The third definition is more inclusive as the entirety of the physical world includes humans as well.

In environmentalism in general and conservation in particular, it is the separation of humans from nature which is the predominant view and which forms the basis for nature reserves with restricted human access as conservationists strive to save 'the last vestiges of nature'. Admittedly, defining nature is not an easy task and Cronon (1996) acknowledges that nature is one of the most difficult words to define in the English language. Therefore, the definitions advanced here are by no means the only ones but are deemed sufficient for purposes of this study.

3.2.3 The Origins of the Concept of 'Natural' Nature

Michael Foucault (1970) has traced the separation of nature from humanity to the European enlightenment period, stressing that it is a historically specific view. Prior to that era and particularly during the Middle Ages, Europeans linked nature directly to God whom they believed made it for humanity's perfection.

FitzSimmons (1989) has attributed the separation of nature as an external realm in Euro-American thought to the rapid capitalist industrialisation and urbanisation during the early nineteenth century. She argues that as previously unoccupied landscapes were developed, a stark contrast emerged between nature and society, the rural and the urban and the countryside and the city. For Grove (1995), the invention of an 'unhumanised nature' coincided with what he calls 'the imperial outreach' of the European powers into tropical islands like Mauritius where, contrasted with increasingly desiccated landscapes back home, these islands appeared as tropical Edens to them. It is with this notion of nature that the modern environmental movement emerged in Western Europe and North America and the defense of nature became a growing preoccupation resulting in today's widespread environmentalism (Johnston et al 2000, 538).

3.2.4 Human interactions with Nature

Historically, there have been three views on the human-nature relationship emanating from this dichotomous view of nature and culture. The first is the view that humans and nature are considered to have been in balance, with neither affecting the other negatively. This is often termed as the Edenic era, a metaphorical reference to the Biblical version of the genesis of man and life in general in a park-like Garden of Eden. The second is the one characterised by nature dominating humans. Earlier geographers were particularly interested in how this 'nature' or environment determined the shape of human societies and cultures (Castree 2001, 6). This was the era of environmental determinism during which people like Friedriech Ratzel believed that nature or the environment determined what humans could do in particular localities (Holt-Jensen 1999, 42).

The third relationship is one with humans dominating nature under which they were regarded to be free to manipulate nature and overcome its constraints. This was a view espoused by such geographers as Alfred Hettner in Germany (Holt-Jensen 1999, 45). Most environmentalists nostalgically advocate for the return to the first relationship where humans are in harmony with nature. Others caution that nature might take its 'revenge' on humans and once again dominate them as it did in pre-industrial times (Johnston et al 2000, 538).

As a result of the third view, contemporary research has focused on human impacts on the environment or nature under the assumption that humans are outside of nature and therefore their activities constitute impacts on it. But this view has not gone without criticism. Other scholars have contended that the perception of nature as separate from culture and thus locating humans outside of it (*nature*) is problematic. For example, William Cronon (1996) points out that the natural world is far more dynamic, changeable and entangled with human history than popular beliefs about the balance of nature have acknowledged.

He argues that environmental historians have demonstrated that human beings have been manipulating ecosystems for as long as we have history of their existence. Emphasising that almost all parts of the world have been touched by humans, Cronon concludes that the perception of pristine non-human nature is profoundly a human construction. The idea of nature contains an extraordinary amount of human history to the extent that nature is not nearly as natural as it seems. Kenneth Olwig equally bemoans the dichotomization of society and nature into exclusive categories (Olwig 1980, 29). According to Olwig, our knowledge of nature is influenced by who we are, and therefore affected by our biases. As such, there is no singular, objective knowledge of nature but peculiar and socially constructed *knowledges*.

Olwig further contends that even our knowledge about environmental problems such as deforestation is never neutral but largely reflective of wider class interests of the most powerful in societies. Castree also notes that this is the view held by feminists like Nesmith and Radclife who criticise the patriarchal view of the "environment as something to be protected or intrinsically 'nurturing', thus feminising nature" (Nesmith and Radcliffe 1997, Castree 2001, 11). Fairhead and Leach (1997) attest to this view when they give an example from Guinea in West Africa where "forest islands" have been observed to follow the pattern of human settlements in an otherwise grassland savannah. Foresters and botanists considered these forests as nature itself "the last vestiges of upper Guinean forests of ancient times" (Fairhead and Leach 1997, 8).

To the local inhabitants of Kissia and Koranko however, where these forests are 'nurtured', these forest patches are considered cultured, encouraged to form through habitation and management. Locally, it is believed that a settled social life promotes forest establishment through activities that eliminate late fires and concentrate fertility and woody resources around human settlements. These forests are also a focus of cultural practice and meaning (Fairhead and Leach 1997, 8). As Aitken (2004, 78) puts it, "places we consider 'wild' are very often, if not always, places filled with history of human influence". The other criticism against the perception of nature as unhumanised is that it gives little guidance in practical conservation. It results in attention being focused on a few areas identified as 'wilderness', leaving other even more important areas unattended to.

Proctor (1996) criticises this 'wilderness ethic' in conservation saying that the vast majority of what is considered as nature is not included in the lines drawn (nature reserves) to protect certain sacred areas. Restating the fact that natural areas untouched by man do not exist, Proctor reasons that even if they did exist, the narrow focus on them would leave vast parts of nature unattended to. Indeed the total land surface globally dedicated to conservation under this 'barbed wire' approach is only about 12 percent implying that if these are the only natural areas, the rest of the earth is cultural or humanised (Biodiversity Organisation 2004, FAO 2001b). One radical criticism of nature as pristine and worth conserving is that it is a mere social construct meant to serve vested interests of certain groups (Spirn 1996). The contention is that the perception of nature does not exist outside the values, aspirations, interests and fears of society.

Therefore, the way nature is projected in the environmental discourse manifests particular local, national and even global dominant interests. For example, Proctor (1996, 287) argues that "environment or nature is a social construction, a product of cultural responses to specific historical circumstances which give rise to shared sets of imagined landscapes". If this idea that 'nature' is discursively constructed in environmental discourse is true, then the question of multiple natures arises.

This leads one to the inevitable question of whose nature is to be conserved, why it should be conserved and for whom. These are troubling but legitimate questions particularly in the context of the international approach to conservation and the effect on local communities who may be dismissed as illegal settlers or their ancestral settlements labeled as illegitimate encroachment on protected reserves. For example, while in mainstream environmentalism nature is treated as a pristine wilderness, among the Latino-Americans of the Pacific North West in northern California; the image of nature is that of a garden with man actively involved in 'cultivating' or managing it. Their perception is that humans are by no means intruders in nature nor are they fellow travelers.

They are managers, charged with the responsibility of using the resource wisely. This notion among the Latinos is far different from that of mainstream environmentalism and has resulted in different approaches and conflicts in how the ancient forests should be managed (Proctor 1996, 287). Forests have emerged as a contested moral terrain characterised by disputes arising from divergent ideas about what nature is and should be, what people's role is and should be. To talk of multiple natures in this way is not to deny the existence of the real world but to demonstrate that the way that nature is discursively represented in environmental discourse is not objective nor the only one possible. This representation of nature reflects certain deeply rooted interests and values of given classes in society.

This needs to be analysed as such representations have policy implications. Such policies may represent the unequal distribution of power as only the 'nature' of given sections of the human society is conserved at the expense or even to the detriment of other people's 'natures' which are marginalised. Whatever one perceives nature to be, Swyngedow's words ring true when he asserts that "it is impossible to physically disentangle the natural from the social" (Swyngedow 1999, 443). As Cronon (1996, 35) puts it, "ideas of nature never exist outside the cultural context, and the meanings we assign to nature can not help reflecting that context."

The definition of nature as non-social thus results in denying the social aspects of nature with adverse consequences for communities who live in or near landscapes perceived to be 'natural.' Human influence has been so comprehensive on earth that one can only talk of socio-nature or cultural nature and not virgin or pristine nature. As Proctor cited above concludes, the issue is not whether people should care about nature but how and why, whose nature should be protected and who should make those decisions? It is critically important to clarify the reasons for conservation or identify the principal beneficiaries for any conservation strategy in order to mobilise local support and ensure sustainability of the conservation project.

3.4.5 Emerging Conservation Approaches

There are a number of conservation approaches that are based on these divergent views on the relationship between man and nature. Aitken (2004) identifies three broad schools of thought on how man should intervene in nature. These are termed the 'purist' non-interventionist approach, the modified non-interventionist approach and the thinking interventionist approach. Under the non-interventionist approach, the only way to safe guard nature is considered to be 'hands-off' from nature. Advocates for this approach argue that nature knows best and it is too delicately balanced ecologically such that any human intervention inevitably results in some impact. Deep ecologists share this view as a basis for designation of wilderness areas in which human presence can only be tolerated as "benign and transient visitors" (Aitken 2004, 66).

But this view of safeguarding nature sounds paradoxical as even the idea of designating such areas constitute some form of intervention. Any wilderness areas only exist through a complex set of social mediations such as regulations and management procedures and therefore the issue of non-intervention does not arise. While the argument advanced is that humans should only be "benign and transient visitors" in such reserves, "the nature of nature is such that even the smallest occurrence can not fail to have an impact upon nature whether we are excluded from it or not" (Aitken 2004, 67). Besides, in countries where land is scarce this strategy is simply unattainable as it occupies valuable land, therefore this conservation approach seems to be unrealistic.

The modified non-intervention approach only accepts intervention as a means to 'undo' any damage caused to nature or as a corrective measure. This approach is also criticised for several reasons. The idea to 'undo' damage seems to imply that nature can be restored to its former state, but the dynamic and complex nature of nature makes this simply impossible. Besides, undoing all human actions that impact on nature would render humans dysfunctional not to mention the fact that the process of undoing itself constitutes an impact. The last approach given by Aitken is the thinking interventionist approach under which thoughtful intervention is regarded as appropriate. Nature is not perceived as an "ark to be preserved as if in ice, in a designated state" (Aitken 2004, 70). This approach emphasises appropriate human activities.

There is growing recognition in the conservation movement for conservation to be based on a systematic, dynamic and flexible landscape approach which integrates both production and protection (Margules and Pressey 2000, 243). This is the approach taken by the John Muir Trust, a prominent British conservation organisation which aims to safeguard wild areas through integrating humans and wild land. The organisation notes that "people have lived in these areas for thousands of years and left their mark everywhere, so the only way to safeguard these areas is by sustaining local communities while maintaining the special qualities of wild areas" (Aitken 2004, 67). Most importantly, the decisions on what to conserve, for whom and why that should be conserved should principally be the brainchild of local communities and not outside international environmental movements or national bureaucrats, conservation should be a local enterprise. This will ensure that the local people take full charge of their choices to conserve certain areas.

3.3 Knowledge-Systems Theory

The management of natural resources including forests is based on a set of values, ethics and norms which are part of a given system of knowledge. Broadly, there are two types of systems of knowledge; indigenous knowledge which is also erroneously referred to as 'traditional' or non-modern knowledge on one hand, and western 'scientific' or 'modern' knowledge on the other.

These different modes of knowing are based on different values and the power relations between them determine which meanings are adopted in resource management (Banuri and Appfel-Marglin 1993, 1). The 'scientific' or western system of knowledge is the predominant knowledge system in mainstream development as well as most public institutions worldwide, particularly in natural resource management such as forestry. These broad categories of knowledge systems have different characteristics which distinguish them from one another.

The relevance of knowledge systems theory to this study is that there are claims for superiority between these two systems of knowing. As Bavisker (2000, 115) puts it "across the ecodevelopment divide, claims to superior knowledge are key to legitimising claims to control over natural resources". The superior knowledge system in this case imposes its values in natural resource management. It is therefore necessary to take into account which knowledge system forms the basis for the conservation programme under study as this provides explanation for the way such programmes are implemented and whose worldview they reflect.

3.3.1 The Scientific Knowledge system

The scientific or 'modern' system of knowledge is disembedded, claims universalism and has an individualistic, objective as well as an instrumentalist view towards resources. As it is said to be scientific, this knowledge is divorced from other components of society such as the social, cultural or spiritual realm/s (Banuri and Appfel-Marglin 1993). As a result of the disembedded nature of the scientific knowledge system, natural resource management regimes based on it are characterised by a narrow focus on ecological and economic factors, ignoring the broader social issues. For example, the overriding principle in 'scientific forest conservation' and management is sustained yields with little regard to social implications on forest-dependent communities. This is because the scientific paradigm has a compartmentalised and ordered worldview where life is perceived as well packaged and therefore treated in its respective segments. As such scientific knowledge relies on an ordered conceptual framework and imagines the world as ordered and easily manageable (Ellen and Harris 2000, 14).

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It is also characterised by an elitist top-down approach with 'experts' dispensing their specialised knowledge to the receptive masses. Scientific or formal knowledge itself is situated in written texts, legal codes, and canonical knowledge (Brush and Stabinsky 1996, 4). This excludes the uninitiated or those who have not attained the art of deciphering such texts from accessing this knowledge. In some cases, the coding is deliberately intended to exclude even the literate masses to ensure that only 'experts' and 'specialists' produce such knowledge and continue to exert their control over the masses. The predominant mode of transfer of scientific knowledge is through formal and structured learning, mostly in institutions away from the subject of study.

This objectification of knowledge or the inherent dichotomies in science results in separation between object and subject, making this knowledge system fundamentally theoretical. It is in most cases divorced from the practical realities as the so-called experts are not usually the practitioners of what they are specialised in but have only read or done research in such fields as forestry or other natural resource management fields. The universal claim of western science like its base, the mainstream modernist development project, makes it decontextualised as the same solutions provided by research experts are deemed to be one-size fits all. Ellen and Harris state that for over fifty years the dominant model of development has been based on knowledge generated in laboratories, research stations and universities and then transferred to ignorant peasants.

As a result 'top-down' development experts and organisations engaged in resource extraction and management in the underdeveloped world deliberately avoided indigenous knowledge. The two authors attribute this sidelining of indigenous knowledge to the "inherent ethnocentrism and elitism of twentieth century global science" (Ellen and Harris 2000, 11). After several years of exclusive application of scientific knowledge in natural resource management in general and forest conservation in particular, there is growing interest in indigenous knowledge and its formulation of resource management regimes. Kalland (2000, 319) states that this shift reflects the increasing skepticism many people in the industrialised world now have over the power of the western paradigm and its economic development as a whole.

This view strikes a chord with Agrawal (1995) who attributes the interest in indigenous knowledge to the failure of grand theories to account for the lack of state-sponsored development in Third World countries. Scientific knowledge is a top-down model which has influenced natural resource management regimes imposed by national and increasingly international authorities but which have no basis in local environmental knowledge (Kalland 2000, 318). According to Friedman (1992), the increased interest in indigenous knowledge is also an intellectual reaction against what he terms the anti-culture and anti-nature character of modernism. Some indigenous peoples have also of late become vocal in airing their views at both national and international fora. As the search for alternatives to the crumbling scientific paradigm continues in the west, people are increasingly looking elsewhere for explanations and solutions to environmental problems. Kalland (2000, 319) reports that "environmentalists have turned to indigenous peoples pictured as savage ecologists living in harmony with nature."

3.3.2 Indigenous or Traditional Ecological Knowledge (TEK)

There is considerable confusion on what to call this alternative system of knowledge. Environmentalists lean towards calling it Traditional Ecological Knowledge (TEK), while others prefer calling it indigenous or simply traditional or local knowledge. All these terms are not without problems. For example concerning the term traditional knowledge Possey (1999, 4) argues that "what is traditional about traditional knowledge is not its antiquity, but the way it is acquired and used, the social process of learning and sharing knowledge."

Ellen and Harris (2000, 2) argue that the term 'indigenous' forces us into an oppositional logic of 'us' and 'them', and this hegemonic opposition to privileged scientific paradigm is objectionable as well as being practically useless. The same authors also wonder whether there are differences between indigenous knowledge, indigenous technical knowledge (ITK), folk knowledge, ethno-ecology, traditional knowledge (TK) or traditional ecological knowledge (TEK). But as Fairhead and Leach (2003, 235) put it, "these are forms of knowledge developed in experiential interaction with local landscapes, and embedded in their socio-cultural milieu and forms of local political authority."

However, whatever terminology one uses to define this 'people's or citizen's science' there is general consensus that non-modern knowledge is characterised by embeddedness, locality, community perspective and a lack of separation between subject and object as well as a non-instrumental approach to natural resource management (Banuri and Appfel-Marglin 1993, 1; Ellen and Harris 2000, 2; Seeland 1997, 102; Fairhead and Leach 2003, 2). As testimony to this embeddedness, Varese (1996, 122) quotes the Iquitos declaration on the first summit held between the Indian people and United States environmentalists in 1990, where the Indians stated that "*we indigenous peoples and our land are one and the same, to destroy one is to destroy another, we think of our land as continuity, without breaks or divisions.*"

It is increasingly becoming clear that indigenous people possess extensive empirical knowledge about their environment. They also offer interpretations of reality which are radically different from the conventional scientific paradigm. Therefore, there are important lessons that can be drawn from studying the workings of indigenous resource management regimes (Kalland 2000, 320). As the term implies, indigenous knowledge is local, rooted in a particular place and set of experiences. It is a consequence of practical engagement in everyday life, based on trial and error as well as deliberate experimentation. As Chalmers (1983, 91) puts it, indigenous knowledge is "tested in the rigorous laboratory of survival." From this perspective, indigenous knowledge tends to be mostly empirical rather than theoretical knowledge. It is transmitted through imitation, demonstration and repetition, which aids retention and reinforces as well as helps refine or adjust existing ideas (Ellen and Harris 2000).

While several authors have contended that indigenous or traditional knowledge is not inferior to scientific knowledge, arguing that the two simply differ in their ideological basis and values, others are concerned that it has been romanticised and presented as timeless and flawless. Ellen and Harris (2000, 2) state that the perception that indigenous knowledge and 'primitive' peoples are in some kind of idyllic harmony with nature is a fallacy.

The same authors also report that indigenous knowledge is increasingly being criticised for its lack of clearly organised themes, reflecting its epistemological weakness. Kalland (1997) also cautions against a simplified view that people with indigenous knowledge will act in harmony with their perceptions. He stresses the point that people's perceptions and norms are not always mirrored in their actual behaviour, however admirable their knowledge base may be. Citing the Mbuti pygmies in Zaire (Democratic Republic of Congo DRC), who regard the forest as their parent but burn it down indiscriminately when driving out game, Kalland concludes that "postulating a close fit between perceptions and behaviour has led to romanticism and idealisation when it comes to indigenous peoples and local people in general and their relations with nature" (Kalland 2000, 324).

It is indeed naive to assume that everybody within a culture acts according to a fixed set of norms and values even if those norms and values were ideal, and indigenous knowledge should not be idealised. Bavisker (2000, 115) agrees with this view when he criticises the way indigenous knowledge has been represented as faultless, timeless and unchanging. He states that while asserting the role of indigenous knowledge and challenging the scientific hegemony, people have been compelled to construct a new myth glorifying indigenous knowledge.

The other concern is that indigenous knowledge is represented and transformed as one homogenous ethnographic context. This tends to homogenise an otherwise diverse group into a 'uniform indigenous' or 'forest' people, (Brosious 2000, 308). This construction of indigenous knowledge and peoples has been orchestrated in environmental discourse in a bid to make a people narratable by essentalising them as indigenous forest people. This has produced a more politicised discourse in which the different groups including local peoples themselves use the term 'indigenous knowledge' to pursue varied agendas (Bavisker 2000). As Brosious (2000, 311) concludes, the issue of who talks to whom and who constructs representations of whom is critical in the post-Rio international fora.

3.3.3 Forest Conservation: A Scientific or Indigenous practice?

In the management of forests, particularly protected forests, indigenous knowledge has been displaced by scientific knowledge whose sole objective is sustained yields. This has created conflicts between the two systems in most cases, as Banuri and Appfel-Marglin (1993:1) point out; "forestry has become an arena of conflict between modern and non-modern systems of knowledge, a conflict with important implications for current environmental debates" (Ramachandra 2000, 27). One major source of conflicts between the two knowledge systems is the different meanings and interpretations that they attach to environmental issues and problems. A classic example is the conflict in the Indian State of Himachal Pradesh. A World Bank sponsored ecodevelopment project resulted in the declaration of the Great Himalayan National Park. This resulted in great conflict between the Forest Department and the surrounding villagers who had traditional grazing rights in the area, even enshrined in an agreement with the British Colonial Administration decades before the declaration of the national park.

Even though people were displaced from the National Park, those outside the buffer zone continued to use resources within it because local livelihoods remained heavily dependent on them. The major problem was that ecodevelopment was based on the assumption that wildlife conservation is a priority that overrides people's right to resources within the protected area. This ignores the crucial aspect of redressing a fundamental inequity, denial of rights to local people (Baviskar, 2000, 105). Scientific forestry management tends to be centralised and with an instrumentalist or utilitarian view of the resources, and non-scientific knowledge is relegated to the background.

In essence, it entails the state taking over the running of local forest landscapes, sidelining the indigenous local communities. The 'managerism' attitude prevalent in scientific forestry is a complete opposite of the "passionate commitment to conservation expressed in the beliefs and actions of long standing local communities" (Banuri and Appfel-Marglin 1993, 4; Fairhead and Leach 2003). Instead of looking at nature and its resources as something to subdue and manage purely for utilitarian purposes, indigenous communities regard nature with sacredness allowing for a harmonious co-existence.

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It is important to realise that the two systems of knowledge are complimentary to each other and are better applied in combination to optimise benefits. The challenge, particularly in natural resource management such as forestry "is to find a way of synthesising and balancing the best of both systems of knowledge as neither of them tells the whole story" (Pretty 2002, 66).

3.4 The Participatory Approach

The concept and process of participation was introduced in the development discourse in the 1950s and formed one of the key elements in creating an alternative, bottom-up, human-centered alternative development later in the 1970s (Rahnema 1992, 121). Broadly, participatory approaches refer to "the organised efforts to increase control over resources and movements of those hitherto excluded from such control". In other words, it is a means of "enabling the grassroots populations to regenerate their life spaces" (Rahnema 1992, 120). Such community participation is critical in natural resource management such as forestry. Participation is therefore part of a broader movement towards increased involvement of local people at all stages of the decision-making process on issues that affect their lives and the entire development process.

This is opposed to what is termed "rural development tourism" characterised by a brief rural visit by urban based professionals who get a single snap shot view of people's problems based on their expert opinion (Barrow 1996, 19). Participatory approaches are a result of the realisation that the success of any project depended heavily on the effective participation of the local people. The process entails the forging of genuine partnerships between local communities and national institutions or Non-Governmental Organisations implementing projects in the locality. As a bottom-up approach, it entails the involvement of the people in decision-making on issues that affect their livelihoods. But the concept of participation is amenable to several definitions and applications. For project managers, 'participation' may be a means to cut costs, secure cheap labour or co-opt others. In natural resource management it is covered under the general term of Community Based Natural Resource Management (CBNRM). This refers to the management of natural resources by local communities under a detailed plan developed and agreed to, by all concerned stakeholders.

The approach is termed as community-based in that the communities managing the resources have the legal rights, the local institutions, and the economic incentives to take substantial responsibility for sustained use of these resources. Under the natural resource management plan, communities become the primary implementers, assisted and monitored by technical experts (USAID 2004). The level and degree of this participation by communities has generated interest as in many cases it has become cosmetic and only used as a formality to satisfy donor requirements for funding by legitimising decisions already made (Mosse 2001). In such cases community participation is not meaningful and is, at worst harmful and counter-productive.

Fairhead and Leach (2003, 233) have cautioned that the "so-called 'participatory' processes have sometimes excluded the stigmatized or framed the terms of discussions to limit the expression of their perspectives." The two authors have shown through two ethnography case studies how 'public consultation' meetings in Trinidad and Guinea on biodiversity conservation have tended to include government ministries, research institutions, university staff, NGOs, CBOs, commercial organisations and members of the international community. Conspicuously missing at such fora have been direct forest users such as farmers, hunters and 'squatters'. In Guinea, national park planning meetings have reportedly included 'everyone' except "charcoal-makers and bush-meat dealers," (Fairhead and Leach 2003, 233). As the two authors conclude, apparent consensus at such fora and under those exclusionary circumstances can conceal much conflict and dissent (Hildyard, et al 2001).

Pretty (1997) outlines seven different categories of participation based on the degree of involvement of the people. These categories range from manipulative participation to self mobilisation with increasing degree of people's active involvement. While most communities would prefer interactive participation or self mobilisation, authorities are comfortable with the first four forms and usually it is the fifth, functional participation which is taken as a compromise. It is seen to achieve officially formulated objectives, particularly reducing costs while appearing to gain local legitimacy through the involvement of specific local groups. Such local groups however may not fully represent the 'people's views' neither and they are often treated as junior partners in the negotiating processes.

Table 3: **Typology of Participation**

Typology	*Characteristics of Typology*
1. Manipulative Participation	Participation is simply pretence
2. Passive Participation	People participate by being told what has been decided or has already happened, information being shared belongs only to professionals.
3. Participation by Consultation	People participate by being consulted or answering questions. The process does not concede any share in decision-making and professionals are under no obligation to take on board people's views.
4. Participation for Material Incentives	People participate in return for food, cash or other material incentives, local people have no stake in prolonging technologies or practices after the incentives end.
5. Functional Participation	Participation seen by external agencies as useful to achieve project goals, especially reduced costs. People participate by forming groups to meet predetermined objectives related to the project.
6. Interactive Participation	Participation is by joint analysis, development of action plans forming or strengthening of local groups and institutions, learning methodologies used to seek multiple perspectives, groups determine how available resources are used.
7. Self Mobilisation	Participation by taking initiatives independent of external institutions to change systems. They develop contacts with external institutions for resources and technical advice they need but retain control over and how such resources are used.

Source: Pretty (1997)

Johnson (1995) identifies three possible options for the management of common property resources, particularly forests. These are Participatory Forestry Management (PFM), Community Forestry Management (CFM) and Joint Forest Management (JFM).

Participatory Forest Management (PFM) is where government takes the initiatives, manages the resource and the community participates in various forms, most commonly as hired labour. In Community Forest Management (CFM), communities take the lead in managing the resource while government is a passive supporter or simply an observer. Joint Forest Management is a process where the owner (state) as well as the user (community) manages the resource and share costs as well as the benefits.

3.4.1 Joint Forest Management (JFM)

Joint Forest Management is a relatively new concept for many countries. It has become popular in Asia and India in particular, where it was implemented as early as June 1990. By 1997, nearly 10,000 communities had formed Forest Protection Committees (FPCs) (Raju 1997, 2). The main objective of most Joint Forest Management (JFM) regimes is to meet the resource and livelihood needs of forest-dependent communities. JFM attempts to achieve this by developing partnerships between the Forest Department staff and the local communities through sharing not only responsibilities for forest protection and management but, most importantly, the benefits from the forest products. The experiences in countries that have implemented JFM for a long time like India are mixed.

For example, the State of West Bengal, which boasts of the oldest and one of the largest Joint Forest Programmes with 2,423 Forest Protection Committees (FPCs), several indicators suggest a positive impact. These indicators include increases in biodiversity and forest productivity. It has also resulted in stronger community institutions (Sarin 1998). But in Gujarat, another Indian State, complaints were reported about the way forest officials were making decisions and the manner in which benefits were being distributed. Most people had feelings that JFM was merely a smart move by the Forest Department to buy forest protection cheaply and there were no meaningful benefits to the local communities (Raju 1997, 8). In order for this partnership between the state and the communities to work out, a lot of changes are needed for both parties, particularly where the previous relationship was characterized by mistrust and enmity (Kothari 2001).

The management objectives need to change from bias towards revenue and timber to a wider variety of products particularly Non-Wood Forest Products (NWFPs). These management plans need to become open-ended, participatory, simple, flexible reflecting social, economic and technical considerations. Foresters and policy makers need to accept and change their ideas about who controls the sale and revenue from forest products. The communities on the other hand will also need to adjust to more formal management controls involving compromises between traditional practices of open access to resources. Making compromises for both parties is the key factor to the success of the Joint Forest Management partnership. In general the objectives of both partners in the JFM must be clearly understood and jointly agreed upon. Most importantly, JFM must be approached within the overall context of the communities' other aspirations (Campbell 1995, 63). Therefore, JFMs need to be tailored to the local context and not transplanted from other areas and reproduced in another.

3.4.2 Limitations of the Participatory Approach

One of the pitfalls of the participation approach is to treat the grass root communities as a homogenous entity ignoring the diversity within these communities. This results in the marginalization of the classes of societies who are really dependent on forest resources such as the poor and the women. This is because the most powerful and vocal who do not even depend on forest resources are more visible to 'official eyes' and the officials find them easier to deal with (Fairhead and Leach 2003). Thus superficial 'participation' may even result in usurping control of forest resources from the people who need it most (Sarin 1998). The different social classes such as the poor and the rich, men and women have heterogeneous interests in forests which may be incompatible if not conflicting. The process of participation can also be slow and time consuming, resulting in delays in implementing, and may therefore not be ideal for providing quick solutions to urgent problems as reaching consensus may not be easy.

For example, certain technical decisions may not be solved locally through a participatory approach as they require technical knowledge which may not be available among most participants.

It is also difficult to assess when participation is meaningful as all parties often have hidden interests and agendas which are rarely in conformity. This is mostly noticeable in sharing costs and benefits. Ramutsindela (2004) questions the issue of 'benefits' to communities, particularly those who are displaced from forest reserves. He wonders whether the different stakeholders in this 'new conservation approach' are in agreement on what constitutes 'benefits' from nature and observes that there is a prescriptive tendency by officials under the assumption that local communities would want to benefit from protected areas only in material terms, access to certain resources within the parks or reserves and job opportunities (Ramutsindela 2004, 108). He argues that these communities initially had unfettered access to these resources and they are not getting anything 'new' under these new benefit-sharing participatory approaches or arrangements. Therefore they question what these benefits are and who should define them for whom. His contention is that these communities are only getting what belongs to them, except now under 'negotiated terms and bureaucratic procedures,' and they should therefore be the ones in the driving seat when deciding who gets what, and not the state institutions as the situation currently is.

3.5 Summary

This chapter has presented the main concepts and theories which form the basis of the study. The concepts of conservation, deforestation, livelihoods and encroachment are defined and explained. The nature-culture theory is discussed with its relevance to the principles of conservation particularly on excluding humans from areas demarcated for protection. This is linked to the values and norms which inspire conservation practices as discussed under the knowledge-systems theory. Under this theory, scientific knowledge is contrasted with indigenous technical knowledge or 'people's science' and their respective relevance to conservation analysed. The participation of local people in development in general and forest management in particular is discussed under participatory approaches as bottom-up alternatives to the mainstream top-down bureaucratic conservation movement. In particular, Joint Forest Management (JFM) is discussed with special reference to the concept of 'benefits' to the local communities which is critiqued. The bottlenecks of participation are then outlined. These theories and concepts have helped explain encroachment on the Mwekera protected forest and to reveal the local people's views on conservation and their livelihoods.

CHAPTER FOUR

4.0 RESEARCH DESIGN AND METHODOLOGY

4.1 Introduction

This chapter presents the methodology and approaches that were employed in the collection and analysis of the data. It also highlights some of the constraints encountered in the field as well as limitations of the study as a whole.

4.2 Justification of the Methodology Adopted

Qualitative methodology was adopted in this study as it was found to be the most suitable in exploring the theoretical basis of the study. It was important for the study to have a clear link between its theoretical or philosophical framework and the empirical strategies or methods of data collection and analysis. The main theory in this study is the Knowledge Systems theory with its emphasis on the recognition and respect for 'other knowledges'. It is founded in the diverse field of post-modern philosophy. This is a reaction against dominant paradigms or 'knowledges' as well as "expert top-down planning, but instead emphasising participation and the bottom-up involvement of citizens and interest groups in the planning process" (Holt-Jensen 1999, 137). Therefore, in order to utilise this theory effectively in this study, the qualitative methodology was indispensable.

The nature of the study required that an in-depth understanding of the processes of encroachment on protected forests and their subsequent deforestation be acquired. This had to be done from the perspective of the communities who live and work in these forests. Therefore, qualitative methods that facilitate "understanding people's sense of place and the life-worlds of individuals and the taken for granted dimension of experience" (Limb and Dwyer 2001: 3) were employed. This involved using individual interviews, focused group discussions (FGDs) and observation to "explore the feelings, understandings and knowledges" of these individuals who are affected by, and themselves affect, their forest landscapes (Limb and Dwyer 2001:1).

Qualitative approaches were preferred in this study because of their focus and attention on people's lived experiences and the meanings they attach to their social surrounding as opposed to quantitative, positivistic approaches, which tend to reduce everything to numbers and statistical models. The complex interaction between people and their forest landscapes and other resources could not best be handled with such reductionism. It was hoped that a combination of different qualitative data collecting techniques such as individual interviews, focused group discussions (FGDs), observations and photographs which were taken in the field, would help bring out the lived experiences of the people.

This within-method triangulation also provided a deeper understanding of the underlying causes of encroachment and deforestation of protected forests on the Copperbelt and by extension Zambia as a whole (Mikkelsen 1995, 82). While aerial photographs would have been useful, coverage in the country is irregular and the most recent photos were too outdated to capture such dynamic phenomena as deforestation and new settlements. Besides, aerial photos would require a time series for comparison and this would not have been possible because of irregular coverage. The study adopted the ethnographic approach outlined below as the specific approach for data collection.

4.3 Ethnographic Approach

This approach seeks to understand the world as it is "seen through the eyes" of the participants (Kitchin and Tate 2000, 224). As stated from the outset, this study is an endeavour to explain encroachment of protected forests from the perspective of the alleged encroachers whom I prefer to call forest communities. Employing first hand participant field observation and in-depth individual interviews, the ethnographic approach is essential for conveying the inner life and texture of a particular social group. In this case the forest communities as it seeks to explain "human experience in its social and spatial setting" (Limb and Dwyer 2001, 4). It was hoped that employing this approach could help the researcher explain apparently 'exotic' and 'irrational' practices of forest communities when interpreted in a contextual and holistic manner. There is also growing interest in "indigenous knowledges" and "ethnoscience" (Fairhead and Leach 2003, 2).

Instead of looking down on the culture of forest communities as inferior and destructive to forests, this approach would help us see the "intrinsic logic in this sub-culture when we approach it as a whole way of life", (Johnston et al. 2000, 238).

4.3.1 Choice of Study Area

The choice of the Copperbelt Province for the study was purposive and was based on two reasons. First, Copperbelt Province is among the areas with the highest rates of deforestation as well as encroachment on protected forests in Zambia, (Chipungu and Kunda 1994, 27).

Secondly, the Copperbelt is also an area that has been undergoing a lot of socio-economic changes after the privatisation of copper mines with subsequent massive loss of jobs. Therefore people are involved in a search for alternative sources of livelihoods including forestry related activities. Initially, the study was intended to focus on two protected forests. The first was Mwekera National Forest which lies about 25 kilometres outside the city of Kitwe along the Ndola-Kitwe highway. Kitwe and Ndola are the second and third largest cities in Zambia respectively. This forest has been encroached upon and people have settled within it. This has resulted in high levels of deforestation. It is also the site of Zambia's only Forestry College which uses it for teaching purposes.

The people who have encroached on this forest are mostly from townships surrounding the city of Kitwe and are therefore market-oriented in the way they utilise the forest resources. They put emphasis on charcoal manufacturing and market gardening. This is to produce for the markets in the city where they once lived and worked until recently. The other study site envisaged was Ichimpe in the rural district of Kalulushi, which is equally encroached upon and has lost much of its forest area. Prior to fieldwork, this area was perceived to be mostly an agricultural area and most of the encroachment was expected to be related to farming activities. It is also in a rural setting and was expected to provide a rural dimension in the data collected. However, reality in the field proved that the characteristics of the two forest reserves were almost indistinguishable.

Therefore, given the engaging nature of the study within the available time frame, it became prudent to drop the Ichimpe site and concentrate on the Mwekera National Forest. Besides the nature of qualitative methodology is such that the researcher employing them does not hope to make generalised conclusions but only specific to that area at that time, therefore a comparative approach was not necessary.

4.3.2 The Selection of Respondents

The target groups for the research were selected purposively on the basis of the research questions formulated. The principal target group for this research was the local forest community in and around Mwekera National Forest who wrestle their living from these forest landscapes. These were expected to shed light on the intricate factors that inform their decision-making process in the use and possible misuse of forest resources. For these people residence in or around Mwekera National Forest was the major criterion regardless of their professed occupation whether it was farming, charcoal manufacturing or any other activities. In practical terms, all residents living about two hundred metres from the forest buffer zone were potential respondents together with those settled inside the forest reserve.

Although the official buffer zone is 25 meters from the reserve boundary, it was felt that those within two hundred meters of the forest reserve were close enough to have an impact or be impacted by the forest reserve. In principal, all people living within this perimeter of Mwekera forest reserve were potential respondents. The actual respondents in these settlements were picked randomly mainly based on availability and willingness to be interviewed. The traditional authorities such as chiefs and village headmen and 'chairmen' and other interest groups in the area, were also talked to. All the organisations, institutions and individuals who were expected to provide answers to the research questions were considered. These comprised representatives of public and private institutions whose activities are related to forestry, land and the environment as well as the actual users of forestry products.

4.4 Data Collection

The research involved collecting primary data mainly from the forest community in and around Mwekera Protected Forest. This centered on their settlement, livelihood activities, and participation in managing forest resources as well as their views on forest conservation. Their economic profile was also reviewed through questions about their employment status and other occupational or income generating activities (IGAs). This information from the communities was augmented and cross-checked with that obtained from key informants, mainly from government institutions in charge of forestry in the country.

These included the Ministry of Tourism, Environment and Natural Resources (MTENR), Department of Forestry Headquarters, District Forestry Office (DFO) in Kitwe, Zambia Forestry College (ZFC), Environmental Council of Zambia (ECZ), Ministry of Lands and other relevant institutions, Non-governmental Organisations (NGOs) and individuals too numerous to enumerate. The data collected from government officials was mainly that pertaining to the policy, institutional and legal framework of the forest sector, the status of protected forests, problems encountered and solutions employed. Government departments and other institutions also provided secondary data in form of documents ranging from policy papers to relevant project reports. All the primary data and most of the secondary data were collected during the field work conducted between June 7th and August 10th 2004.

4.5 Data Collecting Techniques

The actual techniques used in collecting primary data in the field included interviewing and observation. These were important tools in capturing people's views, opinions, feelings and lived experiences so that one can "understand the world as seen through the eyes of the participants" (Kitchin and Tate 2000, 212). Two types of interviews were used; individual interview and focused group discussions (FGDs) both of them utilising unstructured interview guides as instruments.

The use of these multiple techniques or within-method triangulation was intended to improve validity of findings as it ensured that information obtained through the other technique or category of respondents could be cross-checked and probably verified.

4.5.1 Interviews

All interview guides employed open-ended questions and topics allowing the respondents the flexibility to express their own views adequately.

(a) Individual Interviews

This was mostly applied to forest community respondents and in total ten of them were interviewed. This number of respondents among principal respondents was adequate as qualitative research does not aim at coverage but depth and so the interviews were intensive. Mostly the interviews were conducted at the homes of respondents but a number were also done at their work sites within the forest reserve. At most of these interview sessions both spouses were present and contributed to the discussions. The duration of these individual interview sessions for the forest communities lasted between one and half to two hours. In some cases more than one visit was done to the respondents for further discussions and clarifications almost converting these interviews into in-depth ones.

(b) Key Informant Interviews

These were also individual interviews but of government forestry officials or other people who spoke in their official capacity and provided specific 'expert' information. Key informants included an official at the Ministry of Tourism, Environment and Natural Resources in Lusaka, which is in charge of forestry; the Director of the Forest Department at Forestry Department Headquarters in Lusaka; and an official at the District Forestry Office (DFO) in Kitwe under which the study area falls. Other key informants were an official at the Zambia Forestry College situated within Mwekera Forest reserve, one at the Ministry of Lands and the Environmental council of Zambia (ECZ) among others. The sessions with these officials were mostly in their offices or around their official premises and lasted up to one and half hours. The information supplied by these officials was cross-checked with that obtained from the forest communities to establish collaboration, differences in perspectives and outright accuracy.

(c) Focused Group Discussions

Three focused group discussions were held based on interview guide topics. One was with the foresters and comprised both veteran retired foresters and those still serving. There were seven discussants, a lecturer in Forestry from the Copperbelt University (CBU), three lecturers from the Zambia Forestry College (ZFC), a retired Forest Guard, another retired Forest ranger and a serving Forest Instructor at Zambia Forestry College. The discussion was held at Zambia Forestry College premises and lasted two hours. The aim of this discussion was to get the views of the foresters on the status of Mwekera National Forest, the changes it has undergone over time, what they consider to be the root causes of the changes and their suggested solutions.

The other Focused Group Discussion was among the forest communities involving male discussants mostly those involved in charcoal manufacturing. Six people took part in this discussion and it lasted two hours as most respondents tried to turn it into a petition to the authorities concerning their grievances and views. This session was held at one of the alleged illegal settlements within the forest reserve. This was intended to find out their views on conservation in general and their participation in the process and its impact on their livelihoods. Their settlement in the forest reserve was discussed and they were also asked to highlight problems associated with conservation of Mwekera National Forest and suggest solutions to them.

The last discussion group was held among another forest community group in a settlement on the outskirts of the forest reserve. It involved six women but later three men dropped in and took part in the discussion. It also lasted for two hours. The men who joined the discussion nearly dominated the discussion but careful moderation ensured that the women's views were not missed. This discussion was held at a shelter used for community meetings and was informative in capturing other dimensions of the life of these forest communities. Some of the participants in that discussion group are shown in the Fig.6 below.

Fig. 6. Some Participants in a Focused Group Discussion
Source: Field survey, Chankalamo, on Outskirts of Mwekera National Forest

4.5.1 Participant Observation and Photographs

As "qualitative data consists of words, pictures and sounds" (Kitchin and Tate 2000, 211), observation as well as photographs of selected phenomena of relevance to the study were included in the data collected. These techniques were employed throughout the fieldwork exercise in order to get information beyond what was said. This was particularly useful as interviews were conducted at respondents' homes and work places, therefore observing and taking notes augmented what was said. It also helped bridge the discrepancy between what people said and what they actually did.

For example some respondents maintained that they were not involved in charcoal manufacturing despite stacks of bags of charcoal in their back yards. It was also useful in capturing indescribable phenomena such as poor living conditions, or how tedious charcoal manufacturing really is. Participant observation also allowed me to study behaviour in its natural setting allowing a greater depth of understanding of processes under play than merely through interviewing, like two families observed preparing logs for charcoal manufacturing in the area shown in Fig.7.

Fig. 7. Two couples interviewed at site and observed preparing logs for charcoal
Source: Field   Survey,   in   the   Mwekera   Area,   June   22,
2004

Respondents could not clearly bring out this even if they wanted to, but observing and noting them down was found useful. The uses of photographs were also helpful in capturing scenes and activities in the forest reserve which brought the reality of forest decline to the fore. Some of the observed phenomena that were captured on photographs helped put abstract but deep issues in perspective.

Fig. 8. Confiscated Bicycles from suspected charcoal manufacturers
Source: Field work, Kitwe District Forest Office, June 25, 2004

For example, the relationship between foresters and the communities was clearly and variously described by several respondents, but it was summed up graphically in confiscated bicycles from suspected charcoal manufacturers stored in a District Forest Office (Fig. 8). It revealed the strained relationship and level of suspicion between the two groups.

4.6 Research Assistants

One male research assistant was recruited during data collection whose role was limited to organising focused group discussions. He is a qualified forester working as an instructor at the Zambia Forestry College. He is also currently studying for his Bachelor's degree in Forestry at the Copperbelt University. He was selected for his skills in public mobilisation and his trusted reputation with the forest communities around. However, I was reluctant to involve him in the more intensive individual interviews for two reasons.

First, my major strategy during the entire fieldwork was to distance myself from professional foresters so that I was not identified as a government forestry official and therefore treated with suspicion and even animosity. Second, the nature of the intensive individual interviews I employed required engaging closely with respondents, usually going beyond the written script of the interview guide to solicit for people's deep rooted views and feelings. It was not appropriate to entrust asking probing questions to a research assistant. Most importantly, as I was privileged to share the same local language with my respondents, I did not feel the need for an intermediate person through whom I might lose some vital information. Therefore, apart from the assistant helping organise three focused group discussions, fieldwork was conducted single handedly.

4.7 Data Analysis and Presentation

The data was analysed mainly through an interpretative approach relying on patterns, categories and main themes as basic descriptive units. As the study was detailed and intended to bring out the deep rooted causes of encroachment and deforestation from the community's perspective, thick description is employed in a bid to bring out detailed experiences of the people.

4.8 Positionality and Reflexivity

The importance of being aware of the position of the researcher in relation to the researched, the research theme and power relations exerted is emphasised by several authors (Limb and Dwyer 2001, Mullings 1999, Mikkelssen 2001). This is because these factors affect the data collected and ultimately the conclusions that are drawn from them. According to Limb and Dwyer (2001, 104) this can be achieved by making visible "the social locatedness of the researcher and his fieldwork relations". Positionality also relates to whether the researcher is perceived as an insider or outsider by the researched and the degree to which he is allowed access to their confidentiality. As stated by Turner and Martin (1984, 271), cited by Mullings (1999, 399), *"social characteristics of an interviewer and a respondent such as age, race, and sex are significant during their brief encounter , different pairings have different meanings and evoke different cultural norms and stereotypes that influence the opinions and feelings expressed by respondents."*

It is therefore necessary to chart my social, academic and professional location in fieldwork and the study as a whole. Admittedly one's philosophical leanings as far as an issue like conservation is concerned are difficult to clarify objectively in a self-reflexive way. Hopefully, laying bare my social, academic and professional biases will help indirectly to bring this out. I have been trained at undergraduate level as a geographer with a leaning towards environmental studies. I worked as a lecturer at the Zambia Forestry College (located in studied Forest Reserve) from 2001 to early 2003 before being elevated to the position of Senior Environmental Management Officer in the Ministry of Tourism, Environment and Natural Resources. This ministry is also in charge of forestry although my job description is broader than just forestry.

Socially, I identified with respondents in the field not only by race and ethnicity but most importantly the local language which I employed in data collection. While this, coupled with my more than two years stay in this forest area gave me some claim to 'insider' status, I did not fully qualify as such as far as the everyday life of forest communities were concerned. Most of forest community respondents were academically below my qualification but had a vast wealth of indigenous technical knowledge I was after. Therefore, I downplayed whatever 'book knowledge' I had in order to be re-educated by them and relate with them at the same level. Within the constraints of these factors and my awareness of them in my study, it is hoped that the knowledge produced has reflected the views of the forest communities more than my own personal biases.

4.9 Validity and Reliability of Research findings

According to Mikkelsen (1995, 208) reliability is the degree to which research results are independent of accidental circumstances of the research. It also refers to the degree to which a measure is consistent over time, or the extent to which the same findings can be replicated under the same circumstances and procedure. Reliability alludes to the extent to which collected data reflects reality. Validity is the degree to which the finding is interpreted in a correct way; it is a degree to which a measure measures what it is intended to measure. To ensure that this study produced credible, valid and reliable results I adopted a within-method triangulation.

This triangulation involved the use of multiple data collection techniques such as individual interviews, focused group discussions, observations, photographs as well as adopting a multi-source approach in data collection. Apart from the data collected from officials in the Forestry Department and other official sources, members of forest communities themselves as well as their community leaders were interviewed to get a balanced position on the issues relating to encroachment and deforestation. This variety of techniques and data sources made it possible to cross-check information in order to enhance its credibility. However, despite the efforts taken to make this study as credible and reliable as humanly possible, no claim is made of it being totally flawless. Below are some of the limitations that I was conscious of but could not totally eliminate.

4.9 Limitations of the Study and Problems Encountered in the Field

The ethnographic approach I adopted in this study ordinarily requires more time in order to enable one explore the lives of the respondents in depth and the level of participation by the researcher needs to be deeper than I had achieved. The two months time frame I had for my research did not give me the luxury to fulfill these two requirements. Hopefully, my prior knowledge of the community and the several common things I shared with my respondents such as language, ethnicity, broader cultural values and my two years previous residence in this forest helped matters.

My main aim in this study was not to show the extent of deforestation or encroachment of Mwekera National forest, as this has been clearly documented (Mulenga 2000, Gondwe 1999), but to unearth the underlying causes of this. However, up to date multi-temporal photos would have been useful in demonstrating the change in the extent of the forest cover during the relevant time period; as stated earlier poor and irregular photo coverage in the country did not allow me to achieve this. Those inclined to look for large surveys would take issue with my number of respondents, particularly the forest community members, as being inadequate. However, as a qualitative researcher, my interest was depth and not extent and most of my interviews were in-depth as I met the same respondents on more than one session.

Therefore within the constraints of time and resources for this study, I feel justified that the people I talked to were adequate to help me answer the questions raised by the study. In retrospect, tape-recording my interview sessions would have been more efficient and faster as writing down notes made me slow down some of my most passionate and fast respondents and probably cost me some valuable details. On a personal level, it was emotionally taxing to leave my wife and kids for fieldwork after being away from them for almost a year as I had to do fieldwork on the Copperbelt away from Lusaka, my residential city.

CHAPTER FIVE

5.0 FORESTRY INSTITUTIONAL, POLICY AND LEGAL FRAMEWORK

5.1 Introduction

This chapter presents the institutional, policy and legal framework within which forest resources are managed in Zambia. It starts by tracing forest policy formulation in the country and the creation of the Forest Department as the state agent for forest management. The management approach, capacity as well as the impending transformation of this department into a more inclusive and autonomous Forest Commission are analysed. The chapter then outlines the policy and legal reforms undertaken in the forest sector in Zambia before giving a detailed analysis of the 1998 forest policy as well as its legal instrument, the Forest Act No. 7 of 1999. These factors are linked to problems in forest sector, including encroachment in protected forests such as Mwekera National Forest.

5.2 Origins of Forest Policy in Zambia

Before independence in 1964, during the colonial administration, the forest sector was run by a Forest Division in the Department of Agriculture. This division formulated the first Forest Policy for Zambia (then Northern Rhodesia) in 1949. That forestry policy broadly covered land protection, wood supplies, timber produce, conservation of forest resources, research and extension. Its aim included reserving parts of the country as gazetted forest reserves for both production and protection, ensuring a reliable supply of wood fuel for mining operations and safeguarding nationally important water catchment areas.

Mwekera National Forest was established under this policy in 1946. The policy also gave the colonial central government responsibility to shoulder much of the activities in terms of protection and management of forests (Zimba 2003).

5.2.1 The 1965 Forestry Policy and State Monopoly

After independence in 1964, the management of forest resources in Zambia was entrusted to the Forest Department, a government institution created through the 1965 Forest Policy and enacted through the Forest Act No. 39 of 1973, cap 311 of the Laws of Zambia. From its inception in 1965 to date, the Forest Department has been the only institution responsible for the management and regulating of forest resource use in the country.

Notably, the 1965 Forest Policy did not provide for the participation of local communities in the management of forest resources, neither did it recognize private sector involvement. This is not surprising as the department pursued scientific forest conservation and local people with their indigenous knowledge were considered irrelevant to the cause (Bavisker 2000). It was equally silent on gender issues as well as non-wood forest products (NWFPs) (GRZ 1998). This is in line with the characteristics of scientific forestry which narrowly pursues sustained forestry yields, particularly timber, and is preserved and transmitted in coded form only understood by a few people who are literate and specialized, as outlined under the knowledge systems theory discussed in chapter three of this thesis (Brush and Stabinsky, 1996).

The Forest Department enjoyed the monopoly in running the Forest sector until the review and replacement of the 1965 policy by a new policy in 1998. Under the 1965 policy, the local people felt alienated from the forest resources, which they perceived as government property. Therefore from independence in 1964 up to the formulation of the current forest policy in 1998, local forest communities had no officially recognized role in forest management nor did they share in its benefits.

This alienation of people from their resources created a relationship between the communities and forest officials which was characterised as 'cat and mouse' because of suspicion and mistrust. As a result people had no incentives to conserve forests as they did not reap any benefits and considered forests as government property resulting in widespread over-exploitation and deforestation (MTENR 2002; Kumbo and Sha 1996).

This is in agreement with several scholars who warn about the dangers of excluding people from the management of their local forest resources. Raju (1997) indicates that greater community involvement in forest resource management is inevitable if it has to be effective and sustainable. This is echoed by Campbell (1995, 59) who emphasizes the importance of developing partnerships between forest department staff and local communities, sharing responsibilities and benefits for forest protection and management. As brought out under the typology of participation in chapter three, this form of participation needs to be meaningful and not cosmetic otherwise people will not feel fully involved and will have loose motivation (Pretty 1997).

5.2.2 The Forestry Department: Management Approach and Capacity

The interviews with the key informants as well as documentary evidence revealed that the major management approach of the Forest Department has been a regulatory one or the Command and Control (CAC) approach. The major component under this approach has been licensing, which regulates resource use through a pricing mechanism by issuing licenses to people utilizing forest resources, thereby also raising revenue (GRZ 1998, 29). Both these approaches require sufficient staff for effective implementation and monitoring. In particular, licensing depends on effective monitoring to ensure that licensees comply with their license conditions and only harvest the number of trees or other forest resources that are stipulated under their licenses. This approach reportedly seems to have worked relatively well in Zambia in its early stages until the forest guards and rangers were retrenched, starting in 1997 according to Forest Department officials.

The abolition of the positions of forest guards as well as forest rangers through the Public Sector Reform Programme (PSRP) dealt a decisive blow to the effectiveness of the Forest Department. These were the field staff that were in direct contact with the people and therefore abolishing the positions broke the link between the department and the local communities. They were also the people who monitored licensees for compliance to their license conditions. Therefore, their removal rendered the department ineffective in as far as monitoring forest resource exploitation is concerned, particularly compliance to license conditions.

As a result, over-exploitation of forest resources became rampant and the illegal settlements in Mwekera forest reserve commenced after 1997, coinciding with the abolition of the two positions. As one respondent, a retired forest guard, put it, "there has been no one monitoring forests out there except on papers and maps in offices." Apart from the forest guards and rangers other lower ranking but experienced officers lost their jobs in the Forest Department through the restructuring process. According to a high ranking key informant at the Forest Department, the department now only operates at half capacity and this has serious consequences for effective forest management, particularly using the regulatory approach which the Forest Department has been pursuing for years.

The department is seriously understaffed with hardly any field staff, has no inspectorate in place and the remaining workers are demotivated and uncertain about their future. This is because the Forest Department is scheduled to be transformed into an autonomous more inclusive institution to be called the Forest Commission. This has been in the pipeline since 1998 when it was provided for in the current forestry policy and enshrined in the Forest Act No. 7 of 1999. As late as December 2004, the Minister responsible for the forestry sector Hon. Patrick Kalifungwa was quoted as saying that the Forest Department will be closed.

 He further explained that "the remaining objective for the ministry is the initiating of the recruitment of staff in readiness for the commission to take off in 2005" (Mwape 2004). While everyone agrees that an organization divorced from government and more inclusive of other stakeholders is necessary, the delay of its implementation and the uncertainty this has caused workers has affected their working morale, further worsening the deforestation and encroachment problems in protected forests. The practice of licensing as a forest utilization regulatory mechanism has also contributed to rampant deforestation and encroachment of the forest reserves. Apart from the ineffectiveness of the technique in the absence of close monitoring as explained earlier, the license fees for most forest products are too high for forest communities to afford.

As one key informant at the Kitwe District Forestry office explained, license fees set too high only discourage forest users from paying for the forest products, especially if they can still get them illegally. These prices were also set without consulting the forest users and the latest upward adjustments made in 2003 were described as too high by forest users and some district forestry officials. For example, a circular depicting the same price changes indicated that fuel wood stacked in a cubic meter was put at 200 fee units or 36,000 ZMK, equivalent to roughly $8 US dollars. The cost of a license for ten bags of charcoal was increased from 9000 ZMK ($2 USD) before 2003 to 162,000 ZMK ($35 USD) in the new circular (GRZ 2003, 520). This is in a country where most of the people survive on less than one United States dollar per day (GRZ 2002).

As a result, people resort to avoiding paying such exorbitant fees for licenses and exploit forest resources illegally. Sometimes they are arrested and their produce and implements such as bicycles, wheelbarrows, axes and in some cases vans confiscated as shown in Figure 8. In such cases, they are made to pay admission of guilty fines and are released together with their property. This practice has worsened the relationship between the forest communities and the forest government officials. For Mwekera National Forest, licensing for any forest produce was suspended in 1995 and has never been reviewed. This means that there is no legal channel for harvesting forest produce in the reserve and yet the monitoring mechanism is weak. The local people explained that they are left with no alternative but to engage in illegal harvesting of forest produce to sustain their lives.

The major feature of the 1965 forestry policy was its centralist approach as a result, "determination of areas for forest reservation was not borne out of consensus with other stakeholders, but merely imposed" (MENR 1998, 15). As Kufwakwandi (1992, 3) puts it, "the 1965 forest policy never fulfilled its economic and social objectives of forest management and was generally out of tune with the social and economic conditions in the country." Kufwakwandi concludes that it was the inappropriateness of the 1965 policy that had led to encroachment and illegal settlements in forest reserves. Brockett and Godtfried (2002) confirm this view in their study in Costa Rica, where they looked at the impact of state policies on forest cover.

They concluded that state policies have great influence in providing private incentives or disincentives for preserving forest cover. According to the two authors, the creation of parks and reserves as well as regulatory measures produced mixed results at best. Their conclusion points to the importance of policies in influencing private decisions. The shortcomings of the 1965 policy and the high deforestation rates blamed on it made it necessary to have it reviewed. This was also recommended by the Zambia Forestry Action Plan (ZFAP), an assessment carried out between 1995 and 1997 whose major objective was to develop a national strategic frame work for the Zambian forestry sector (MENR 1998).

5.2.3 From State Monopoly to broad Stakeholder participation?

The 1998 forestry policy which replaced the 1965 one discussed above was intended to broaden stakeholder participation in forest resource management, particularly involvement of the local communities and the private sector through Joint Forest Management (JFM). In order to put this into effect, the policy provided for the creation of an autonomous Forestry Commission in place of the state run Forest Department. It also emphasized the importance of non-wood forest products instead of focusing narrowly on timber and other wood products. While the 1998 forestry policy is an ambitious attempt at reorienting forest management in Zambia, its implementation has been problematic to say the least. To start with, its proposed institutional reform of replacing the Forest Department with an autonomous body called the Forest Commission has not taken place.

According to this policy, the commission is supposed to be "responsible for co-ordination, implementation and enforcement of rules and regulations pertaining to forestry development" (GRZ 1998, 34). This delay in establishing the Forest Commission has meant that the new policy can not be implemented in full. Even the few sections which are being implemented face a mismatch as it is like putting new wine in old bottles. The old structures of the Forest Department are not ideal for changes advocated by the new policy. The major reason given by key informants for the delay in institutional changes is that the Forest Act No. 39, cap 311 of the Laws of Zambia which created the Forest Department has not been repealed to dissolve the Forest Department.

However, it is important to note that the Forest Act No. 7 of 1999, which provides for all these changes, was passed by parliament and assented to by the president as early as 1999. The only thing delaying the process is the enactment by issuing a ministerial statutory instrument to put it in effect. This is a political decision and therefore the fundamental reason advanced is the lack of resources to effect these changes. One of the serious implications of this political inertia is that the new policy which is being implemented partially is being done within the framework of an old and centralist legal framework completely inconsistent with its provisions. As a result, the same old approach of 'policing' and a 'cat-mouse' relationship between forestry officials and communities still persists as shown below where a kiln for two couples is destroyed and logs taken away for use at a local state prison.

Fig. 9.   State Prison Vehicle loaded with logs from Destroyed Charcoal Kiln
Source: Fieldwork, Mwekera National Forest, June 2004

The vehicle above belonging to the Prison Services was used to carry the logs from a destroyed kiln which was made within Mwekera Forest Reserve. This researcher had observed the two couples make this kiln and interviewed them a few days earlier as depicted in chapter four of this report. But after all their strenuous work, their efforts went to worst as prison authorities destroyed their kiln and took the logs, more to meet their own energy requirements than to conserve the forest. The two couples had narrated the difficult circumstances that compelled them to engage in charcoal manufacturing during the interview. They conceded that it was hard work but they had no alternatives. The 'policing' approach as a strategy for forest resource management is still the one employed in practice despite the official rhetoric on broad stakeholder participation.

5.3 Forest Legislation

The Forest Act No. 39 of 1973, cap 311 of the laws of Zambia was the first comprehensive forest law which was and is still in effect. It was devised with a centralized regulatory management approach in mind. The aims of this Act included to "provide for the establishment and management of national forests and local forests, to make provision for the conservation and protection of forests and trees and to provide for the licensing and sale of forest produce" (GRZ 1973, 7) and like the 1965 policy, its supporting policy, it never provided for community participation and focused mainly on licensing and sale of forest produce. This Act is usually blamed for the widespread deforestation as it alienated communities from their forest resources and created enmity between the department and the local communities neighbouring forest reserves.

Its successor, the Forest Act No. 7 of 1999, cap 199 of the Laws of Zambia represents a departure from this centralised approach. Among other things, it aims at establishing the Forest Commission, providing for the participation of local communities and other stakeholders through Joint Forest Management (JFM) and implementation of relevant international conventions (GRZ 1999). But as stated earlier, this piece of legislation is not yet enacted through a statutory instrument and it is therefore not easy to assess its effectiveness. Official key informants, however, expressed concern that the new law does not state the role of the Forest Commission in open forests.

Emerton (1998) is equally skeptical of the new Act and policy. He states that although stakeholder participation is the current theme in the new policy and legislation, mechanisms and arrangements for facilitating this participation are not specified beyond establishment of Joint Forest Management Areas. The same author also points out that the new forest legislation is weak by confining itself largely to gazzetted forest areas. It does not mention degraded areas and forests outside protected forest reserves. This is again a reflection of the narrow focus on areas regarded as natural or wilderness as outlined under the nature-culture theory in chapter three. This 'fortress conservation ethic' ignores large areas outside those demarcated. In order to ensure community participation under the present restrictive Forest Act of 1973, a statutory instrument (SI) No. 52 of 1999 was issued which authorized the formation of Joint Forest Management Committees (JFMCs) (Zimba 2003, 103).

This is the only major aspect of the policy which is being implemented albeit on a pilot basis in three provinces of Copperbelt, Central Luapula and lately Southern. With this lack of full implementation, it is therefore difficult to fully evaluate the effectiveness of the new forest policy. What is notable is that, like its predecessor, it does not say anything about the role of the Forest Commission in the management of open forests. This reflects the narrow focus of scientific forestry on reserves under its 'wilderness ethic' because they are what are considered to be 'natural' while ignoring the rest of nature as discussed earlier under the nature-culture theory (Proctor 1996).

It is difficult to envisage any meaningful collaboration between local communities and forest staff under this climate of suspicion and mistrust without fundamental changes. The Forest Department officials interviewed revealed that the department has inadequate material, human and financial resources. The Forest Department Headquarters itself has no communication equipment such as phones while vehicles are insufficient. This has negatively affected the effective implementation of the new forestry policy. This insufficient financial resources is cited by government officials as the major hindrance in implementing the policy in full as the abolition of the Forest Department and creation of the Forest Commission requires enormous amounts of money.

With the department operating at half capacity due to insufficient staff, it is difficult to achieve fully the objectives of the 1998 forestry policy.

5.4 Conflicting Sectoral Policies

The forest community respondents expressed confusion about conflicting public statements they get from different public officials regarding their status in the Mwekera National Forest. While foresters insist that they were illegal squatters who needed to vacate the protected forest, local politicians such as the Member of Parliament, councilors and party chairmen assured them that no one would evict them. According to the respondents, local politicians even promised them that they would soon get title deeds to the land they are occupying. The other practice that confuses these settlers is that, when it is election time, their areas are not treated as illegal settlements as politicians campaign in such areas and make them several promises regarding their status.

The conflict between sectoral policies was also highlighted by the fact that these forest communities receive agricultural extension services and even government credit for agricultural in-puts in some cases. They also receive services from public health officials and therefore get understandably confused when foresters come and threaten them with evictions. The forest communities expect all government officials, as one respondent put it, 'to speak with one voice' meaning that they are supposed to have consensus on policy issues. They do not understand how a local member of parliament could have a different position from the one held by a minister responsible for forests when the two sit in the same parliament and belong to the same cabinet.

For the forest communities, agriculture, land allocation for settlements and forestry should be harmonized and possibly run by the same authority to ensure harmony in their implementation. This could be understood as a criticism of compartmentalised knowledge under the scientific paradigm as discussed under the knowledge systems theory. The local people on the other hand have a different world view based on their indigenous technical knowledge (Brosious 2000). They look at life as an integrated whole and do not divide it in segments as officials do, hence the misunderstanding and conflicts.

Therefore, they do not look at forestry as distinct from agriculture; neither do they regard their livelihood activities as opposed to conservation. The view that agriculture and forestry should be managed in an integrated manner is shared by several authors. For example, Barraclough and Ghimire (1995, 190) state that "maintenance of sustainable agricultural and forestry systems depends crucially on their being integral parts of one broader socio-economic structure."

5.5 Government Priority and Political Will

The key informants in the forestry sector alluded to political factors in the management of forest resources which had an effect on their effectiveness. Although most of them noted that the situation was improving, they indicated that the government did not rank forestry as a very high priority compared to such sectors as agriculture and tourism. According to these forestry officials, the fact that the forestry sector and tourism are administered by the same ministry has led to the latter overshadowing the former. This is because tourism is considered to be more rewarding than forestry and the allocation of financial and material resources reflects that perception. On the other hand, forestry officials cited outright political interference, particularly relating to people who have settled in Mwekera National forest who have the blessings of the local political leadership. One vice chairman confirmed that he and his other political colleagues are in charge of allocating land in the forest reserve to settlers and even maintain some register.

The role played by politicians in settlements within and around Mwekera Forest was confirmed by the settlers themselves. They explained that land was issued out by particular political party chairmen with the backing of the councilor and the Member of Parliament. According to these forest community respondents, the local political leaders have been instrumental in ensuring that they remain in the forest reserve. The political leaders have even promised the settlers that they will help them get titles to their land. The relationship between foresters and local politicians is quite strained with the former accusing the latter of making their work difficult. Local politicians also criticize foresters for harassing 'innocent citizens and electorate'.

Forest officials in the area explained that this is particularly the case during election years when foresters would not be allowed to evict anyone as this is interpreted as undermining government efforts. The above discussion has shown the role that state policies can play in contributing to deforestation and encroachment. It has also demonstrated contested struggles over protection and production in the Mwekera National Forest and the role being played by politicians. Nygren (2004) refers to such conflicts in a study in Nicaragua's Indo-Maiz reserve. In this study, special attention was paid to local inhabitants' struggles for every day survival and social justice on the fringes of the forest reserve. The study concludes that in such contested reserves with conflicting views between different stakeholders concerning access to resources, 'inclusionary conservation represents the politically most just form of conservation possible" (Nygren 2004, 1995).

The focus on demarcated forests only by the Forest Policy and law in Zambia at the expense of open forests highlights the influence of the 'wilderness ethic' that drives global conservation efforts as outlined in chapter three. The problems that the Forest Department has faced in the management of forest resources are highlighted. The delay in the transformation of the Forest Department into the Forest Commission has negative effects in reducing deforestation and encroachment in several ways. This delay has meant that forest resource management is still in the hands of the state and local people are largely excluded. This is likely to contribute to over-exploitation of forest resources as local communities do not feel responsible for them.

In a study in Nepal, Gautan et al (2004) linked widespread deforestation during the 1960s up to the 1980s to policies oriented towards national control of forests. The study contrasts this period with the recent period since the adoption of more participatory approaches. They concluded that there has been notable success under recent policies of participatory management. However, the same study reveals that there are contentious issues in this participatory approach to forest resources management, including the sharing of benefits. Therefore the institutional inertia for change in Zambia may contribute to deforestation and encroachment.

The role of local political leaders in illegal settlements has been prominent in the data and therefore political expedience can not be ignored in explaining encroachment and deforestation in Mwekera.

5.6 Summary

This chapter has demonstrated the institutional and policy constraints that face the forest sector in Zambia and Mwekera National Forest in particular. The Forest Department is seriously understaffed. The few available workers in the department are also demoralized by the uncertainty of their jobs due to the delayed transition to the autonomous Forest Commission. The Department also lacks adequate funding from the central treasury as the sector does not rank comparatively highly on official ranking. The Command and Control (CAC) management approach still pursued by the Forest Department principally through licensing has been inappropriate in the face of inadequate staff and lack of monitoring for compliance. The public image of the department remains poor, particularly in the eyes of local forest-dependant communities. There is a discrepancy between what is on paper in terms of the policy and legal framework and the practice on the ground. The Forestry Policy of 1998 is not being implemented in full as exemplified by the lack of establishment of the Forest Commission which was its major objective. This has made the shift from a centralised approach to a broader participatory one difficult.

Joint Forest Management (JFM) still remains merely a concept as full implementation awaits institutional changes and its restriction to local forests only does not go far enough to solve problems in national forests such as Mwekera National Forest. The Forest Act that backs the above policy is the Forest Act No. 7 of 1999, but this also awaits enactment through a statutory instrument to put it in force. Therefore, there is a serious mismatch between the new Forestry Policy of 1998 which is being implemented partially under an old centralised legal framework of the 1973 Forest Act which is still in force. These factors mean that meeting the objectives of both the forest policy of 1998 and the Act of 1999 has been very difficult and has affected management of forest resources such as the Mwekera National Forest.

CHAPTER SIX

6.0 PEOPLE'S VIEWS ON THE CONSERVATION OF MWEKERA NATIONAL FOREST: SUSTAINABLE LIVELIHOODS AND FOREST

6.1 Introduction

This chapter presents the views of the Mwekera Forest community on the conservation of Mwekera National Forest. It starts by surveying the historical and current socio-economic profiles of the settlers as well as land ownership status. The views of the community on the conservation of Mwekera National Forest are analysed with particular reference to their livelihoods. The chapter also looks at the relationship between the forest community and the Forest Department officials and assesses the degree to which the community participates in the management of the forest resources in and around the Mwekera National Forest. This information, coupled with what was highlighted in chapter five is married to unearth the underlying causes of encroachment and deforestation of Mwekera National Forest in the concluding chapter.

6.2 Origins and Socio-economic Status of Mwekera National Forest Settlers

The information gathered through interviews and discussions with the local people revealed that settlers in and around Mwekera National Forest have come from two principal sources. These are the mining townships in the nearest city of Kitwe with its surrounding townships or unplanned settlements and the nearby rural farming areas. Only a few mentioned having migrated from other provinces of the country to come and settle in the area. Therefore, it is reasonable to conclude that the settlers in and around Mwekera National Forest are people relocating from within the Copperbelt province and Kitwe District in particular, in search of alternative livelihoods in response to various socio-economic factors.

The majority of settlers in the forest came from mining townships within Kitwe and are mostly ex-miners who had lost their jobs. These were retrenched, laid off and eventually retired. Others were retired after their normal service.

Most of them lost their jobs starting from 1994 when the government sold the mines to foreign private operators like Mopane Copper Mines in Kitwe under the privatization process. Mopane is a private mining company that took over the former Nkana Division of the government mining conglomerate, the Zambia Consolidated Copper Mines (ZCCM) (ECZ 2001, 78). Others lost their jobs in other government institutions and private companies with links to the defunct or privatised mines. This category of settlers with prior occupational background consisted mostly of people in their middle and advanced ages around forty years and above. They are people who have been economically displaced and are in search of alternative livelihoods.

Some of these people lost their jobs abruptly with no time to plan where they were going to settle. A typical case was one narrated by a respondent who reported for work normally one day in 1997 and was handed a letter explaining that his services were no longer required by the mining company and that he could go and collect his retirement benefits the following Monday. For others, the abrupt loss of their employment was worsened by the prolonged waiting for their benefits while some had not even been paid anything at the time of this study five years after their retrenchment.   Those who received their retirement benefits considered these inadequate especially as part of the money was deducted to pay for the purchase of houses which they had occupied as sitting tenants.

This was under a government housing scheme intended to empower sitting tenants with houses. These people found themselves with houses in the urban setting, no formal employment and inadequate retirement packages. At first such people tried to live in their houses relying on their retirement package which continued dwindling. They found it necessary to augment it with some agricultural production and started cultivating fields around the forest reserve. Later they moved to the farming sites during the farming season until they found it necessary to relocate to such areas. Such people have houses in the mining townships which they have either put on rent or are occupied by their younger school-going children while they stay at their 'farm houses' in or around Mwekera National Forest. Mostly, they are only couples or with non-school going children. This was the general sequence of events leading to the settlement of such ex-miners and former employees of other companies in the forest, it occurred gradually.

The other category of settlers are those who are younger mainly in their late twenties and thirty years of age. These are people who have little or no education and have no skills and therefore, no formal work experience. With no prospects for formal employment, these have resigned themselves to earning a living the best they can within the forests including Mwekera National Forest. These second category of settlers also include some relatively older individuals who had irregular temporary jobs in industries and construction works in the past. But the down-turn in the economic life of the Copperbelt and the country as a whole has left them with no part-time jobs for their livelihoods. Most of these people have come from the several unplanned compounds or shanty towns around the city of Kitwe particularly Zamtan. Others relocated from other agricultural settlements such as Kamafwesa nearby where the loss of soil fertility forced them out of such areas.

One respondent from the non-ex-miners settlers explained that he worked in industries as a part time employee as well as road construction works in the past. He stated that he had even worked in clearing the boundaries of the Mwekera National Forest at one time in the 1990s. But this has not been possible of late and surviving became difficult forcing him to resort to agricultural activity in the national forest because he could not access land from elsewhere. Therefore the movement of these people into the forest reserve also seems to be related to economic situation although they did not lose any jobs. They had been a reservoir of casual labour that could be recruited on a temporary basis by industries and public works. But with the change brought about by the ripple effects from the sale of the mines, such job opportunities no longer exist and these people were displaced. The lack of any social security safety net for those unemployed made the situation even more serious leaving the people with few alternatives.

6.3 Livelihood Activities in Mwekera National Forest

According to the respondents talked to during the interviews and focused group discussions, they are mainly engaged in agricultural activities. This includes growing subsistence crops such as maize, cassava, sweet potatoes, sugar canes and assorted vegetables. The other important activity is market gardening.

This involves growing vegetables for sale at the markets in the city. This is the most prevalent commercial farming which is done close to sources of water, the Mwekera stream. The clients are marketeers from the city of Kitwe who come to buy the vegetables in bulk. Sometimes the farmers themselves, mostly women, take the vegetables to town and sell them in bulk.

FIG. 10.   Vegetable Garden Showing Sugar Canes,
Source: Mwekera fieldwork, June 2004

The vegetable garden shown in fig.10 is located right on the fringe of the forest reserve with the hut adjacent to it. It belongs to an old couple who also grow maize in the main field. Their hut was burnt down by student foresters in November 2003 and will be shown and discussed later in this chapter. The other income generating venture that was revealed during interviews and discussions was petty trading. Several make-shift shops, locally known as tuntemba, could be clearly observed along a few foot paths in the settlement. These 'shops' stock daily home requirements such as soap, matches and other minor things that would not warrant traveling to the city for. According to the respondents, vegetable gardening as well as the vending or petty trading referred to above is only supplementary to agricultural activities which are the mainstay of their livelihoods. Other activities included bee-keeping and the making of crafts for sale.

This was on a very small scale and only a few people seem to be engaged in them. One respondent was engaged in dispensing traditional medicine to patients as well as other forms of traditional medical and spiritual consultations. He stated that he relied very much on herbal medicine from the forest and had no problems with the authorities as his activities were not considered as a danger to sustainable forest management. But his house was clearly on forest reserve land and it was difficult to confirm whether his 'medical profession' brought in sufficient income for a living.

Around the house, there were a few mounds of potatoes indicating some form of agricultural activity. Clearly he augmented his income with other activities related to forest resources. It was difficult to access people who were forthright about their involvement in charcoal manufacturing as most of the settlers vowed that they were not involved in the activity. They mostly intimated that it was other people who were involved in it. But in some cases, the implements lying around the premises of the interviewee's homes gave them away. For example, one couple and their neighbour stated that they had never been involved in charcoal manufacturing but forgot that their backyard 'store-room' for the bags of charcoal as well as wheel barrows used in transportation were quite visible from where the interview was being conducted.

As stated earlier, agricultural activities were the most prominent ones reported by interviewees. Even those whose farms are located right in the Mwekera protected Forest admitted carrying out agricultural activities in the forest reserve. But they pointed out that they were only farming in open areas already cleared by charcoal burners. According to them, they did not see anything wrong in that as there were no tree to protect there anyway. That was the view expressed by the owner of the maize field shown in 11 below who was found in his field. He stated that the land had already been cleared and he was only putting it to good use. He further stated that he even received agricultural in-puts from agricultural authorities in the area on the basis of his farm.

FIG. 11.   *An open Maize Field within Mwekera National Forest*
Source: *July 2004*

But others were more frank and gave their justification for their involvement in charcoal burning activities. This was the case with a man depicted in the picture with a bicycle in Fig. 12 who was found transporting his bags of charcoal to town from the forest reserve. The middle aged man, who could only be photographed on condition that his face does not show, explained that he has never had a paid employment in his life. He lamented that the work of producing and transporting charcoal was too taxing physically and he would not engage in it if he had any alternatives. Emphasising that he needed to earn a living for his family, the visibly emotional respondent challenged the authorities to provide alternatives for people to earn a living. "We know that charcoal burning is bad, we do not need to read books to realize that, but one needs to feed oneself and the family, we do not even enjoy this suffering, but there are no alternatives," the man stated.

This awareness of adverse environmental effects of charcoal burning and the compelling influence of the need to survive was repeated by several respondents. They indicated that they could not have been involved in the practice of charcoal manufacturing if there were viable alternatives available to them. The search for livelihoods was therefore a recurrent theme.

FIG. 12. A Charcoal Burner Ferrying Charcoal from Mwekera Forest Reserve
Source: Fieldwork, 2004

Among the different activities that are carried out in Mwekera National Forest, charcoal production is clearly the most serious. This is because it involves the actual clearing of trees and usually targets prime trees for their massive wood. This can be seen from FIG. 13 which shows a cut-over area for charcoal production inside Mwekera Forest National Forest. As a covert activity, it is also carried out mostly deep inside the forest reserve giving a deceptive appearance of normality on the forest fringe. While agriculture ought to be the natural second most serious activity, it appears people involved in it in Mwekera rarely clear trees. It was made clear by forest community respondents and also confirmed by forest officials that those who are involved in farming use areas already cleared of trees by the charcoal burners.

This is why they insist that they are not destroying the forest but only putting what is destroyed to good use. "What can the Forest Department be protecting here where there are no trees?" was a regular rhetoric question posed by farmers during the interviews. Settlements are serious when they are located right within the forest reserve as they are made with building materials from the reserve and rely on forests for the day to day activities such as fuel wood. All these activities are illegal in a national forest like Mwekera.

FIG. 13. A cleared area for charcoal production within Mwekera National Forest
Source: Field work, June 2004

The economic situation in Zambia has been difficult since the country embarked on economic reforms collectively referred to as liberalization, including privatization of State Owned Enterprises (SOEs).

In particular the privatization of the mining conglomerate, the Zambia Consolidated Copper Mines (ZCCM) resulted in massive job losses (Craig 2001). For example, in 1994 alone, over 7,600 persons lost their jobs, mostly on the Copperbelt, where my study was conducted (CSO 2000). This resulted in high poverty levels standing around 72.9 percent by 1998 (GRZ 2002). Therefore the livelihood difficulties respondents referred to during interviews were not unfounded.

The relationship between declining economic performance and pressure on natural resources has been established by other researchers elsewhere. A study in Venezuela explored the effect of that country's worsening economic crisis, which started in 1983, on biodiversity use. The evidence in that study suggested that the contraction of the economy led to an increase in unemployment and the workforce shifted to natural resource exploitation as an alternative source of income and food. This study recommended that regulating this largely informal and diffuse population of direct resource users would require innovative and creative policies both in Venezuela and other developing countries undergoing similar processes (Rodriguez 2000).

These research findings as well as recommendations are relevant to the Zambian case under this study. The innovative and creative policies recommended by Rodriguez must include facilitating for alternative sources of livelihood, particularly in the Zambian context. The people discharged from formal employment after the structural adjustment and privatisation need to be absorbed into some meaningful livelihood activities if sustainable forest conservation is to be achieved. This has been the case in Uganda where eco-tourism is undertaken as one alternative for rural populations. Eco-tourism in the Ugandan case provides employment opportunities, generates revenue for both local and national economies, and enhances conservation awareness (Ruyoka et al. 2000). This has also been done in Kenya's Amboseli ecosystem where the eco-tourism has benefited local community in terms of income, improved infrastructure and employment opportunities. The result in Kenya has been that the community's capacity to facilitate resource-related conflicts has improved and an expanding livelihood base is reducing people-wildlife conflicts and local vulnerability to disaster (Ogutu 2002).

These studies emphasise the importance of providing alternative sources of livelihood to people in order to relieve pressure on natural resources like forests. They are in line with the views of the forest community respondents in the study area who acknowledged the environmental implications of their activities but lamented that they lacked alternatives (Allison and Badjeck 2004). In the absence of alternative livelihoods, these people have no choice but to rely on their natural capital as a source of their livelihoods as discussed under the Sustainable Livelihoods Approach (SLA) in chapter three of this thesis (Ashley and Hussein 2000).

6.4 The Local People's Views on Conservation

The respondents in the Mwekera National Forest generally expressed support for conservation in general and protection of the Mwekera Forest in particular. Their reasons for conservation were the need for future generations to have access to the same resources as well as the fertility that trees provide for their agricultural production or subsistence. But they emphasized the need to balance conservation with provision of livelihoods for the people. Respondents stated that, apart from protecting forests, the state should also ensure that the people have access to a means of living. One male respondent was critical of conservation in the face of difficulties for the people and equated it to preserving one's food while the children starved. According to him, the state should care more for the people before thinking of forests, "people are more important than trees," he pointed out.

Another respondent criticised the practice of setting protected forest areas close to urban areas or areas with high population densities. He explained that protected areas which are located out in the countryside were still in a good state because there was no pressure on them. But the market for charcoal and other forest products is readily available for forests located near urban areas and that is why they are degraded according to him. This point resonates with the views of the King Bhumibol Adulyadej of Thailand who argued that the problem of people encroachment is not their fault but that of the law enforcing authorities. The king's point rests on the "argument that before some forests were designated and delineated by authorities as reserved or restricted, there were people already at the time of the delineation, and with the delineation done, the people become violators of the law" (Lynch and Talbot 1995, iii).

The king further stated that it is the authorities who encroach upon individuals in such cases and not individuals transgressing the law of the land. Although most people settled in Mwekera National Forest may not claim to have settled there before its delineation, it is important to consider flexibility in conservation when circumstances change.

The other point that was highlighted during one group discussion was the need to involve communities in the management of the protected forests. The participants in one group discussion explained that the members of the communities understood the problems in their areas better than outsiders and even knew who was involved in charcoal production. Therefore, involving them would make forest protection more effective. The need for alternatives in terms of land for settlement and means of a living in the form of employment opportunities or provision of agricultural in-puts were some of the major conclusions that were made in group discussions with the communities. The local people also tended to talk of conservation, subsistence and their livelihoods as interrelated and compatible. This can be explained through their indigenous knowledge under which aspects of life are not perceived as compartmentalised but integrated and harmonious as outlined in chapter three. This has led to conflicts with the officials in the Forest Department who rely on a scientific ecological approach.

6.5 Land ownership in Mwekera

The respondents who are settled in the forest reserve acknowledged that they were staying in a national forest land and that they were aware of their illegal status. They also explained and outlined an existing systematic procedure of acquiring a piece of land for both settlement and cultivation in the area. Contrary to the general belief that people just go and settle in the forest spontaneously, it was revealed during interviews that some land allocation mechanism does exist. According to the settlers in the forest, a new arrival needs a letter of introduction to show where s/he has come from and confirm their Zambian citizenship, then the Ward Chairman in the area who also administers the settlement would allocate them a piece of land for their settlement and cultivation. This chairman then keeps the record of the piece of land and the name of the owner in a register and in this way land disputes are avoided.

This is because multiple allocation of the same piece of land is reduced. But when land disputes arise, and during field work a few were reported to have occurred, the same chairman would intervene and clarify the situation. It is important to point out that although these chairmen are politicians almost without exception belonging to the ruling political party; their land allocation role is not an officially recognized one.

This procedure was confirmed by forestry officials who explained that what the political party officials were doing was illegal under the Forest Act and constituted political interference. But the party chairmen and forest communities are either covertly or sometimes openly backed by high level local politicians at councilor and even parliamentary levels. These political figures assure the settlers that their stay would be legalized someday and they would get titles to the land they are using. In return, the settlers are expected to show political loyalty to these 'sympathetic' authorities. However, according to the communities, these promises have taken too long to be fulfilled and these political figures distance themselves from those arrested and are appearing in court. The respondents expressed confusion due to these mixed messages from officials. Since they regard all officials to be government representatives, they can not tell who is telling them the truth between the foresters and the local politicians. As a result, they feel cheated by officials especially when they face harassment.

Under this improvised and illegal 'land tenure' system, owners of land enjoy usufruct rights as they can only use their land and are not expected to sell it or transfer it to anyone else. But such land transfers were reported during this study. For example, one respondent stated that they had bought the land they were using from the previous occupier and had records changed by the chairman. Others also are occupying land that is said to have been bought by relatives, who are absentee landlords. This is the case of the old couple referred to earlier in this chapter whose sugar cane garden was discussed in this chapter and their house will be dealt with in detail later. They are keeping the 'farm' for their son who bought it but is still working in town.

These land tenure dynamics in the area indicate some form of land speculation prompted by the promises by local political leaders that titles will be issued to the settlers at some point. This land speculation usually occurs where land allocation mechanisms are inefficient as people want to establish their private property rights by demonstrating conversion of forest to crop land (Barraclough and Ghimire 1995). This is because people want to have some occupancy rights before authorities decide to award them the degraded forest. As Barraclough and Ghimire (1995) explain, that has significantly contributed to the encroachment and deforestation in many countries, including Mwekera Forest Reserve in Zambia. What also emerged during the interviews was that people did not have easy access to legal land for settlement. This was the case of a retiree shown in FIG 14 below, who explained that he had never dreamed of staying in the forest reserve during his working years. But when he abruptly lost his job and could not easily get access to a suitable serviced and legalized settlement for agriculture, he resorted to the forest reserve where land was dispensed quickly.

Fig. 14. A Retiree's Residence in Mwekera Forest Reserve
Source: Fieldwork, July 2004

This respondent, a vice chairperson and influential local political figure, and others stated that they did not necessarily like staying in the forest reserve and would gladly go to any alternative settlement. They also complained about the bureaucracy surrounding application for prime agricultural land and the difficulty of getting it. Although arable land is sufficient in Zambia, easy access to prime land along the railway line is not easy. The procedure of applying for it and acquiring it frustrates most low-income peasant farmers. As such they resort to settling illegally where they can find land. These constraints in accessing land for settlement have contributed to the pressure on the forest reserves.

6.5.1 Security of tenure and conservation

As a result of their illegal status in the forest reserve, the forest communities are under threats of eviction from their settlements by Forest Department authorities. Respondents explained that they live in constant fear of being evicted from the forest reserve and that affects their lives greatly. Some of them complained that they could not even put up more permanent structures for their houses because they can be pulled down by foresters any time. They also reported that the lack of security of tenure has affected their production capacity as they can not invest in their pieces of land because of the uncertainty of their stay. Sometimes, they even suffer physical harassment from the forest officials and police. This was the case in November 2003 when about nineteen (19) huts were burnt down in and around Mwekera National Forest, including one belonging to an old couple involved in sugar cane production referred to earlier.

According to the couple, they had no prior warning and only saw a group of student foresters calling themselves 'Task Force One' arrive at their house and order them to leave. They had no time to remove all their personal belongings from the hut and most of them were destroyed in the fire that was set by student foresters. This burning of huts was confirmed by foresters and at the time of the research some cases were in court with foresters facing possible arson charges over the incident. The couple referred to above had come back to their home at the time of the study, and repaired their hut but it still shows the scars of the incident as shown in Fig 15. As the state of the house shows, they have not repaired it in full as they are not sure whether it will not be destroyed again.

Part of their story is reproduced in the Box 6.1 below. These incidents have fueled tension between the Forest Department and the local communities. As a result, the effective management of forest resources has been compromised. This situation is similar to a study conducted in Mexico to explore factors influencing forest conditions in a reserve, with particular reference to the presence of community institutions, as well as political and economic contexts. The results of that study suggested that lack of coordination between state and community institutions, and tensions between residents and external authorities, compromise reserve protection (Tucker 2004). The serious tension and mistrust existing between the foresters and the forest communities in the Mwekera National Forest is therefore not good for effective forest conservation.

Fig. 15. A partially repaired hut that was previously burnt down by foresters
Source: Fieldwork July, 2004

Box 1

> *We found ourselves suddenly surrounded by young foresters who ordered us to vacate our house immediately or be beaten up. We had no time to remove all our items from the house before they set it on fire. Our chickens which had laid their eggs in the house were killed in the fire. Other personal effects such as identification papers were also destroyed. It was at the beginning of the rain season in 2003 and we had difficulties to survive the rains, we can not put up a better structure now because we are not sure of our stay, they should understand that we do not have alternative land where to settle.*

Source: Excerpt from Interview with Couple whose Hut was burnt down by Foresters

This mistrust and tension has reduced chances of cooperation between the local forest community and Forest Department officials. A study in Oregon, USA explored opportunities and challenges for cooperative fire management among public and private forest managers in the John Day Valley and identified five themes as variables that may affect cooperation between the two parties: these were land tenure, power, ideology, uncertainty and trust (Bergmann and Bliss 2004).

Apart from the variable of ideology, all the four variables seem to be relevant to the Mwekera study. The people are struggling with rights to land ownership or land tenure, they are powerless in the face of forest authorities and this makes them uncertain of their stay and creates mistrust of authorities. Cooperation with them under this situation is difficult (Kaimowitz 2004). Another study in India's Gir National Park attempted to examine and understand the people's perception towards conservation. It revealed that restrictions in using the forest resources have created unspoken conflicts between the forest and its dwellers. Although the study showed that conservation was well supported by the community, it also showed that the sense of insecurity due to resettlement and limitations in using the forest is a major hindrance towards proper protection of forests. This study concluded that the conflicts and the apathetic attitude of the Forest Department were also responsible for the antagonism of the people (Munkherjee and Borad 2004). These conflicts between the community and the forest authorities can be explained in terms of the different world views that the two parties operate under.

According to the officials and their scientific conservation ethic of wilderness as discussed under the Nature-Culture theory, the people are not supposed to be in the forest. As a result officials try to remove them forcibly on the basis of the forest law. According to section 61 of the Forest Act No. 39 of 1973 and also reproduced in section 74 of the new Forest Act No. 7 of 1999, forest officers and police officers may use 'reasonable force' in effecting their arrests if there is resistance (GRZ 1973, GRZ 1999). But the incidents reported by respondents during fieldwork including the burning of houses go beyond the legal definition of 'reasonable force' allowed by law. The local people on the other hand do not distinguish protection from subsistence and feel justified to make livelihoods from the natural capital in the absence of alternatives.

6.6 Community Participation in Forest Management in Mwekera

The forest community respondents in Mwekera reported that there was no meaningful collaboration between them and the Forest Department Officials. They attributed this lack of cooperation to the sour relationship between them and the Foresters as discussed above. According to one respondent, Foresters are only perceived as enemies and the only time they meet is when they are trying to evict them from their homes or confiscating forest products and implements from them. This poor relationship was also confirmed by several Foresters who stated that they do not visit the forest communities without being accompanied by armed police officers. The account of one Forest Extension Assistant is reproduced in Box 6.2.

Box 2

> *We arrived at a forest settlement one afternoon this year to confront illegal settlers; I was with four other forest officers and one armed police officer. We soon started confiscating charcoal, bicycles and wheelbarrows, and I started taking down details of items against names of suspects. Suddenly there was uproar as all settlers descended on us, first pleading for their implements and later becoming violent. A fight ensued, two of us sustained deep cuts on our heads, and the other officers ran for their lives including the armed police officer! The illegal settlers grabbed even things we had confiscated from elsewhere. We went to hospital for treatment, later a few arrests were made and two boys from the illegal settlement are serving sentences for assault.*

Source: Excerpt from the Story of an Anonymous Forest Assistant Assaulted
During a Confrontation with Forest Settlers in April 2004.

Such incidents have made it difficult for foresters even to explain their programmes to the local forest community. As a result, respondents from the forest community expressed ignorance of the current Forest Policy which provides for their participation in forest resource management. They accused foresters of focusing solely on trees and forgetting other aspects such as agriculture. According to the forest community respondents, agriculture and forestry are so related that you can not deal with one and ignore the other. In the interviews and group discussions, respondents repeated the fact that they support and respect forest conservation. But they argued that they have only occupied parts of the forest that are already cleared of trees by charcoal burners. "We are only working in areas that are already cleared of trees, what are foresters protecting where there are no trees anyway?" one respondent asked.

The criticism by local communities of the treatment of agriculture and forestry as separate and antagonistic entities by authorities is in line with the views of Banuri and Apffel-Marglin (1993). These two authors are critical of the modern interpretation of the relationship between humans and the natural environment. Under this main stream mode of knowing, nature is segmented into parts as discussed under both the knowledge system's and nature-culture theory in chapter three.

This reductionism has "resulted in excesses, violence, exclusion and repression" (Banuri and Apffel-Marglin 1993, 21). In line with the view of these two authors, alternative perspectives of knowing reject this as the only valid form of knowing, but instead "search for sustainable development in a redefinition of relationship of humans to nature as one of harmony or stewardship rather than of conquest or mastery" (Banuri and Apffel-Marglin 1993, 21; Parpart 2000). Similarly, in their study of forests and livelihoods in Brazil, six countries in Central America (Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama), Nepal and Tanzania, Barraclough and Ghimire (1995) emphasized the importance of sustainable livelihoods if forests were to be fully protected. For example, in Nicaragua the study stressed the need for "greater participation of people affected by deforestation and conservation schemes, improved access to land for weaker groups and greater security of tenure as well as a more favourable or coherent macro-policy and institutional environment" (Barraclough and Ghimire 1995, 29).

In the case of Rondonia in Brazil, the above study identified several factors as contributing to deforestation. These included the problem of landlessness and lack of security of tenure, the general pattern of land ownership, government policies and the uncertain land tenure rights. The study summarized the underlying causes of Brazil's widespread deforestation to four factors; "actual or anticipated market forces, government policies, the country's bimodal agrarian structure and the terms by which Brazil's economy is inserted into the world system" (Barraclough and Ghimire 1995, 59). Most of these factors and processes strike interesting parallels with the current study in Mwekera National Forest and Zambian forestry problems in general.

According to information obtained from the forest community respondents, any consultations that take place between them and forestry officials are still patterned on the top-down model. For example, in the case of Joint Forest Management (JFM), the local people are not sure how the sharing of benefits of 40 percent for them and 60 percent for the state was arrived at. They are simply told what the arrangement is like and in the same way policies are only explained to them without seeking their genuine in-put in the first place.

Under the typology of participation presented in chapter three, this level of participation can be characterised as functional participation. At this level of participation, people participate by forming groups (Joint Forest Management Committees (JFMCs) to meet predetermined objectives related to the project. This participation is seen by external agencies (Forest Department) as a means to achieve project goals especially that of reducing costs and they are under no obligation to take the views of the communities on board (Pretty 1997). Therefore, one can conclude that the degree to which the local community is participating in forest resource management in Mwekera National Forest is still based on a top-down model and is not sufficient to ensure its sustainable protection and at the same time ensure sustainable livelihoods for the communities.

6.7 Summary

This chapter has shown that the privatization of mines and its effects on other industries in the Copperbelt province led to the loss of jobs and people's source of livelihoods. This forced most people who were displaced from jobs to seek other sources of livelihoods including settling and working in Mwekera National Forest. It has also been demonstrated that the inefficiency and bureaucracy associated with the land delivery system in the country has contributed to people settling illegally in Mwekera National Forest. The role of the local political elite in allowing people to settle in Mwekera National forest has been highlighted. The poor relationship between forest department officials and the local community around Mwekera National forest has made collaboration between the two difficult and undermined local people's participation in forest resource management. This has contributed to the degradation of Mwekera National Forest. All these factors have combined to contribute to the encroachment and deforestation of Mwekera National Forest.

CHAPTER SEVEN

SUMMARY, CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

This chapter presents a summary of the findings of this study in relation to the theories that were used and the extent to which these findings answer the questions that were raised at the beginning of the study. The theories that have been advanced in this study are analyzed in the light of the empirical evidence produced from the field. Based on the findings, recommendations for the government and other policy makers have been made. The chapter concludes by throwing a challenge to other researchers for potential areas of further research identified during this study, but which were beyond its scope.

The primary aim of this study was to contribute to effective and participatory forest resource management which is in harmony with people's livelihoods. This was to be achieved through providing sound policy recommendations to the authorities on how to deal with the problem of encroachment and deforestation of Mwekera National Forest while ensuring the local people's participation and safeguarding their livelihoods. It was therefore aimed at achieving a delicate balance between conservation and sustainable livelihoods for the forest-dependent communities in Mwekera and other degraded forest reserves. In order to attain that goal, underlying causes of deforestation and encroachment in Mwekera National Forest needed to be revealed, the institutional and legal framework for the forestry sector also required assessment to ensure its effectiveness and most importantly, the local people's views on conservation as well as their participation in it needed to be established.

7.2 Summary of Findings

The major underlying factors for the encroachment and deforestation of Mwekera National Forest that were brought out in this study can be divided into organizational, policy and livelihood levels. The Forest Department is not only understaffed but its management approach of command and control also makes the organization quite ineffective in its current form and staffing.

The delayed transition from the state run Forest Department to the autonomous Forest Commission has resulted in reduced funding for the department. It has also left workers uncertain of their future, making them highly demotivated and potentially vulnerable to irregular practices. The linkage between the Forest Department and the local communities is also weak and makes collaboration between the two difficult. This poor relationship between the two stakeholders has been a major factor in the poor state of the forest reserves in the country. The neo-liberal economic policies that Zambia has pursued since the early 1990s have also played a significant role in the pressure exerted on the forest resources. This is particularly true for the Mwekera National Forest where the privatisation of the mines in the nearby city of Kitwe and other towns on the Copperbelt resulted in a massive loss of jobs and livelihoods forcing people to seek economic refuge in forest reserves.

These macro-economic factors have been influential in rendering people poor, forcing them into unsustainable environmental practices to earn their living. Therefore, attention needs to be focused on these macro-economic policies both at the national as well as international levels. There has been considerable confusion concerning the policy in the forest sector. The 1998 forestry policy is only being implemented partially and in tandem with an outdated commandist legal framework which is inconsistent with the participatory approach enunciated in this policy. The failure to enact the Forest Act No. 7 of 1999 which provides a coherent legal framework for the 1998 forestry policy has rendered both of them ineffective. This new Act is in place but the statutory instrument to put it into force has been delayed for too long.

This delay has perpetuated the old centralised management approach of the 1973 Forest Act, despite the bold policy changes contained in the two documents. This mismatch between the new policy objectives and the provisions of the old Forest Act, which remains in force, has rendered Joint Forest Management (JFM) and participation of the local communities and other stakeholders mere concepts, as they are not implemented in full and face legal and institutional dilemmas. The lack of a comprehensive environmental policy that harmonises different sectoral policies has also resulted in conflicts between such sectors as agriculture, energy and land; but this may improve with environmental policy being formulated at the time of this study.

These sectoral conflicts coupled with the relative low priority government places on the forestry sector have significantly contributed to the encroachment and deforestation of Mwekera National Forest. The influence of local political leaders in the allocation of land in Mwekera Forest Reserve was also a major factor established during the study. This has created confusion among the settlers on the official position on settlement in the protected forest as forestry officials insist that the practice is illegal while local politicians seem to hold a different view. It is also clear that the forest resource as well as land for settlement is being used as political capital in exerting influence among the forest settlers. The authority and influence of these local politicians makes the work of professional forest officials difficult, while they seem deceptive to the forest community to whom they make various promises on land.

The problem of landlessness and lack of security of tenure particularly among the urban poor and retirees was found to be another major underlying factor for the encroachment and degradation of Mwekera National Forest. Most of the poor people do not easily have access to suitable land for settlement and agricultural activities and therefore find it inevitable to settle on 'vacant' land in the forest reserve. This has been worsened by the inefficient, slow and bureaucratic land delivery system in the country, which makes it difficult for people to acquire land. As a result, people settle in forest reserves on a speculative basis, hoping to gain legitimacy to the piece of land after clearing or using it for agricultural purposes. The promises of title deeds to such land by local politicians have also promoted this situation. The retirees and people retrenched from the mines without adequate retirement packages could not find any other suitable land except the apparently cheap and vacant forest reserve in Mwekera.

Most importantly, the livelihoods of the forest community came out prominently in the study as the fundamental factor that needs to be taken into account to ensure successful conservation of the forest reserve. The local people understandably put their livelihoods ahead of conservation in their worldview and unless these are safeguarded, it will be difficult to ensure the forest reserve is effectively protected. The local people's view was that the efforts at conservation should be balanced with that of ensuring that they have sustainable livelihoods.

They do not perceive livelihood activities such as agriculture as opposed to conservation. They consider the two practices as integral parts of their life-spaces, which only need to be harmonized and managed properly. This right of the local people to sustainable livelihoods should not be ignored but needs to be acknowledged and promoted to ensure effective forest protection. It is also apparent that the local people are not participating fully in the management of forest resources in Mwekera National Forest. Their involvement in forest resource management can best be characterized as weak. This is because they do not have any major influence in decision-making as they are merely co-opted to help achieve objectives that are already formulated by the officials. This is characterized as functional, under the participation typology model in chapter three, and it is not effective.

While the local people support forest conservation, the value that they attach to it is mostly in relation to their subsistence and as a heritage to be bequeathed to posterity. They referred to the forests importance in terms of adding fertility to agricultural land and the several goods and services they derive from it. So for the local community, the motivation for conservation is to ensure the continuity of those goods and services from the forests and also secure the future of posterity. It has nothing to do with reference to any international importance or value. As far as the local people are concerned, local livelihoods are, and should be at the centre of any conservation efforts in the area. This is radically different from the official position on the issue.

7.3 From Empirical Evidence to Conservation Theory

The empirical evidence presented in this thesis indicates that the official management of forest reserves through conservation in Zambia is based on scientific knowledge and a dichotomous perception of nature and culture. This is clearly demonstrated by the practice of removing people from the protected forests as well as restricting or forbidding human activities in them. The other indication of a scientific approach to conservation in Zambia in general and Mwekera National Forest in particular is the sectoral perspective and apparent treatment of agriculture and other activities as being in conflict with forest conservation. This is typical of scientific knowledge which treats reality as segmented and well organized. The participation of the people in forest management through the Joint Forest Management is still being done in a subtle top-down approach.

The people do not have a meaningful involvement in decision making and they are merely *'scientised'* into conservation with little regard to their own 'local science' or indigenous technical knowledge. On the other hand, the local people look at reality as integrated and treat conservation and subsistence as only different sides of the same coin on the basis of their indigenous technical knowledge. As such, they do not understand why they have to vacate certain parts of their land in order to conserve them at the expense of their livelihoods. They are skeptical of the form of participation in forest management spearheaded by forestry officials as it merely co-opts them into achieving official objectives and their knowledge is rarely taken into account. This partnership in forest management will only be meaningful when both parties become willing to compromise and become open to accepting the other party's world-view instead of asking them to give up their knowledge for scientific values on the assumption that the latter holds universal values of conservation.

Finally, the diverse nature of the underlying causes of encroachment and deforestation which have been highlighted in this study demonstrates the integrated nature of reality. The activities and decisions made at macro-level and even in other sectors have had major impact on the encroachment and deforestation of Mwekera National Forest. This implies that indigenous technical knowledge which has a holistic perspective on nature could be closer to reality than the scientific paradigm. Therefore, any collaboration with local communities in forest conservation should be based on integrating both systems of knowledge to benefit from their respective strengths and without assuming that one is superior to the other.

7.4 Conclusion

There are several factors that have combined to result in the encroachment and deforestation of Mwekera National Forest. These include macro-economic policies such as economic liberalisation and privatisation of mines and other companies. The inconsistencies, lack of full implementation and conflicts of the forest sector policy with other policies such as those of agriculture, energy and land have also played a major role. The forestry policy of 1998 and the Forest Act of 1999 are not fully meeting their stated objectives mainly because they have not been implemented in full and also contain gaps.

The local people are not participating in a meaningful way in the management of forest resources in the province due to the poor relationship with the forest department officials and the fact that the outdated legal instrument which is still in force does not provide for that. The management of forest resources in the area and the country as a whole is largely still centralized and therefore lacks the genuine support and contribution of the local people.   This has contributed to the encroachment and deforestation of protected forest reserves like Mwekera National Forest.

7.5 Policy Recommendations

In line with the findings of this study as summarized in this chapter, the following policy measures should be considered to ensure effective protection of the Mwekera National Forest and other forest reserves and at the same time safeguard the local people's livelihoods.

- The Forest Act No. 7 of 1999 which forms the legal basis for the participation of the local communities in forest resource management should be brought into force by enacting it through a statutory instrument (SI), without further delay.
- The delayed transformation of the state-run Forest Department into an autonomous Forest Commission as provided for in the 1998 forestry policy and enshrined in the Forest Act No. 7 of 1999, should be expedited as this delay has already been detrimental to the effective management of forest resources in the country
- Joint Forest Management (JFM) between the local communities, the Forest Commission and other stakeholders, currently provided for only in local forests should be extended to national forests as well since most of them like Mwekera are also degraded and need the local people's participation.
- There should be more harmony and synergies created between such interrelated sectors as agriculture, forestry, energy and land distribution to avoid policy inconsistencies and contradictions that currently exist.

- The extension wing of the forestry sector, which should form a link between the communities and forestry officials, needs to be strengthened and encouraged to be responsive to the local people's views if conservation is to benefit from the people's science.

- The protected areas, particularly forest reserves, should be part and parcel of the land use plan of the province in which they are located, and their management should be flexible and dynamic enough to respond to changing circumstances.

- Most importantly, the rights of the forest-dependent communities to the lands they have traditionally occupied must be recognized and any plans must only be carried out with their consultation and agreement, if they are to succeed.

7.5 Suggestions for Further Study

While every effort was made to cover all the relevant aspects necessary to the theme of this study, the subject is too diverse to be covered exhaustively in a study of this scope. Therefore I throw a challenge to other scholars to consider investigating the following aspects of forest conservation which were identified during this study but could not be incorporated in its scope:

1. The relationship between encroachment, deforestation and population dynamics in the area needs further investigation.

2. The conflict between traditional land tenure systems such as open access or communal land ownership and current leasehold tenure, and the acceptance of these by the people, needs to be studied in the context of restricted access to protected landscapes, particularly forest reserves like Mwekera National Forest

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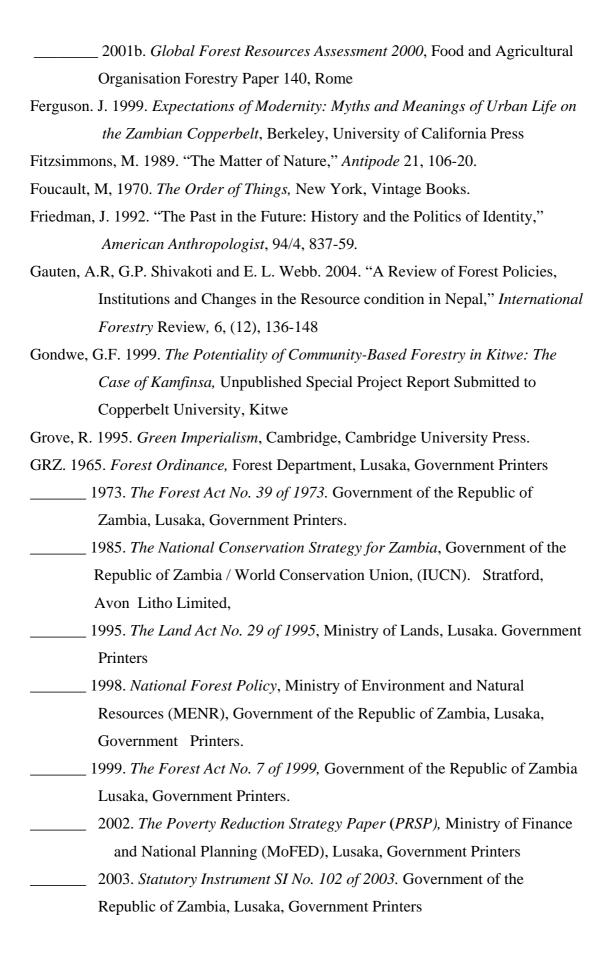
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9.0 APPENDICES

(A) INDIVIDUAL INTERVIEW QUESTIONS

(A) Forest Community (Residents or Users of Forest Resources)

(a) Personal Details:

(1) Sex male ( ) female ( )   (ii) Age: (a) 15 – 25 ( )   (b) 25 – 35 (   ) (c) 35 - 45 (d) 45 – 55 ( ) (e) 55+ ( )

(2) Size of household (i) Less than 5 ( ),   (ii) Between 5 and 10 ( ), (iii) 10 – 15 ( ) (iv)

(3) Occupation

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(1) When did you start living in this area?

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(2) Have you lived anywhere else before your stay here?

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(3) What attracted you to settle in this area?

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(4) Would you describe the activities you do for your living here?

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(5) Have you ever had a paying or salaried job?

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(6) Explain the status of landownership here.

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(7) Do you own the land you are using?

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(8) Would you describe your relationship with government Forestry Officials?

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(9) Do you take part in the management of forest resources in this area?

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(10) What are your comments on the way forest resources are managed in this area?

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(11) What makes forest resources important to you?

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(12) What are your views on conservation of this protected forest in relation to your livelihood?

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(13) What are your comments on the Forest policy and law in the country?

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(14) What would you like changed in the management or use of forest resources in this area?

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(B) INTERVIEW QUESTIONS FOR KEY INFORMANT

Forest Department Officials (Lusaka Forest Department Headquarters)

(1) What is the general state of protected forests in the country?

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(2) Does the current forest Policy (1998) meet the requirement for the effective management of forest resources?

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(3) To what extent is the implementation of the forest policy meeting its stated objectives?

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(4) Do the provisions of the forest policy adequately address the needs of the forest communities and local people?

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(5) Are there any gaps in the provisions of the forest policy?

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(6) Does the current Forest Act (No. 7 of 1999) meet the requirements for effective forest management?

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(7) Do the provisions of the forest Act (No7 of 1999) address local forest communities' needs?

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(8) Are there any gaps in the provisions of the Forest Act (No. 7 of 1999)?

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(9) What management approach is followed by the Forest Department in implementing the forest policy and the Forest Act?

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(10) Does the Forest Department have adequate field Officers (Forest Guards and Rangers) provided for under its establishment?

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(11) How is the relationship between the Forest Department officials and the local forest communities in managing forest resources?

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(12) To what extent do local communities participate in the management of forest resources in their areas?

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(13) What are some of the constraints faced by the Forest Department in the management of forest resources in the country?

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(14) Are there any measures that the Department is taking to solve some of the problems mentioned?

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(C) INTERVIEW QUESTIONS FOR KEY INFORMANTS

Forest Department Officials (Kitwe District Forest Office)

(1) What is the general state of protected forests in the district?

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(2) Does the current forest Policy (1998) meet the requirement for the effective management of forest resources?

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(3) To what extent is the implementation of the forest policy meeting its stated objectives?

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(4) Do the provisions of the forest policy adequately address the needs of the forest communities' and local people in this district?

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(5) Are there any gaps in the provisions of the forest policy?

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(6) Does the current Forest Act (No. 7 of 1999) meet the requirements for effective forest management?

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(7) Do the provisions of the forest Act (No7 of 1999) address the needs of the forest communities in the disctrict?

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(8) Are there any gaps in the provisions of the Forest Act (No. 7 of 1999)?

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(9) What management approach is followed by the District Office in implementing the forest policy and the Forest Act?

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(10) Does the District Office have adequate field Officers (Forest Guards and Rangers) provided for under its establishment?

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(11) How is the relationship between the Forest Department officials and the local forest communities in managing forest resources?

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(12) What are the problems, if any; you are facing in Mwekera and Ichimpe National forests?

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(13) What could be the major causes of those problems?

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(13) To what extent do local communities participate in the management of forest resources in these two areas?

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(14) What are some of the constraint faced by the District office in the management of forest resources in the District?

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(15) Are there any measures that your office is taking to solve some of the problems mentioned?

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(D) FOREST COMMUNITY GROUP DISCUSSION TOPICS

1. Settlement, origin and length of stay in forest reserve
2. Land Ownership and general land tenure system in the area
3. Livelihood activities and other survival strategies
4. Participation in Forest Resource Management
5. Relationship with government forestry officials
6. Importance attached to forest resources by local communities
7. Views about encroachment, deforestation and protection of forests
8. Major problems regarding forests and possible solutions
9. General comments and conclusions

(E) PROFESSIONAL FORESTERS GROUP DISCUSSION TOPICS

1. Status of protected forests and Mwekera National Forest
2. Deforestation and Encroachment in Mwekera National Forest
3. Land Tenure system
4. Effectiveness of Forest Policy of 1998 and Forest Act of 1999
5. The Forest Department: Structure, Operations and Effectiveness
6. Community participation in management of forest resources
7. Relationship between foresters and local forest communities