

**CONTRIBUTION OF COMMUNITY-BASED WILDLIFE MANAGEMENT
TO POVERTY REDUCTION: THE CASE OF MPIMBWE AND INYONGA
DIVISIONS, RUKWA REGION, TANZANIA**

BY

JOAN JOHN MACHIBYA

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN
MANAGEMENT OF NATURAL RESOURCES FOR SUSTAINABLE
AGRICULTURE OF SOKOINE UNIVERSITY OF AGRICULTURE.
MOROGORO, TANZANIA.**

2010

ABSTRACT

This study was conducted in Mpimbwe and Inyonga divisions in Rukwa region, Tanzania. It examined the contribution of community-based wildlife management (CBWM) to poverty reduction. Specifically the study intended to assess actors, benefit-sharing systems of CBWM, contribution of CBWM to local livelihoods and poverty reduction, the role of illegal use of Katavi National Park in poverty acceleration or deceleration and to identify strategies that would contribute to poverty reduction. Socio-economic data were collected through direct observation, questionnaire survey and interviews. The household survey involved 120 households. Assessment was done with reference to use of natural resources, accessibility and use of park products, livestock reared, crops grown and their contribution to livelihoods. Socio-economic data were analyzed using SPSS 12 program, content analytical tools and structural-functional analytical tools. Types of crops grown, amount consumed and cash obtained were analyzed using Microsoft excel 2007. Chi-square test at 5% level of significance was employed to test if there was significant change in utilization of resources by communities. The study revealed that CBWM actors had their roles that contributed to poverty reduction. Central government formulates rules and policies. Local government acts as a bridge between the central government, residents and non-governmental organizations. Mpimbwe WMA authority provided advice to residents on protection of wildlife resources while local communities acted as participants in environmental conservation programmes. Existence of CBWM activities around Mpimbwe WMA facilitated land use planning. CBWM practices contributed to decreased poaching

and illegal harvesting of forest resources. It was revealed that the implemented poverty reduction strategies were effective through increased agricultural outputs. It is recommended that communities should be facilitated to access capital for developing more income-generating activities. Moreover, there is a need to monitor regularly and evaluate the performance of CBWM activities by scaling up to other areas.

Keywords: actors, benefit-sharing, CBWM, contribution, livelihoods, poverty

DECLARATION

I, JOAN JOHN MACHIBYA, do hereby declare to the Senate of Sokoine University of Agriculture (SUA) that this dissertation is my original work and has not been submitted for any academic degree award to any other University.

Joan John Machibya

(MSc. Candidate)

Date

The above declaration is confirmed

Prof. A.N. Songorwa

(Supervisor)

Date

COPYRIGHT

No part of this dissertation may be reproduced, stored in any retrieval system, or transmitted in any form or any means (electronic, mechanical, photocopying, recording, or otherwise) without prior written permission of the author or Sokoine University of Agriculture on that behalf.

ACKNOWLEDGEMENT

I would first like to thank my beloved heavenly Father for giving me strength, guidance, endurance and capability during my entire Masters Degree programme.

I wish to express my sincere gratitude to my supervisor Professor A.N. Songorwa, whose valuable guidance, academic strength, broad knowledge as well as tireless effort in giving challenging advises have made the completion of this study possible.

I would also wish to acknowledge the University of Applied Sciences of Western Switzerland, Lullier and Association for the Development of Protected Area (ADAP) with the help of Y. Hausser, Prof A.N. Songorwa and Eng. J.P. Machibya for providing me with financial support throughout my Masters Degree programme.

Also, I am grateful to the entire staff of the Department of Wildlife Management and Faculty of Forestry and Nature Conservation and my postgraduate colleagues whose cordial hospitality made my academic potential fruitful and my stay in Morogoro pleasant. Special thanks should go to my hostel mates with whom I shared almost all my study challenges at SUA.

Grateful acknowledgement to Inyonga Beekeeping Association and its members for providing me with field transport during preliminary survey as well as actual data collection.

Also, I appreciate the contribution of Katavi national park's ecologist, Mr. K.K. Susuma, village executive officers (VEOs) from Usevya, Ikuba and Inyonga villages (Mr. A.M. Yongolo, C. Mwanisawa, and H. Mwita respectively) and the chairman of Kibaoni village (Mr. W. Mizengo) for their hospitality extended to me during data collection.

Furthermore, I would like to express deep gratitude to my beloved mum (Mrs. W.G. Machibya), my brothers, my friends (R. Rweyemamu, L. Mussa, S. Njau, J. Charles and I. Peter) for their prayers and assistance during my entire study.

TABLE OF CONTENTS

ABSTRACT.....	ii
DECLARATION.....	iv
COPYRIGHT.....	v
ACKNOWLEDGEMENT.....	vi
TABLE OF CONTENTS.....	viii
LIST OF TABLES.....	xii
LIST OF FIGURES.....	xiii
LIST OF APPENDICES.....	xiv
LIST OF ACRONYMS.....	xv
CHAPTER ONE.....	1
1.0 INTRODUCTION.....	1
1.1 Background Information.....	1
1.1.1 Community-Based Wildlife Management.....	1
1.1.2 Poverty	3
1.2 Problem Statement and Justification.....	4
1.3 Objectives of the Study.....	7
1.3.1 General Objective.....	7
1.3.2 Specific Objectives.....	7
1.4 Research Questions.....	7
1.5 Conceptual Framework.....	8
1.6 Organization of the dissertation.....	9
CHAPTER TWO.....	10
2.0 LITERATURE REVIEW.....	10

2.1 Overview of CBWM in Tanzania.....	10
2.2 Wildlife with Respect to Poverty Reduction.....	11
2.3 Actors and Benefit Sharing System of CBWM.....	11
2.3.1 Central Government Actors.....	11
2.3.2 Local Government.....	12
2.3.3 Local Community and Supporting Organizations.....	12
2.3.3.1 Local Community.....	12
2.3.3.2 Supporting Organizations and Other Stakeholders.....	13
2.3.4 Benefit Sharing System.....	14
2.3.5 Contribution of CBWM to Local Livelihoods and Poverty Reduction.....	14
2.5 Problems Facing Wildlife Resources Associated with Poverty.....	15
2.5.1 Poaching.....	15
2.5.2 Wood Harvesting.....	15
2.6 Poverty Reduction Strategies.....	15
CHAPTER THREE.....	18
3.0 MATERIALS AND METHODS.....	18
3.1 Study Area.....	18
3.1.1 Geographical Location.....	18
3.1.2 Climate.....	18
3.1.3 Soil and Physical Features.....	20
3.1.4 Vegetation.....	20
3.1.5 Socio-economic Activities.....	20
3.2 Data Collection Methods.....	21
3.2.1 Research Design.....	21
3.2.2 Sample size.....	21
3.3 Data Collection.....	22
3.3.1 Primary Data Collection.....	22
3.3.1.1 Questionnaire Survey.....	22
3.3.1.2 Direct Observations.....	23

3.3.1.3 Focus Group Discussions.....	23
3.3.1.4 Key Informant Interviews.....	23
3.3.2 Secondary Data Collection.....	24
3.4 Data Analysis.....	24
3.4.1 Qualitative Data Analysis.....	24
3.4.2 Quantitative Data analysis.....	25
CHAPTER FOUR.....	26
4.0 RESULTS AND DISCUSSION.....	26
4.1 Socio-economic Characteristics of Respondents.....	26
4.1.1 Gender.....	26
4.1.2 Age.....	26
4.1.3 Marital Status.....	26
4.1.4 Education.....	27
4.1.5 Socio-economic Activities.....	28
4.1.5.1 Crops Grown.....	29
4.1.5.2 Types of Livestock/Poultry Owned.....	31
4.2 Actors in CBWM.....	32
4.2.1 Actors' Roles.....	34
4.2.2 Contribution of the Actors' Roles to Livelihoods.....	36
4.2.3 Benefit Sharing	41
4.2.4 Resources which are benefiting the Communities.....	42
4.2.5 Utilization of Resources by Communities.....	43
4.3 Contribution of CBWM to Local Livelihoods and Poverty Reduction.....	44
4.3.1 Socio-economic Conditions Before and After Implementation of CBWM	44
4.3.2 Contribution to Community Income.....	46
4.3.2 Contribution of CBWM to Social Service Improvement.....	47
4.3.3 Contribution of CBWM to Agricultural Development.....	48
4.3.4 Contribution of CBWM to Livestock Development.....	49
4.3.6 Achievements of CBWM.....	51

4.4 Role of Park Use in Poverty Acceleration or Deceleration.....	53
4.4.1 Types of Products Collected.....	53
4.4.2 Access to Park Products.....	55
4.4.3 Contribution of Park Products to Poverty Reduction.....	56
4.4.5 Effects of Illegal Wood harvesting on Local Livelihoods.....	58
4.4.6 Effect of Poaching on Livelihoods.....	60
4.5 Strategies that Would Lead to Poverty Reduction.....	62
4.6 Effectiveness of Poverty Reduction Strategies.....	64
CHAPTER FIVE.....	67
5.0 CONCLUSION AND RECOMMENDATIONS.....	67
5.1 Conclusion.....	67
5.2 Recommendations.....	68
REFERENCES.....	70
APPENDICES.....	88

LIST OF TABLES

Table 1: Socio-economic activities.....	28
Table 2: Types of crops grown.....	30
Table 3: Roles played by different actors in CBWM as perceived by villagers..	35
Table 4: Roles of CBWM actors in residents' livelihoods.....	38
Table 5: Utilization of resources by households.....	44
Table 6: Socio-economic conditions before implementation of CBWM.....	45
Table 7: Socio-economic conditions after implementation of CBWM.....	46
Table 8: Types of products collected.....	53
Table 9: Suggestions to reduce poverty reduction.....	63

LIST OF FIGURES

Figure 1: Conceptual framework summarizing key issues in the contribution of CBWM to poverty reduction.....9

Figure 2: Map of Mpanda district showing location of Mpimbwe (Kibaoni) and Inyonga divisions. Source: Lands Department, Mpanda district council (2007).19

Figure 3: Types of livestock/poultry kept by households.....31

Figure 4: Positive effects of illegal wood harvesting on livelihoods.....60

Figure 5: Negative effects of poaching on livelihoods.....61

Figure 6: Effectiveness of implemented poverty reduction strategies.....65

LIST OF APPENDICES

Appendix 1: Demography and population attributes.....	88
Appendix 2: Household questionnaire.....	89
Appendix 3: Checklist for key informants.....	95
Appendix 4: Direct observations.....	97
Appendix 5: Community development projects supported by Katavi National Park, GTZ and USAID (2000 – 2009).....	98
Appendix 6: Participants in FGD.....	99
Appendix 7: Focus Group Discussion	100

LIST OF ACRONYMS

ADAP	Association for the Development of the Protected Areas
ADMADE	Administrative Management Design
CAMPFIRE	Communal Areas Management Programme For Indigenous Resources
CARE	Conservation of Agriculture, Resources, and the Environment
CBNRM	Community-Based Natural Resource Management
CBO	Community-Based Organization
CBWM	Community-Based Wildlife Management
CITES	Convention on International Trade in Endangered Species
CSPR	Civil Society for Poverty Reduction
DALDO	District Agricultural and Livestock Development Officer
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
HIPC	Highly Indebted Poor Countries
IBA	Inyonga Beekeeping Association
ICDP	Integrated Conservation and Development Project
IFAD	International Fund for Agricultural Development
KRCDP	Katavi-Rukwa Conservation and Development Programme
MBOMIPA	Matumizi Bora ya Malihai Idodi na Pawaga
MIMAKI	Miti na Mazingira Kibaoni
MIMAMPI	Miti na Mazingira Mpimbwe

MNRT	Ministry of Natural Resources and Tourism
NAD	Namibian Dollar
NGOs	Non-Governmental Organizations
NPES	National Poverty Eradication Strategy
NSGRP	National Strategy for Growth and Reduction of Poverty
NTFPs	Non-Timber Forest Products
PFM	Participatory Forest Management
PRSP	Poverty Reduction Strategy Paper
SNV	Stichting Nederlandse Vriwilligers
TANAPA	Tanzania National Parks
TAS	Tanzania Assistance Strategy
TShs	Tanzanian shillings
URT	United Republic of Tanzania
USAID	United States Agency for International Development
US\$	United States Dollar
UTUMI	Utunzaji wa Misitu
VNRC	Village Natural Resources Committee
VGS	Village Game Scout
WMA	Wildlife Management Area

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Tanzania is, for the most part, a land-based economy, which is mainly reliant on exploitation of natural resources such as wildlife (URT, 1998). By the 1980s, Tanzania's wildlife management practices were under increasing pressure from a set of internal and external forces largely linked to the broad economic and political changes occurring in the country at that time (Nelson *et al.*, 2007). This led to support for greater local community involvement as a means of pursuing both conservation and rural development goals (Nelson *et al.*, 2007). These emergent community-based wildlife management (CBWM) strategies featured prominently in Tanzania's 1998 Wildlife Policy (MNRT, 1998a), which called for devolvement of wildlife management to local communities. In addition, the 2007 Wildlife Policy aims at conserving, developing and managing wildlife sustainably to contribute to poverty reduction (MNRT, 2007).

1.1.1 Community-Based Wildlife Management

Community-based wildlife management has been identified as an alternative strategy to the colonial fortress conservation approach (fences and fines) as it intends to devolve property rights and management responsibility for wildlife to local communities (Adams and Hulme, 1999). The underlying assumption behind community-based wildlife management is that it contributes to improving rural livelihoods and reducing poverty whilst protecting wildlife. In Eastern African

countries, community-based conservation started after the falling of the “fences and fines” approach due to serious poaching that started in the late 1970s up to mid 1980s. In that period Tanzania lost about 290 000 African elephants (*Loxodonta africana*) due to poaching (Mboya *et al.*, 1995).

Furthermore, CBWM is well linked to macro-economic policies addressing poverty reduction (URT, 2000). These include the Tanzania Development Vision 2025, which is a principle vision of the country to reduce the widespread poverty by increasing socio-economic opportunities, ensuring good governance, transparency, improved and redefined public sector performance, which emphasizes on appropriate balance between public and private institutions (URT, 2000). The National Poverty Reduction Strategy Papers (PRSP) of 2000 and 2004 are another medium-term strategy for poverty reduction. Another initiative is the Tanzania Assistance Strategy (TAS), which is a medium-term national strategy encompassing joint efforts of government and the international community in improving the living standards of Tanzanians (URT, 2000)

Besides these, the government is aware of the need to promote good governance (MNRT, 2007). Like several other African countries, Tanzania has suffered from inefficient governance. The above-mentioned recent policy approaches try to address these problems by emphasizing a shift towards decentralization and devolution of government powers to local level. Such devolution of power is expected to have a positive impact on management of natural resources at the community level (MNRT, 2007)

1.1.2 Poverty

In sub-Saharan Africa, poverty is not only a social crisis, but a challenge to development, since poverty affects nearly every dimension of social and economic life. Diseases, increased food insecurity, increased human-wildlife conflicts, increased community-park management conflicts, increased mobility, decreased access to natural resources, poor health services and education are strongly connected to poverty acceleration (Thaxton, 2006).

Poverty is multidimensional and is perceived differently by different groups, so no single definition captures all its aspects. The International Fund for Agricultural Development (IFAD), for example, uses a definition of poverty that includes eight broad classes: material degradation, lack of assets, isolation, alienation, dependence and lack of decision-making power, vulnerability to external shocks and insecurity. Thus poverty not only constitutes an inefficient use of society's resources but also causes social and political instability (Jazairy *et al.*, 1992). In Tanzania, the linkages between environmental management such as wildlife management and poverty reduction are highlighted in the government's Poverty Reduction Strategy Paper and Development Vision 2025 (VPO, 2005).

Furthermore, incidence of poverty is important to know in initiating different activities. Poverty varies greatly across the country but is highest among rural families living in arid and semi-arid regions that depend exclusively on livestock and food crop production (IFAD, 2007).

Besides these, the poverty surveys conducted by the World Bank in 2001 indicate that almost half of the world's six billion people live on less than US\$ 2 per day, and one fifth on less than US\$ 1 per day (World Bank, 2002). In Tanzania, poverty is

generally a rural phenomenon with 39% of the population living below basic needs and 19% below the poverty line. In addition, poverty seems to be much deeper and severer in rural areas than urban areas as 85% of the population lives in rural areas (URT, 2003).

1.2 Problem Statement and Justification

Globally, the link between rural livelihoods and natural resource management is of fundamental importance to effective poverty reduction strategies. Stichting Nederlandse Vriwilligers (SNV) also called Netherlands Development Organization strengthens local government and non-governmental development organizations with a view of making a sustainable contribution of natural resources to the structural alleviation of poverty in rural areas in developing countries (Wood, 2007). Afghanistan has protected areas aimed at conserving global diversity and reducing poverty in the buffer zones, (Azimi, 2004).

Rukwa region is a relatively poor and undeveloped area in the south of Tanzania (URT, 2005). Most of the communities around Katavi National Park depended on wildlife and forest resources before the gazettelement of the Park (Mulder *et al.*, 2007). By then these resources were easily accessible, which led to increased hunting due to increased food insecurity, because of rapid population growth. In pre-colonial times, prior to German occupation in 1893, the area was prosperous as indigenous people engaged in mound-based horticulture (chitimene), cooperative hunting, fishing and honey production (Willis, 1966). According to Sommerlatte (1995), Katavi Game Reserve was extended westward in 1957 and upgraded to national park

status in 1974. In 1997, Katavi National Park was extended eastward and effectively doubled in size from 2253 km² to 4300 km² (MNRT, 2002). Pimbwe hunter-horticulturists surround the park and Sukuma found in the south and Bende who are in the north. To establish new settlements the Pimbwe and Sukuma cleared the forests from each village to plant crops (Holmes, 2005).

According to Mulder *et al.* (2007), observations on health, nutrition and demography will indicate the wealth differentials. Poverty and seasonal food insecurity are the key drivers of agricultural expansion and potential drivers of change in the prevalence of local hunting in Mpimbwe as many people will need to secure food availability and income through agriculture and local hunting. Hausser and Savary (2002) observed that poverty has been the main obstacle to long-term conservation of natural resources by the Konongos in Inyonga division. Mpimbwe division is said to be underdeveloped due to acute seasonal food insecurity (Hadley *et al.*, 2007) that leads to long-lasting poverty. These anthropometric measures indicate short-term and chronic malnutrition (Hadley, 2005).

A local community-based environmental organization known as Miti na Mazingira Kibaoni (MIMAKI) which means Kibaoni Ward Environmental Conservation Society, was set up by a local member of parliament in 1998. In 2006, it was transformed by community activists into a broader organization called MIMAMPI (Miti na Mazingira Mpimbwe) which literary means Mpimbwe Division Environmental Conservation Society, with dual objectives of environmental conservation and community livelihood protection. The organization concentrated on

extending the much-needed buffer zone and protection activities along park boundaries within Mpimbwe division, and strengthening law enforcement in the community-protected areas where it called on sungusungu (a resilient Sukuma law enforcement institution) to regulate interpersonal behaviour and punish lawbreakers.

Conservation education provided by MIMAMPI focuses primarily on division level workshops, capacity building among professionals and training village game scouts to conduct surveys on foot. Furthermore, it works on achieving a reputation for improving aspects of local livelihoods before seeking to develop awareness and solutions to environmental problems (Paciotti and Mulder, 2004). Moreover, a Swiss organization called Association for the Development of Protected Areas (ADAP) supports the establishment and management of a Bee Reserves in Inyonga, though it faces some unbalanced relationship between different stakeholders as it has been explained by Forestry and Beekeeping Division (2000) that wildlife stakeholders tend to exclude the others.

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) completed an integrated conservation and development project (ICDP) in 2006 to improve the livelihoods of villagers near the park (MNRT, 2002) thus made MIMAMPI to get less support from external donors. TANAPA and Wildlife Division tried to work hand in hand with GTZ (MNRT, 2002). Lack of concrete evidence/data to demonstrate the contribution of CBWM to poverty reduction typified the core of this study. Thus, this research concentrated on the contribution of CBWM and associated activities to poverty reduction in the area.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective was to investigate the contribution of Community-based wildlife management (CBWM) to poverty reduction in communities in Mpimbwe and Inyonga Divisions, Rukwa region.

1.3.2 Specific Objectives

Specific objectives included to:

- i. assess actors and benefit sharing systems of CBWM in Mpimbwe and Inyonga divisions;
- ii. assess the contribution of CBWM to local livelihoods and poverty reduction;
- iii. assess the role of illegal use of the park (poaching, wood harvesting) in poverty acceleration or deceleration and;
- iv. identify various strategies that will contribute to poverty reduction.

1.4 Research Questions

In accomplishing the objectives of this study, the following questions provided a guide in getting the desired information.

- i. Who are the actors in CBWM? How does benefit sharing system work in CBWM?
- ii. What is the contribution of CBWM to the local livelihoods and poverty reduction?
- iii. What are the roles of illegal park use (poaching, wood harvesting) in poverty acceleration or deceleration?
- iv. What are the strategies that will lead to poverty reduction?

1.5 Conceptual Framework

A conceptual framework binds facts together and provides guidance towards collection of appropriate data or information (Kajembe, 1994). Without a theoretical framework to bind facts together, knowledge will be fragmented into discrete segments. The conceptual framework of this study (Fig.1) reflects the main thinking that CBWM approach has impact on poverty reduction. The role of CBWM central actors such as TANAPA and Wildlife Division in collaboration with CBWM social actors is to identify existing socio-economic, environmental problems then solve these problems by providing education on the importance of natural resources, and employment to the residents thus reflects to poverty reduction. For example, employment provided by TANAPA to the residents is such as village game scouting. This helps to alleviate poverty as they are paid salaries, which assist them and their families to obtain necessary needs.

The socio-economic and environmental institutions linking to central actors and social actors identify problems causing poverty such as diseases, food insecurity, human-wildlife conflicts, and overpopulation. They conduct research on those problems and advise on ways to reduce poverty. Fig. 1 describes the key issues in the contribution of CBWM to poverty reduction.

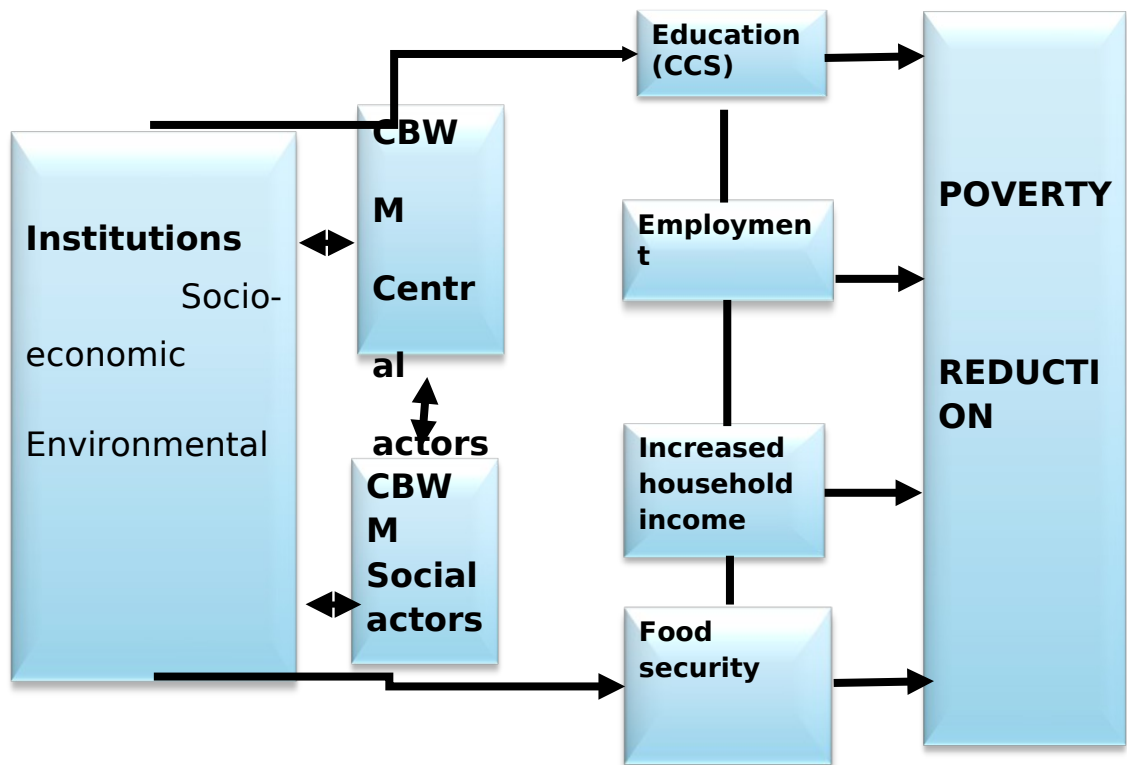


Figure 1: Conceptual framework summarizing key issues in the contribution of CBWM to poverty reduction

1.6 Organization of the dissertation

The dissertation is organized into five chapters. Chapter two gives a detailed literature review. Chapter three describes the methods used in data collection and data analysis. Chapter four highlights the results and discussion and the last chapter gives conclusion and recommendations.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Overview of CBWM in Tanzania

In the 1980s, Tanzania's wildlife management practices such as protection were under increasing pressure from a set of internal and external forces largely linked to the broad economic and political changes occurring in the country at that time (MNRT, 1998). Conservationists for failing to protect wildlife blamed the protectionist approach (fences and fines). This led to the emergence of CBWM, which supports greater local community involvement in wildlife management as a means of pursuing both conservation and development goals (MNRT, 1998). This situation related to the 2007 Wildlife Policy with the aim of protection and conservation of wildlife (MNRT, 2007). Broader development policies, such as Tanzania's National Strategy for Growth and Reduction of Poverty (NSGRP), also support these reforms by calling for improved macro-micro linkages in the country's economy and greater local income-earning opportunities from tourism and wildlife management (URT, 2005).

Tanzanian CBWM has become highly challenging both physically and conceptually. The linear centrally led devolutionary reform processes that were conceptualized by donors and NGO supporters of CBWM in the mid-1990s have not materialized, rather multi-faceted political and institutional conflicts over the control of valuable land and wildlife resources characterize CBWM in Tanzania today (Nelson *et al.*, 2007). The outcomes of two decades of CBWM in Tanzania reflect broader internal political struggles over land rights, resource governance, and participation in policy

formulation, as well as challenges facing efforts to devolve natural resource management to local communities throughout Tanzania (Ribot, 2004).

2.2 Wildlife with Respect to Poverty Reduction

Tanzanian wildlife is one of the richest and most diversified in Africa. As a resource, it is of great importance nationally and internationally. Some of the benefits of wildlife are employment to some residents, increase of government revenues through tourism and provision of social services. Economic potential of wildlife utilisation for citizens of Tanzania is considerable, and the wildlife policy recognises that special emphasis must be placed on wildlife utilisation schemes that benefit the local people living in or around wildlife areas (MNRT, 2007).

Wildlife tourism in Tanzania accounts for 17.2% of GDP in 2008 (MNRT, 2008). Tourist arrival is high 719,031 tourists thus 250,000 job opportunities were offered in 2007 (MNRT, 2007). Barnett and Patterson (2006) also report that in recent years, Namibia's hunting industry has grown considerably, following the creation of communal conservancies and attendant wildlife recoveries, from total revenues of NAD 19.6 million in 1992 to NAD 80 million in the year 2000.

2.3 Actors and Benefit Sharing System of CBWM

2.3.1 Central Government Actors

The central government (TANAPA, Wildlife Division, Forest and Beekeeping Division) has a great role in CBWM. The Wildlife Policy of Tanzania outlines the role played by the central government such as employment of the residents, educating and creating conservation awareness to the public and paying salaries to

wildlife officials. Provision of funds for social services and infrastructure development and acting as a bridge between international donors and the local government by addressing the development needs of local population are also roles (MNRT, 2007).

MNRT (1998b) describes the overall responsibility of Forest and Beekeeping Division, which is to manage the forest and beekeeping sectors on mainland Tanzania to ensure sustainable supply of forest products and services and provision of employment to residents. In addition, it plays a role in biodiversity conservation and develops national capacity to manage the forest sector in collaboration with other stakeholders such as local communities, NGOs and the private sector.

2.3.2 Local Government

The local government engages in decision-making and management, as it is closest to people and allows the residents to actively participate in matters, which affect them directly. The wildlife policy of Tanzania (MNRT, 2007) also states the local governments' activities such as regulating matters that pertain to their residents, using their own knowledge and resident expertise and consultation of a democratically elected, local representative body (MNRT, 2007).

2.3.3 Local Community and Supporting Organizations

2.3.3.1 Local Community

The local community's role is to manage the wildlife resources such as patrolling activities, eco-tourism activities; education to un-aware residents on what community- based wildlife management is (Gibson, 1999).

2.3.3.2 Supporting Organizations and Other Stakeholders

The local communities are supported by Community-Based Organizations (CBOs) such as MIMAMPI. Association for the Development of the Protected Areas (ADAP) supported the establishment and management of a bee reserve in Inyonga division in 2006. Furthermore, GTZ established the Katavi-Rukwa Conservation and Development Programme (KRCDP) in 1998, which aimed at providing conservation education to residents such as the Pimbwe and Sukuma. GTZ focused primarily on district level workshops, and capacity building among professionals (Holme, 2005). Also, it worked with the government, TANAPA and the Wildlife Division on building infrastructure. It supported the extension of national park boundaries (MNRT, 2002).

Hausser and Savary (2002) describe ADAP as being supportive to the community-based natural resource management. ADAP supported the Inyonga Beekeepers Association, village participatory land use management process, the Village Councils' environmental committees through capacity building, the community participatory identification, negotiation with different managers, development of other sustainable economic alternatives, launching of eco-tourism project and supported the production of sustainable crops. Besides these, ADAP also participated as a facilitator, a "bridge-actor" between the different stakeholders such as central government and the residents (Van Der Duim and Caalders, 2002). Gibson (1999) expresses that the powerful actors in CBWM include international donors, politicians, governments, district councils, NGOs, Convention on International Trade of Endangered Species (CITES) technical committees and tour operators.

2.3.4 Benefit Sharing System

Benefit accrued from wildlife should be shared among local communities and the government. This improves the power relationship between rural district councils and their lower level constituents (Maveneke, 1996). Local communities must be able to derive benefits from wildlife resources in order to have incentives for conservation. The Wildlife Policy of Tanzania supports the benefit-sharing system to reduce negative impacts towards wildlife (MNRT, 1998).

2.3.5 Contribution of CBWM to Local Livelihoods and Poverty Reduction

Contribution of community-based wildlife management to poverty reduction is due to a set of conditions and measures, which are all to be addressed. As observed by Williamson (1999) the conditions and measures are policies, laws and regulations, which allow and enable effective action at the local level, effective institutions at all levels from national government to local government, including non-governmental and civil society organizations, and provision of technical, economic and management capabilities.

Local communities, through employment opportunities offered by CBWM, manage to meet their necessary needs. For instance, the value of wildlife in Namibia where CBWM operates has increased 30 times since 1980 (Barnett and Patterson, 2006). In 2006 the value of wildlife-based tourism in Namibia was US\$10 million and was projected to increase to \$40 million, which could result in doubling of the average income of rural people in the area (Barnett and Patterson, 2006).

2.5 Problems Facing Wildlife Resources Associated with Poverty

2.5.1 Poaching

Poaching is illegal hunting and trapping of wild animals (Magelah *et al.*, 2007). For instance, central African residents were paid low wages and their diet became worse hence many turned to poachers to survive (Wasser *et al.*, 2007).

2.5.2 Wood Harvesting

Wood perennials have many functions such as provision of habitat for breeding and brooding to some of the wildlife species such as birds, environment amelioration by modifying the climate around the park, live fences playing a protective role. In Jozani-Chwaka forest reserve, Zanzibar, the residents purposely carried out wood harvesting for building houses, fences, medicine (barks, roots), cooking and warming up at night (CARE, 2000).

Thailand residents rely on forest products as sources of food, medicinal plants and other uses, about 80% of at least 18,000 forest trees in Thailand are medicinal (Bhummbamon, 1997). Caro (1999a) reports ongoing exploitation of hard wood like (*Pterocarpus angolensis*) Mninga, (*K. Schum*) *Msawala*, and (*Amarula spp*) Marula in the forests around Katavi National Park, for subsistence use.

2.6 Poverty Reduction Strategies

The government of Tanzania began to move in the direction of a comprehensive poverty reduction strategy in the mid 1990s, and adopted a plan titled the National Poverty Eradication Strategy (NPES) in 1997 (Songorwa, 2007). Tanzania was drawn into the Poverty Reduction Strategy Paper (PRSP) process, whereby

preparation of the PRSP and its acceptance by donors became a precondition for debt relief under the Highly Indebted Poor Countries (HIPC) initiative (URT, 2005).

PRSPs describe the country's macroeconomic, structural and social policies and programs to promote growth and reduce poverty as well as associated external financing needs (URT, 2000). PRSPs aim to provide the crucial link between national public actions, donor support, and the development outcomes needed to meet the United Nations' Millennium Development Goals (MDGs), which are centred on reducing poverty by 2015 (URT, 2000). There are various ways, which are used to reduce poverty such as:

- Adoption of plans, which are much more comprehensive and multi-sectoral than their predecessors in almost all cases. Increase of 'poverty-oriented' expenditures and inputs by managing the trend established by the heavily indebted poor countries (HIPC) initiative towards increasing 'pro-poor spending' (Driscoll and Evans, 2004).
- Management of biodiversity to alleviate poverty should be based on biogeographical regions and specific site conditions. Such as, biodiversity restoration (Adriyanti, 1994)
- Implementation of policies and enforcement mechanisms for sustainable exploitation of the resources
- Attention to donor alignment and harmonisation questions, both at country and international level by developing stronger government focus on institutionalised commitment to poverty reduction

- Expanding civil society consultations into deeper forms of government accountability to citizens linked to longer-term drivers of change (Driscoll and Evans, 2004).
- Tracking progress over time in achieving results, which can be beneficial to locals and the government.
- Undertaking workshops to the residents on the benefits of poverty reduction through dramas and posters.

CHAPTER THREE

3.0 MATERIALS AND METHODS

3.1 Study Area

The study was conducted in Mpimbwe and Inyonga divisions of Rukwa region (Fig. 2). The two divisions were selected purposely as Mpimbwe implements CBWM activities in Mpimbwe Wildlife Management Area (WMA), in Kibaoni, Ikuba and Usevya villages, and Inyonga division is in the process of establishing its WMA. Data collected was based on community-based association (Inyonga Beekeeping Association) (Inyonga and Wachawaseme villages)

3.1.1 Geographical Location

Mpimbwe division lies approximately between latitude 6° 45' and 7° 05' South of the Equator and between longitude 30°31' and 31° 04' East of Greenwich Meridian. It is located south of Katavi National Park. Inyonga division lies approximately between latitude 6° 43' and 7°07' South of the Equator and between longitude 31° 04' and 32° 4' East of Greenwich meridian (Google earth, 2009). It is located east of Mpanda town and north-west of Katavi National Park (Figure 2). Altitude ranges from 1 000 to 2 500 meters above sea level.

3.1.2 Climate

The area has two main seasons; dry season (May to October) and wet season (November to April) with annual rainfall approximately 900 - 1 000 mm. Average

annual temperature ranges between 26°C and 30°C. Annual average wind strength is about 2 km/day (Mpanda DALDO, 2003).

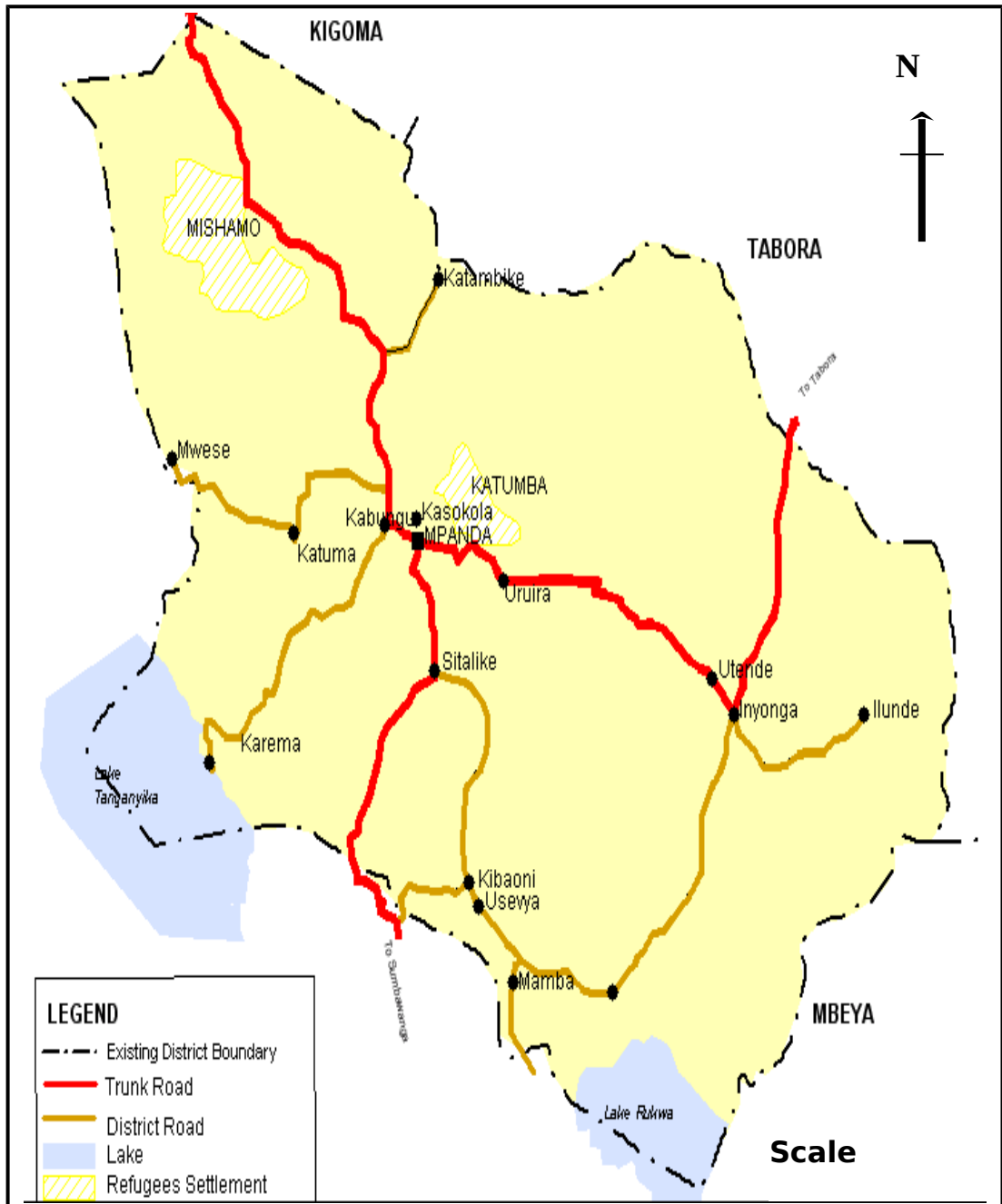


Figure 2: Map of Mpanda district showing location of Mpimbwe (Kibaoni) and Inyonga divisions. Source: Lands Department, Mpanda district council (2007).

3.1.3 Soil and Physical Features

Soils are oil-sandy loam with moderate good drainage. There are highlands, gentle plains, plateaus and small mountain peaks (Mpanda DALDO, 2003).

3.1.4 Vegetation

The area is dominated principally by miombo woodland dry forest habitat and other species. Tree diversity is high (45 families, 117 genera, 229 species) and concentrated in the Fabaceae (30 genera, 73 species), *Grewia* (Mkola) (17.42%), *Markhamia* (Mtalawanda) (13.20%) and *Combretum* (Mrama) (13.13%) dominating abundance. (Rodgers 1996; Schwartz *et al.*, 2002).

3.1.5 Socio-economic Activities

Socio-economic activities included agriculture, livestock keeping, beekeeping, formal employment and retail business. Most households depend on agriculture, cultivating both cash and food crops. The main cash crops include simsim and tobacco while the main food crops are maize, beans, rice, potatoes and groundnuts. Besides agriculture, the communities depend on livestock and poultry for their livelihoods and types of livestock kept are goats, cattle, pigs and poultry (chicken and ducks). Also, beekeeping activities are practiced mainly in Inyonga division. Most of the beekeepers in Inyonga work hand in hand with Inyonga Beekeeping Association (IBA). Residents employed by the government or private sectors and those doing retail business, practice agriculture, livestock keeping and beekeeping.

3.2 Data Collection Methods

3.2.1 Research Design

A cross-sectional design as suggested by De Vaus (1993) was used in this study whereby data were collected at one point in time from Mpimbwe (Kibaoni, Usevya and Ikuba villages) and Inyonga (Inyonga and Wachawaseme villages) divisions. Using one point in time means that data are collected in as short time as is feasible and economical (Singleton *et al.*, 1993). However, a note is taken that, the design has a limitation that it does not allow a control for a broad range of unobserved characteristics that are omitted in estimation and correlated with the error term.

3.2.2 Sample size

Sampling unit for this study was a household and was randomly picked from the village register books (sampling frames) in which all members of the village and the households are normally listed. In villages where register books were not found, names of people were recorded with assistance of village leaders after that random selection was employed to reduce bias. World Bank (1995) defined a household as a unit consisting of one or more persons, related or unrelated, who live together in one part or more than one housing unit and have common catering arrangements. The definition used for the purpose of this study.

The sample size for this study was 5% of all households in each village. Bartlett *et al.* (2001) recommended that, the alpha level used in determining sample size in most research studies is either 0.05 or 0.01. Generally, an alpha level of 0.05 is acceptable for most research which is equivalent to 5%. In each household, the head

of the household were interviewed, but other members were allowed to attend to supplement information. The total numbers of households in all five villages of study were 2 400 of which 120 respondents were interviewed (Appendix 1).

3.3 Data Collection

3.3.1 Primary Data Collection

Primary data were collected using a structured interviews and questionnaires. Direct observations were also employed as well as Rapid Rural Appraisal (PRA) involving focus group discussions and key informant interviews.

3.3.1.1 Questionnaire Survey

Structured questionnaire (Appendix 2) was used to collect data on contribution of CBWM to poverty reduction. In order to elicit more information, open-ended and closed questions were used. Open-ended questions helped to get the respondent's view regarding the problem under study; while in the closed-ended interview, respondents were provided with alternative answers. This method of using questionnaire in data collection provided enough information on age, sex, marital status, education and socio-economic activities, actors' and their roles in CBWM, benefit-sharing system of CBWM, contribution of CBWM to livelihoods and poverty reduction, benefits from the resources and strategies to poverty reduction (Appendix 2).

3.3.1.2 Direct Observations.

The researcher and an assistant recorded what they saw in the study area; observations were of physical surroundings, socio-economic activities, livelihood conditions of the residents and social services present (Appendix 4).

3.3.1.3 Focus Group Discussions

Checklists were used to guide focus group discussions (FGDs) with groups of villagers (Appendix3). Villagers participated in discussions on issues and experience among themselves. After introducing the CBWM topic, the researcher stimulated and focused the discussion about ongoing CBWM activities. In each study village two groups were formed for the FGDs. Membership of the group was; men only group women only group with youth representatives of respective sex. The sex separation was adopted because according to Sukuma, Pimbwe and Konongos customs, women are not allowed to speak in the presence of men, especially in village settings.

3.3.1.4 Key Informant Interviews

This involved interviewing 4 people from each division who included knowledgeable and accessible stakeholders willing to talk about the area and CBWM activities as most of key informants were out of their vicinity when conducting the study. These were village government leaders, Village Natural Resources Committee (VNRC) members, Katavi National Park Ecologist, ADAP representative and MIMAMPI leaders (Appendix 6).

3.3.2 Secondary Data Collection

Secondary data were obtained by reviewing various publications mainly electronic databases on the Internet and libraries, including Sokoine National Agricultural Library, Ministry of Natural Resources and Tourism, Tanzania National Parks (TANAPA) and ADAP office.

3.4 Data Analysis

Both qualitative and quantitative methods were employed in order to address the study objectives. Statistical Package for Social Science (SPSS 12) and Microsoft Excel 2003 computer programmes were used in data analysis.

3.4.1 Qualitative Data Analysis

Content and structural-functional analysis techniques are qualitative techniques (Weber, 1990), which were employed to analyse qualitative data/information. By using content analysis, information collected from key informants and villagers was analysed in detail whereby the recorded dialogues were broken down into smallest meaningful units of information (Weber, 1990). The information from key informants was grouped according to the study objectives and discussed. This helped the researcher in ascertaining values and attitudes of respondents.

Structural-functional analysis techniques were used to explain the way social facts were related to the physical environment (Park *et al.*, 2009). Observations on physical environment such as households' surroundings, social services and natural resources were related with social facts like diseases and socio-economic activities to obtain more information on the study area.

3.4.2 Quantitative Data analysis

All quantitative analysis were performed by using Statistical Package for Social Sciences for Windows (SPSS 12). The first step was to carry out coding so that data could be in a form suitable for addressing research questions and the method of analysis used such as summarized results in frequencies and percentages, histograms, tables and pie charts. The second step was to explore the data for distributing of responses. Most of the analysis described fall under descriptive statistical analysis.

Cross-tabulation, involving Chi-Square test at 5% level of significance, was employed to test if there was a significant change in resource utilization by households between years 2006 and 2008. Five percent level of significance was employed as can it be used for realistic probabilities estimations or arguments.

3.5 Problems faced in data collection

There were some difficulties for some of the respondents in estimating the number/quantity of Park products collected, consumed and sold by their households. It was also difficult to estimate the amount of animal products sold by each household as livestock and poultry keeping was not their major economic activities. However with the help of the accompanied villagers (VEO) it was possible to make more reasonable estimates.

Illegal wood harvesters and poachers from the study area did not mention the amount of money obtained from selling the harvested products fearing to be caught by Katavi National Park authorities. For the case it was very difficult to create estimates since they refused to mention the amount of money, though to know someone was a poacher there were special designed questions asked, thus straight answers were provided (Appendix 2).

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of Respondents

4.1.1 Gender

Respondents in the questionnaire survey were 33.3% females and 66.7% males (N=120). Females had lesser representation and the reason behind was that the study targeted heads of households as responsible main decision makers of household affairs. Therefore, except for a few households, which were headed by females the majority were male-headed. Sometimes females had to respond on behalf of their husbands where they were not available. In most traditional African societies, males are the heads of households. Observations further revealed a difference in gender roles in the use of natural resources; males were involved in harvesting beneficial resources such as wildlife, honey and timber while females collected fuel-wood, wild fruits and honey.

4.1.2 Age

The age of the respondents ranged between 21 and 80 whereby those in the 21-35 age group were 50% followed by 36-50 (35.8%), 51-65 (11.7%) and 66-80 (2.5%) (N=120).

4.1.3 Marital Status

The majority (81.7%) of respondents were married, 18.3% had no marriage, while were divorced and widowed (N=120). However, 0.8% of the respondents did not indicate their marital status. Understanding the distribution of marital status of

respondents is important for assessing management and utilization of natural resources (wildlife, forest, water and land). A McKean (1998) report that marriage has an effect in population activities as it affects the availability of labour in the household, which in turn has effects on the chances to engage in forest management and utilization.

4.1.4 Education

Education is an important component for development. Kajembe and Luoga (1996) point out that education tends to create awareness, positive attitudes, values and motivations. In addition, education tends to stimulate self-confidence and self-reliance. Therefore, there may not be development without education. The results show that 55.8% of respondents had attained primary education, 16% attained secondary education, 27.5% had informal education (education which takes place outside schools and is mediated by resources and knowledgeable residents in the community) and 0.8% had college education (N = 120).

According to Kajembe (1994), Kamwenda (1999) and Mbwambo (2000), education is vital in terms of natural resource conservation, utilization, planning and monitoring interventions. A study by Kerario (1992) on environmental conservation in Kondo, Tanzania revealed that people with high level of education, i.e. secondary and above, stand a good chance of adopting new technologies in conserving, utilizing, processing and marketing forest products. The high percent of people with primary education may not be enough for adopting different resource management approaches such as CBWM. Mpimbwe WMA stakeholders cooperate with CBOs

such as MIMAMPI to provide education on conservation of wildlife and forest resources. In Inyonga, IBA helps communities to acquire knowledge on beekeeping. Thus, they participated effectively in sustainable management of these resources by reporting poachers, illegal wood harvesters and pyromaniacs to the natural resource officers.

4.1.5 Socio-economic Activities

Major socio-economic activities in the two divisions included agriculture, livestock keeping, formal employment and retail business (Table 1). These activities help to sustain people's livelihoods. Agriculture being the backbone of most of rural communities is the major economic activity and the main contributor to poverty reduction. Results show that 74% of the respondents were engaged in agricultural activities, 27.5% were livestock keepers, 17.5% had formal employed and 14% were doing retail business.

Table 1: Socio-economic activities

Economic activities	Percentage of respondents		
	Mpimbwe	Inyonga	Overall
Farming	73	75	74
Livestock keeping	35	20	27.5
Formal employment	16	19	17.5
Retail business	12	16	14

Note: Multiple responses allowed

(Source: survey data)

Mellor (2001) argues that, agricultural production in Southern Asia reduces poverty effectively because it generates income for poor households. It is also the source of

increased demand for goods and services, thus reducing urban poverty as well as slowing migration to urban areas.

4.1.5.1 Crops Grown

Most respondents of Mpimbwe and Inyonga grew maize and beans. Results show that amounts of maize and beans harvested on average by each household were 17.19 and 6.33 sacks respectively. Average amounts of maize and beans consumed were 6.86 and 3 sacks respectively. On average, amounts (in sacks) sold for maize and beans were 10.33 and 3.33 respectively and cash obtained from maize and beans was TShs 147 949 and TShs 1224.49 respectively.

For the case of Inyonga division, most communities grew tobacco, groundnuts, rice and few grew sesame. Average amounts of groundnuts, rice and sesame in sacks harvested were 16.62, 16.4 and 4.47 respectively whereby the average amount of tobacco harvested was 19.48 bales (the bale measurements are: length 0.5m, width 0.5m, height 2.5m, weight ranges between 25 – 75 kgs). Amount of sacks consumed on average for groundnuts, rice and sesame was 2.82, 4.4 and none for sesame while the average amount of tobacco utilised was 3.4 bales. The average volume sold in sacks for groundnuts, rice and sesame was 13.8, 12 and 4.47 respectively while the average volume sold in bales for tobacco was 16.08. Lastly, the average household income obtained in TShs for groundnuts was 60 857, tobacco being 23 633, rice was 15 306 and sesame was TShs 9306.1. Inyonga communities also grew tomatoes but in very small amounts for home use. Table 2 presents types of crops grown by respondents

Table 2: Types of crops grown

Crops	Average amount harvested (sacks)/(bales)	Average amount consumed (sacks)/ (Bales)	Average amount sold (sacks)/(bales)	Average Income (TShs)
Maize	17.19	6.86	10.33	147 949
Beans	6.33	3	3.33	1 224.49
Simsim	4.47	0	4.47	9 306.1
Groundnuts	16.62	2.82	13.8	60 857
Tobacco	19.48	3.4	16.08	23 633
Rice	16.4	4.4	12	15 306
Total	80.49	20.48	60.01	258275.59

Note: 1sack = 80 kgs

Most of the crops were sold to raise income. Stephen *et al.* (2002), argues that farmers get income and spend much of that income on a range of consumer goods and non-farm services. This reduces expenditure costs on other household needs hence poverty reduction. Communities around Mpimbwe WMA practise agriculture as per advice from Katavi National Park under outreach programme collaborating with the district agricultural department. They are also advised on utilization of resources, which could be easily obtained such as land resource. In Inyonga, IBA provides beekeeping education as well as agricultural education in collaboration with district agricultural department like good agro-forestry practises. Agricultural extension services in the study areas helped Agriculture to be among the sources of economic growth and a major contributor to poverty reduction across all individual households in Mpimbwe and Inyonga divisions.

4.1.5.2 Types of Livestock/Poultry Owned

Most respondents (49%) reported to own cattle, followed by 48%, 39% and 27.5% of respondents who owned goats, pigs and chicken respectively. Figure 3 presents types of livestock/poultry kept by the surveyed households.

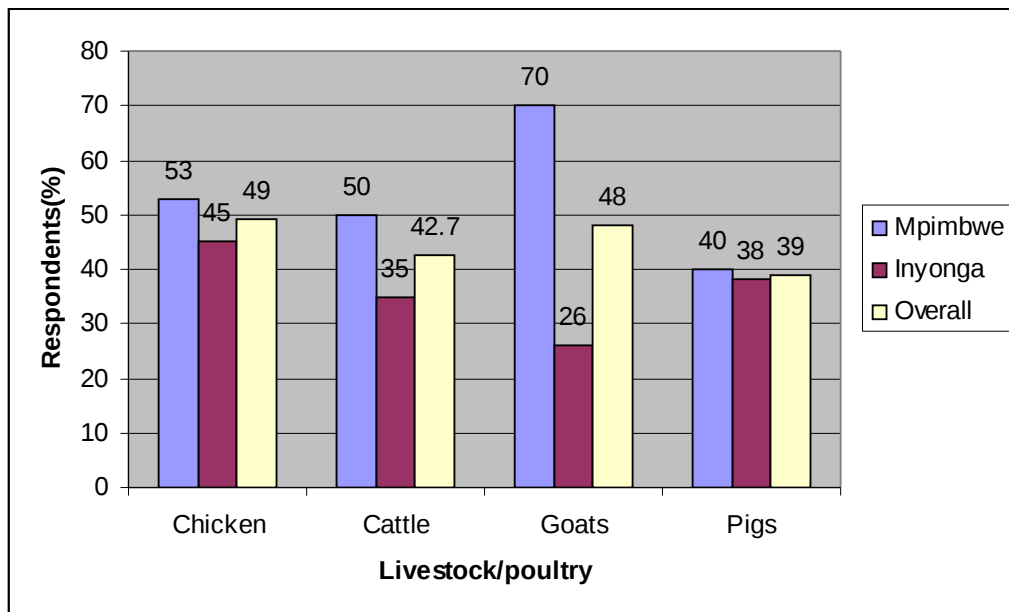


Figure 3: Types of livestock/poultry kept by households

Most households own chicken and goats as these are simple to acquire and they also keep pigs and cattle. For instance, one can get a goat for Tshs 10 000 and even less. Respondents in FGDs who kept goats said that there is great advantage of keeping goats as one gets money to attain basic needs, meat and milk for home consumption, and dung, which can be used to increase soil fertility. Apart from keeping goats and chicken, some households kept cattle, which were used as draught animals thus minimizing cost and time of transporting goods. The cattle meat also provides protein. Both divisions' households owned pigs while most households in Inyonga

owned chicken. Villagers revealed that the products (eggs and meat) were consumed and sold; hence, money obtained was used to acquire family needs. Furthermore, Outreach Programme from Katavi National Park advised communities around Mpimbwe WMA to keep livestock and poultry and stop the illegal hunting.

4.2 Actors in CBWM

Actors are people with differing roles and interests in a scheme or programme (Agrawal and Gibson, 1999). Actors in CBWM come from Mpimbwe division because of the presence of a WMA where CBWM activities (game viewing and photographing guided by VGS) are done. There were no CBWM activities in Inyonga division due to misunderstandings between the Forest and Wildlife Divisions on how much land was to be allocated for forests and wildlife management activities, thus delayed the initiation of CBWM activities. Therefore, results show that 67%, 24%, 7% and 2% of respondents said that the actors were local community, local government, non-governmental organizations (NGOs) and central government respectively. This indicates that local communities in Mpimbwe division are actively engage in CBWM and the local government acts as a linkage between residents and central government. Results from focus group discussion also support the above findings that much of the CBWM work is done by local communities. Moreover, key informant interviews with Katavi National Park ecologist revealed that actors of CBWM are central government, local government, local communities and supporting organizations like USAID. There were no results of actors of CBWM in Inyonga division, as CBWM was not implemented.

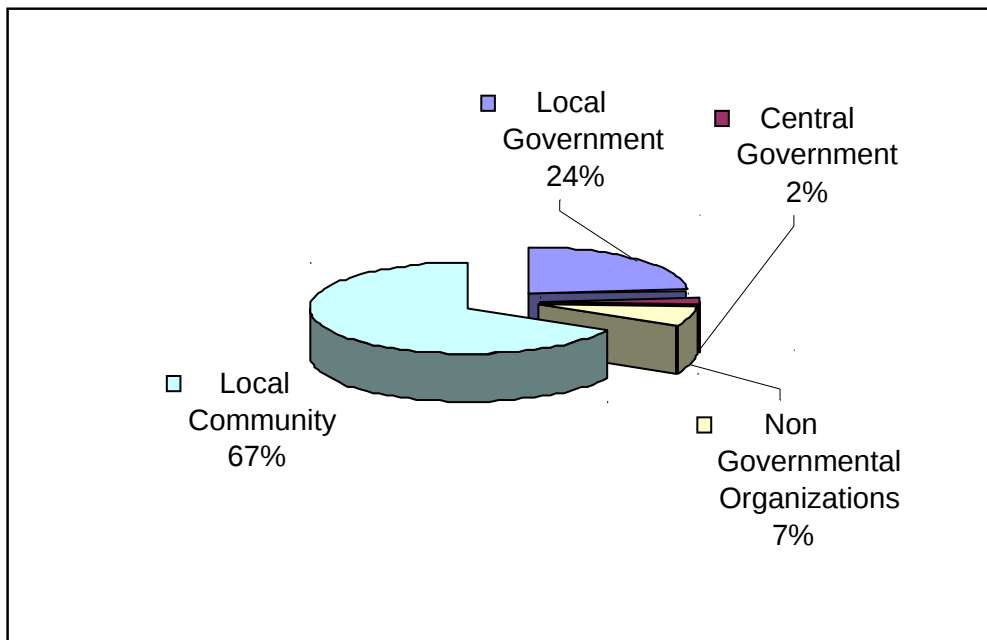


Figure 4: Actors in CBWM in Mpimbwe division

Furthermore, these findings are not similar to those obtained by Gibson and Agrawal (1999) in Blue Lagoon game management area in Zambia. They identified the powerful actors in CBWM to be the state, community, NGOs, politicians and private sector. Different kind of actors' may be due to the type of activities and size of communities in the study area. Many small, territorially contained groups do not protect or manage resources well, and because some mobile transitional groups manage them efficiently, important processes are at work that are not captured by spatial location alone Agrawal (1999). These findings are different from the study results as communities around Mpimbwe WMA are settled and actively engaging themselves in management of the resources. In addition, the differences may be influenced by how politics play part in the managing natural resources. This is because; this study observed that politics had no influence in natural resource management. Agrawal (1999) reported that involvement of politicians in CBWM led

to conflicts, as politicians were very corrupt. This brought no improvement in CBWM that is why communities decided not to deal with politician.

4.2.1 Actors' Roles

In managing natural resources, every actor has got roles. The identified actors of CBWM were central government, local government, local communities and non-governmental organizations (Fig. 4). From the results (table 3) below, 56% of the respondents said that, the roles played by the local communities were to participate in village development activities for example, building schools, roads, dispensaries and 75% reported participation in environmental conservation activities such as Afforestation, reporting illegal hunting and wood harvesting. Regarding local governments, 79% declared that its role were to act as a bridge between the central government, local community and NGOs.

Besides these, 78%, 60% and 54% of the respondents said that, the central government's roles were to formulate laws and policies, facilitate investors to invest in infrastructures construction and social service provision for example roads, electrical power, hospitals, schools and employment provision respectively. For NGOs, 65%, 50%, and 55% of the respondents revealed that, their roles were to provide funds and social services, participate in conservation issues such as education, afforestation and employment provision respectively.

Table 3: Roles played by different actors in CBWM as perceived by villagers

Actors	Roles	Respondents (%)
Local community	Participate in village development activities e.g. building schools, roads, dispensaries	56
	Participate in environmental conservation activities e.g. Afforestation, reporting poachers and illegal wood harvesters	75
Local government	Act as a bridge btw central government and btw local communities and NGOs	79
	Advice to local communities in development issues	35
Local government	Policies implementation e.g. Wildlife and Forest policies	35
	Supervising environmental conservation activities	55
Central government	Formulate laws and policies e.g. Wildlife and Forest Policies	78
	Facilitate investors and social service provision e.g. construction permits, fund	60
	Provide employment	54
Non-governmental organizations	Assist in provision of fund and social services	65
	Participate in conservation issues e.g. education, afforestation	50
	Employment provision	55
Multiple responses	Source: Survey data	

MNRT (2007) outlines the role played by central government in CBWM as educating and creating conservation awareness among the public, paying salaries to wildlife officials and providing funds for social services and infrastructure development. Also, the central government acts as a bridge between international donors (USAID) and the local government by addressing development needs of the local population. The central government actors in Mpimbwe WMA could also act as a bridge between international donors, NGO's and local communities so as to allow more investments for example hotels and schools and provide funds which can

facilitate the activities. The Wildlife Policy states the role of local government is to regulate matters pertaining to their residents using their knowledge, expertise and consulting a democratically elected, local representative body (MNRT, 2007).

Gibson (1999) found that roles of local communities around Blue Lagoon game management area in Zambia were to engage themselves in conservation activities like patrolling, ecotourism and educating residents on what community based wildlife management was. These findings are similar to those obtained from the two divisions whereby local communities around Mpimbwe WMA participate in environmental conservation programmes such as afforestation and reporting illegal hunting and illegal wood harvesting. However, in Inyonga division, some respondents revealed that, the local communities participated in village development activities such as building schools, roads, and dispensaries, all in which had no relationship with CBWM since it is not yet implemented.

Additionally, the results on roles of local community were similar to those reported by Arntzen *et al.* (2007a) on Kgetsi ya Tsie project in Botswana where local communities participated in an afforestation programme by planting trees and were later trained in sustainable harvesting techniques.

4.2.2 Contribution of the Actors' Roles to Livelihoods

Each actor has got responsibilities and the results revealed that the local community has roles that contribute to their own livelihoods whereby 28% of the respondents said that there was reduction of illiteracy and diseases, 15% said that income was raised, 65% claimed that income was obtained from NTFPs. Nonetheless 12% said

that there had been good climate for agriculture (environmental amelioration), 28%% said that there there had been security to the resources benefiting the communities. Moreover, local government's roles contributing to livelihoods were to solve residents' problems (55%), income rising through projects and eco-tourism (40%), providing awareness on CBWM activities (25%), protection of resources, which benefit the present and future generation (45%), good climate conditions (45%) and good state of natural resources (50%).

Furthermore, 45%, 55% and 37% of the respondents revealed that, the contribution of central government roles to livelihoods were in terms of protection of natural resources, raising of income respectively and improvement of residents livelihoods. Respondents further revealed that the contributions of NGOs' roles were development (53%), education to beekeepers (thus raised knowledge and market from timber and non-timber forest products) (42%) and raised income (34%). Table 4 presents the contributions of actors' roles to livelihoods.

Table 4: Roles of CBWM actors in residents' livelihoods

Actors	Roles	Contribution of roles to livelihoods	Respondents (%)
Local communities	Participate in village development activities e.g., building schools, roads, dispensaries	1.Reduces illiteracy and diseases	28
		2. Raise income	15
	Participate in environmental conservation activities e.g. afforestation, reporting illegal hunting and wood harvesters	1.Income from NTFPs	65
2.Environmental amelioration		12	
3.Security to resources		28	
Local government	Act as a bridge between central government and local community and btw local community and NGOs	1.Solving of residents problems	55
		2.Income raising through projects ans eco-tourism	40
	Advice to local communities in dev. issues e.g. small scale projects like livestock keeping, carving, farming, eco-tourism	1.awareness on CBWM activities	25
		Policies implementation e.g. wildlife and Forest policies(2007&1998 respectively)	1.Protection of resources which will benefit the present and future generation
Local government	Supervising environmental conservation activities	1.good climate conditions	45
		2.good state of natural resources	50
Central government	Formulate laws and policies e.g. wildlife	1.Protection of resources	45

Actors	Roles	Contribution of roles to livelihoods	Respondents (%)
Central government	and Forest policies Facilitate investors and social service provision e.g. construction permits, funds	1.Raise income	55
	Provide employment	1.improvement of residents livelihoods	37
NGOs	Assist in provision of fund and social services	1.development	53
	Participate in conservation issues e.g. education and Afforestation	1.Educating beekeepers raise knowledge, market from timber and NTFPs	42
	Employment provision	1.Raise income	34
Multiple responses allowed		Source: Survey data	

Local communities around Mpimbwe WMA take part in village development activities initiated by CBWM such as building schools, roads, dispensaries making villagers become busy by participating in village development activities, and open-minded as they become educated hence reducing illiteracy and diseases as patients are attended in constructed dispensaries. Supporting organizations such as USAID facilitate those activities and pay communities involved hence contributing to their livelihoods.

Communities around Mpimbwe WMA, participate in environmental conservation activities such as afforestation carried out in Kibaoni village by a community-based

organization (MIMAMPI) and reporting illegal hunters and wood harvesters. This contributes to livelihoods. Presence of MIMAMPI forests modifies the microclimate around by providing shed, adequate rainfall and temperature suitable for agriculture. Some community members have planted thorny trees around their farms to protect crops from raiding animals for example monkeys thus preventing destruction. Lastly, by arresting illegal wood harvesters and poachers brought security to village resources and communities in the study area hence contributing to community livelihoods.

Furthermore, small-scale projects, implementation of policies and supervising environmental conservation activities helped to solve problems in the study communities by representing the local stakeholders on development issues. In addition, income was raised through projects such as carvings sold to tourists from 10 to 25 000 Tsh a day, awareness on CBWM activities such as non-consumptive utilization of wildlife (game viewing and photographing) and protection of resources, which are likely to benefit the present and future generations.

Formulation of laws and policies such as wildlife and forest policies, facilitate the investors to provide funds for construction and social service provision and employment opportunities created by central government. Katavi National Park ecologist suggested that laws and policies formulated contributed to livelihoods by protecting natural resources, which brought benefits to the communities and raised residents' income.

Respondents from focus group discussion further revealed that, NGOs (GTZ) provided funds to support locally initiated projects and social services like wells, schools, dispensaries (Appendix 4) and provided conservation education and afforestation. These roles assisted community development. Gibson (1999) obtained similar results as those obtained in this study; he observed work done by an NGO (USAID), which provided funds to ADMADE, which channelled 35-40% of tourism revenue to communities around Zambian National Parks.

4.2.3 Benefit Sharing

Benefit sharing involves distribution of costs and benefits targeted at economic development and poverty reduction among different stakeholder (MNRT, 2007). The Wildlife Policy of Tanzania of 2007 calls for distribution of benefits among stakeholders based on their relevant roles, the effort invested in conservation of the resource, and the institutional and management costs (MNRT, 2007).

The benefit-sharing system of CBWM in Mpimbwe (Kibaoni, Ikuba and Usevya villages) and Inyonga (Inyonga and wachawaseme villages) divisions was not clear due to perceptions of some of the residents on CBWM and its importance. Sethi and Khan (2001) observed that tangible benefits from Joint-Forest Management have been weak, unreliable and captured mostly by local elites hence unclear. Focused group discussion results revealed that benefits shared were the social services provided by government and community-based association (IBA) such as schools and dispensaries to which all community members in Inyonga and Mpimbwe divisions had free access. The benefit shared was not tangible as it has been difficult to many CBWM initiatives, this makes benefit sharing matter to dates discussions.

The benefit-sharing system of CBWM in Mpimbwe WMA can be initiated by starting sharing the tangible benefits accrued from tourism activities among Mpimbwe WMA stakeholders. This would be beneficial as it would strengthen the work done by the actors among the WMA as it has been done in Namibia.

4.2.4 Resources which are benefiting the Communities

Natural resources surrounding communities such as wildlife and forests bring benefits to the communities. Results revealed that 31.9% of respondents claimed that land, wildlife (27.1%), water (23.1%), forest (17.3%) and minerals (0.6%) benefited the residents of Mpimbwe and Inyonga. Figure 5 presents resources from which benefits were received by the communities.

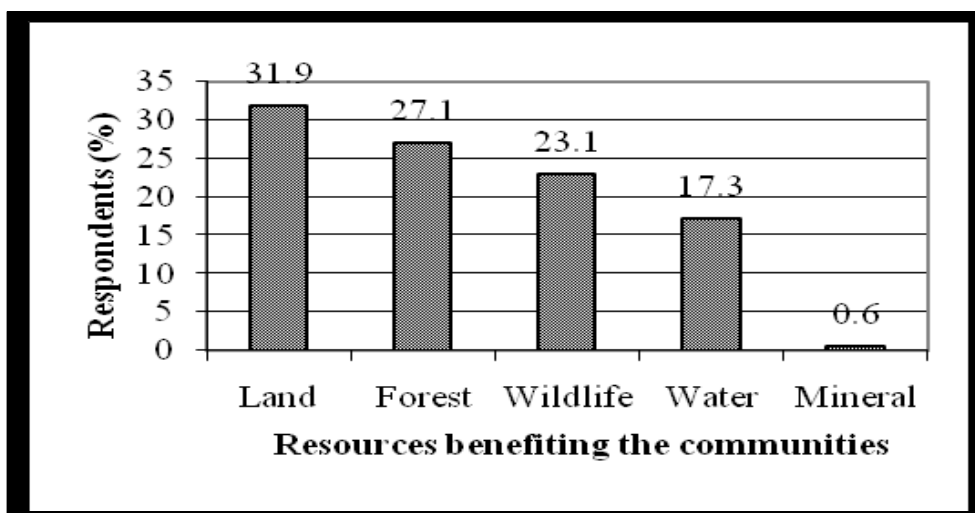


Figure 5: Resources benefiting communities

Communities around Mpimbwe WMA and Inyonga depend mostly on land resource. On land, the communities also graze their livestock. Forest resource benefits communities by providing timber and non-timber forest products (honey, fruits,

poles, medicine and fuel wood). Wildlife resource benefits communities through non-consumptive utilization (game viewing and photographing) in Mpimbwe WMA, where income earned from tourists is used in village development activities. Water resource benefits communities through agriculture and domestic use. Lastly, 0.6% of residents benefit from mineral resource because of toughness on means of extraction due to lack of machines used for extraction purposes and lack of mining industries.

4.2.5 Utilization of Resources by Communities

Table five below explains a change in resource utilization by communities between the years 2006 and 2008 due to technological advancement whereby there had been different ways (consumptive and non-consumptive) of utilizing wildlife resources. This has led to increase of wildlife utilization. Katavi National Park ecologist explained that the utilization of forest resources has decreased due to implementation of forest laws and education provided by Katavi National Park's outreach programme and conservationists. For example, in the year 2008 communities around Mpimbwe WMA reduced (from Kibaoni village) deforestation because of enforcement of forest laws and conservation education provided under National Park outreach programme. In 2006, Inyonga communities freely set beehives in forests without following licence procedures, thus they harvested some timber and non-timber forest products. In 2008 Forest and Beekeeping Division became strict on products harvested which led to security of products. In 2006, most of Mpimbwe and Inyonga communities depended on water from rivers but in 2008 Mpimbwe WMA authorities constructed wells in Mpimbwe division (Kibaoni, usevya and Ikuba villages) (Appendix 5).

There, has also been increase in utilization of land resource due to intensification of agriculture, searching for more grazing areas, and tourism advancement such as building of camps (honey hut camp) around Mpimbwe WMA in Kibaoni village as explained during focus group discussion. Chi square test (at 0.05 probability level) showed that there was a significant change in the utilization of resources between 2006 and 2008 (Table 5).

Table 5: Utilization of resources by households

Resources	Percentage of respondents on resource utilization(2008)*	Percentage of respondents on resource utilization (2006)**	χ^2 o-e	χ^2 (o-e) ² /e
Wildlife	23.1	18.1	5	1.38121
Forest	27.1	58.9	-31.8	5 17.1687
Water	17.3	3.5	13.8	6 54.4114
Mineral	0.6	0.1	0.5	3 2.5
Land	31.9	19.4	12.5	80.5412
			0	4 83.5155
				3

* Source: Field survey (2008)

** Source: Mpanda District Council (2006)

Note: $\chi^2 = 83.51553$

Tabulated $\chi^2 = 9.488$ at P level 0.05

4.3 Contribution of CBWM to Local Livelihoods and Poverty Reduction

4.3.1 Socio-economic Conditions Before and After Implementation of CBWM

The study revealed that there was a poor socio-economic condition before CBWM implementation (Table 6). About 42.5% of respondents claimed that there were poor social services, less agricultural outputs (20%), inadequate markets for products

(35%), lack of employment opportunities (47%), poor economic conditions (65%) and presence of crop raiding animals (36%).

Table 6: Socio-economic conditions before implementation of CBWM

Conditions before CBWM activities	Percentage of responses
Poor social services	42.5
Less agricultural outputs	20
Inadequate markets for the products	35
No employment opportunities	47
Poor economic conditions	65
Presence of crop raiding by animals	36
Multiple responses was allowed	
Source: Survey data	

The results further revealed that there were improvements of socio-economic conditions after CBWM implementation whereby 65% of respondents claimed that there has been improvement of social services, increase of agriculture output (45%), presence of markets for the products (30%), emergence of employment opportunities (25%), improved economy (27%) and reduction of crop raiding animals (20%) (Table 7).

Table 7: Socio-economic conditions after implementation of CBWM

Conditions after CBWM activities	Percentage of responses
Improvement of social services	65
Increase of agriculture output	45
Presence of markets for the products	30
Emergency of employment opportunities	25
Improved economy	27
Reduction of crops raiding by animals	20

Note: Multiple responses was allowed

Source: Survey data

4.3.2 Contribution to Community Income

Focus group discussion results revealed that CBWM contributes greatly to community income in the study area through employment opportunities and tourism revenues. Through CBWM activities Mpimbwe WMA, generated employment to the surrounding communities where 6 villagers from two villages (Kibaoni and Ikuba villages) have been employed as village game scouts. This has helped them to earn additional income to sustain their needs (Appendix 7). These results are similar to those obtained by Hahn and Kaggi (2001) who observed that around 3-4 fulltime scouts were employed in Selous Conservation Programme around Selous game reserve in Tanzania with payment ranging from US \$ 0.5-1 per day in addition to food rations, medicine and uniforms.

A study conducted in Namibia by Arntzen *et al.* (2003) found that CBNRM-related jobs were around 3,800, which made Namibian communities improve their life standards. Jones (2002), argues that about 85% of the CBNRM revenues in Botswana are evenly distributed among villagers around Chobe Enclave Community Trust- the oldest CBNRM project established in Botswana. Revenues from tourists visiting the Mpimbwe WMA contributed substantially to community income, about

TShs 71 million were channelled to villages forming Mpimbwe ward for supporting community projects and other social services (Appendix 5).

Administrative Management Design (ADMAGE) a national program managed by the Zambian National Park and Wildlife Service) granted local communities about 35-40% of tourist hunting revenues (Child and Dalal-Clayton (2004), Lewis and Alpert (1997), and Lewis *et al.*, 1990). Ashley and Barnes (1996) observed that Namibian conservancy programme under CBNRM brought financial benefits to the nation hence the total contribution to national income of four Namibia selected communal areas was NAD 16 million.

4.3.2 Contribution of CBWM to Social Service Improvement

Social services in communities around Mpimbwe WMA have improved since the introduction of CBWM. Stakeholders of CBWM (Katavi National Park and USAID) supported the construction of schools, dispensaries, wells and infrastructure (Appendix 5). Walsh (2000) in his study in Iringa region reported that benefits from CBWM (MBOMIPA) went to the improvement of social services such as roads, schools and dispensaries. Therefore, CBWM initiative can be very beneficial. However, this study observed that social services facilitation in the Mpimbwe WMA and the other actors involved were not enough due to the remoteness of the study area. This could be done by publicizing the Mpimbwe WMA to potential investors who can easily reach the study area hence contributing more to the social economic condition of the area.

4.3.3 Contribution of CBWM to Agricultural Development

Study results revealed that 63.3% of the respondents said that CBWM contributes to agricultural development. This was due to afforestation programmes emphasized by CBWM stakeholders from Mpimbwe WMA who planted trees in Kibaoni village through MIMAMPI. Furthermore, 40% of the respondents viewed CBWM stakeholders (WMA rangers in collaboration with communities) scaring away crops raiding animals from farms.

About 55% of respondents claimed that CBWM assists in increasing agricultural outputs, through education provided by Katavi National Park's outreach programmes and agricultural extension officers, education to the communities is on proper agricultural ways such as agro-forestry practises and usage of farm-yard manure which can be easily obtained. Lastly, 34% of the respondents said that CBWM sets up more areas for agriculture, this helped to reduce encroachment to the forest and wildlife reserves. Table 8 summarizes CBWM contribution to agriculture development.

Table 8: Contribution of CBWM to agriculture development

Contribution of CBWM to agriculture	Respondents (%)
Afforestation programmes	53.3
Reduction of animals raiding crops	40
Increasing agricultural outputs	55
More areas set aside for agriculture	34

Note: Multiple responses allowed Source: Survey data

According to Smith *et al.*, (2003), communities in Zimbabwe benefited more from wildlife than from agriculture in lands of Zimbabwe under CBWM (CAMPFIRE). This was due to high tourism activities conducted in Zimbabwe, which may be more beneficial than practicing agriculture. Moreover, tourism and eco-tourism can also be more promoted around Mpimbwe WMA since there are wild animals, such as lions which attract tourists as it was done in Zimbabwe lands. Collaboration can be done between tourism and agriculture. For example, hotel investors could use residents around Mpimbwe WMA to cultivate fruits and vegetables, which are basic items on menus for tourists. Thus, there could be benefits to both investors and the residents.

4.3.4 Contribution of CBWM to Livestock Development

The results (Table 9) indicate that 58.3% of the respondents claimed that CBWM in collaboration with livestock officers provided livestock vaccination education, 60% argued that CBWM facilitated land-use planning by allocating land for grazing livestock. Forty five percent of respondents had the view that CBWM encouraged people to keep livestock so as to minimize hunting, and 25% claimed that CBWM

helped to reduce human-wildlife conflicts by educating communities not to encroach the WMA. There have been some misunderstandings between livestock keepers and wildlife management, as some villagers in Kibaoni village grazed their livestock near the reserve, one of the villagers in FGDs (Appendix 7) explained this.

Table 9: Contribution of CBWM to livestock development

CBWM contributions to livestock development	Percent
Reduce human-wildlife conflicts	25
Provide education to livestock keepers on the use of natural resources	30
Emphasize people on keeping more livestock's	45
Provides vaccination education	58.3
Facilitation of land use planning by allocating land for grazing animals	60

Note: Multiple responses allowed Source: Survey data

In general, the results show that CBWM contributed greatly to livestock development around Mpimbwe WMA (Table 9 above). It facilitated land-use planning, including allocating land near MIMAMPI for livestock grazing something which was observed during the survey and which was explained by a CBWM stakeholder (Katavi National Park ecologist) during interview. Carney (1998) reported that a sustainable livelihood approach from Amboseli National Park buffer zones in Kenya expanded the available range for livestock grazing. Also, Ba Diao *et al.* (2003) observed similar results on CBWM contribution to livestock whereby community-based natural resource management contributed to the livestock sector in Senegal by integrating livestock into production systems without detrimental effect to the environment. Consequently, increasingly land available for livestock grazing can also be done around Mpimbwe WMA so as to avoid human/wildlife conflicts in future.

4.3.6 Achievements of CBWM

Table 10 presents a summary of reported achievements of CBWM in the study areas whereby 65% of respondents reported improvement of social services, 54.2% reported tremendous decrease of poaching and illegal wood harvest, 50% of the respondents responded that there was an increase of honey production, which contributed to household income and food security. Forty five percent of respondents claimed that there was awareness on what CBWM, 27% said that there were employment opportunities, while 12% claimed that there was decrease of crop raiding animals.

Table 10: Achievements of CBWM in the study divisions

CBWM achievements	Respondents (%)
Social services provision	65
Reduction of poachers and illegal wood harvesters	54.2
Increase of honey production	50
Awareness on CBWM	45
Employment opportunities	27
Decrease of crop raiding animals	12

Note: Multiple responses allowed Source; Survey data

Nyigili (2003) observed in Mbozi district, Tanzania that honey contributed little to household food security, results that are different from those from this study. Kibaoni and Usevya village game scouts and MIMAMPI members from Mpimbwe WMA work hand in hand with natural resource officers to arrest illegal wood harvesters and poachers. Wood harvesters and poachers (using fire) were reported to the Mpimbwe WMA authority by beekeepers that depended on the forests for

beekeeping. This increased honey production since there was reduction of poachers using fire.

Among the achievements reported at Kibaoni village in Mpimbwe division were increased patrols and arrests. This is because most of the poachers arrested came from the same village and neighbouring Usevya and Ikuba. The results were similar to those reported by Getz *et al.* (1999) that the achievement of CBWM in Naleza Camp in Zambia was that the number of patrols and arrests increased with the implementation of ADMADE and most of the poachers arrested came from neighbouring Kafue, Mazabuka and Monze. Employment opportunities to some residents provided by Mpimbwe WMA helped to reduced poverty. Besides, education provided to Mpimbwe communities on what CBWM is and its importance to the community has been achieved. There has also been improved social service such as schools and dispensaries as it was observed during the survey around Mpimbwe WMA (Appendix 5).

There were no achievements of CBWM in Inyonga division since there were misunderstandings between the Wildlife and Forest Divisions on implementation of CBWM activities, but they are now in the process of resolving the problem. Most of the achievements were shown by a community-based organization (IBA) in Inyonga which collaborated with the government on improving social services such as building schools and dispensaries as it was observed during the survey. There was also increase of honey production initiated by IBA.

4.4 Role of Park Use in Poverty Acceleration or Deceleration

4.4.1 Types of Products Collected

The results (Table 11) revealed that 75%, 70%, 65%, 55%, 35%, 20% of respondents declared that firewood, timber, wild animals, poles, honey and wild fruits were collected respectively. Note: Multiple responses allowed

Table 8: Types of products collected

Products types	Respondents Percentage
Firewood	75
Poles	70
Honey	65
Timber,	55
Wild-fruits	35
Wild-animals	20

Source: Survey data

The Survey revealed that firewood was the cooking was and this was the most collected product. Most preferred fuel wood species in Mpimbwe were (*Acacia seyal*) Mgunga, (*Thespesia garckeana*) Mtobo, (*Bombax rhodogndphalon*) Mfuma and (*Acasia nefasia*) Mkese; while (*Brachystagia spiciformis*) Myombo and (*Brachystegia sp.*) Mtundu were mainly collected in Inyonga. Furthermore, FGDs results revealed that timber was harvested for sale or furniture making and this helped the residents to meet their household needs hence poverty reduction. Most preferred timber species in Inyonga were (*Pterocarpus bussei*) Mninga and (*Afzelia quanzesis*) Mkola in Mpimbwe they included (*Sterculia africana*) Msavala, (*Afzelia quanzesis*) Mkola and (*Pterocarpus bussei*) Mninga. In addition, wild animals were poached and the most preferred species were giraffe (*Giraffa camelopardalis*), wildebeest (*Connochaetes taurinus*), elephant (*Loxodonta Africana*) and gazelle

(*Gazella granti*) Poaching was mainly done around Mpimbwe WMA. The results further reveal that 20% of the respondents claimed that wild animals were poached from the buffer zone.

Another product collected was poles, mainly collected around Mpimbwe WMA for immediate household consumption, like construction of houses and fences around homesteads, manufacturing of beds and storage facilitates for storing harvested crops. Sukuma and Pimbwes preferred more houses. Thus species collected in Mpimbwe for house construction were (*Afrormosia angolesia*) Mbanga and (*Burkea africana*) Migando whereas in inyonga it was (*Cassia singueana*) Mitunguru. Pole collection minimizes cost that could be spent in buying furniture, steel fences and bricks to build houses.

Honey is mainly collected in Inyonga division. The study revealed that beekeeping groups were established by Association for the Development of the Protected Areas (ADAP) in Inyonga forming Inyonga beekeeping association (IBA). Honey was reported to substitute sugar in tea and porridge. In addition, respondents reported that they used honey in treatment of coughs (mixed with lemon juice), burns and scalds were also smeared with honey to prevent blisters and enhance quick recovery. This is comparable to the study conducted in Milola and Mchakama villages in Lindi by Lalika and Machangu (2008) which showed that honey was used to cure people suffering from stomach ulcers, burns, and wounds from fire and for children suffering from blood shortages. Honey was marketed by IBA whereby one litre was at TShs 3000/=.

Furthermore, 35% of the respondents claimed that wild fruits came from Kamsisi village, Mulele hills, Rungwa and Inyonga east and west forest reserves in Inyonga. The preferred species in Inyonga were (*Uapaca sp.*) Mkusu, (*Borassus aethiopum*) Mhama, (*Vitex payos*) Sindi Fulu while in Mpimbwe WMA they were (*Borassus aethiopum*) Mhama and (*Thespesia garckeana*) Matobo.

4.4.2 Access to Park Products

The survey revealed that 42.5% of the respondents collected forest products by permission, but 57.5% said that they obtained products illegally. Most of the legally obtained products were honey and small percent of timber. Illegally obtained products were fuel wood, poles, wildfruits and game meat. Kibaoni villagers mainly obtained wild meat from Mpimbwe WMA. Key informant from Kibaoni village said that most of Communities from Mpimbwe WMA collected the products illegally, as it was difficult for them to obtain licences for harvesting the products, difficulties may be in terms of fund and time.

A study by Lehora (2006) revealed that communities adjacent to Dimba forest reserve in Lindi, Tanzania, were not allowed to collect firewood, thus cases of illegal harvesting of the product were present before Participatory forest management (PFM) and currently they are allowed to collect firewood in the forest under agreed rules and by-laws. These results are related to what was discovered during key informant interviews in Mpimbwe division where before CBWM introduction most of the communities were illegally harvesting products such as timber but, after CBWM there were some by-laws set by Forest division for timber acquisition.

Moreover, wild animals were not allowed to be hunted since the communities around Mpimbwe WMA were not authorized to carry out consumptive utilization. What was allowed was non-consumptive utilization. Furthermore, villagers (from focused group discussion) believed that honey and timber were obtained legally while fuelwood, wild meat, wild fruits and timber were obtained illegally.

4.4.3 Contribution of Park Products to Poverty Reduction

The results reveal that many products collected from the park have value to the communities as they maintain the livelihoods (Table 12). Focus group discussions results revealed that collection of park products such as honey and timber increased household income, which in turn increases diversification of household economy (Appendix 7). For example, 70.8% of the respondents claimed that community members obtained money from selling the products. Sixty seven percent said that hospital costs went down as honey was a substituted medicine for coughs, flue and burns, 82% claimed that the products reduced construction costs since materials were easily obtained from the park for example, poles. Moreover, 25% declared that less money was spent on buying food since wild fruits for example (*Uapaca sp*) Mkusu and wild animals such as gazelle (*Gazelle granta*) were collected and 15% of respondents claimed that the products assist agriculture. For example, tree stems and poles are used on farms preparation and making farm boundaries thus protecting farms from strong wind.

Table 12: Contribution of products to poverty reduction

Products contribution to poverty reduction	Percentage
Products reduced construction costs	82
Funds to acquire basic needs	70.8
Hospital expenditure cost are reduced (honey used as medicine)	67
Less fund spent in buying food	25
Assist in agriculture	15

Note: Multiple responses allowed Source: Survey data

According to Mwakatobe and Mlingwa (2005), 46% of the population in Arusha used honey for medicinal purposes. These results are similar to those obtained from the study area since Inyonga division consisted of Miombo woodland where honey is mostly harvested. This shows many residents depend on honey for medication hence reducing costs incurred in hospitals. For example, medication of a cough in Inyonga village dispensary costs 3500, legislation fee is 500, seeing a doctor and medicine costs 3000. Focus group discussion member from Inyonga proposed that with the amount of money one can use in buying food hence sustaining livelihood (Appendix 7).

Hamza and Msalilwa (2004) report that non-timber forest products contribute to poverty reduction as they contribute to household food security of 9.2% households in villages around Mgori forest reserve in Singida, Tanzania. Marshall *et al.* (2006) explain that non-timber forest products (poles, honey and wild fruits) contributed to poverty reduction in Mexico and Bolivia in Central America. Another study in eastern Tanzania's dry miombo forests found that rural households derived more than 50% of their cash income from sale of forest products such as charcoal, honey, wild fruits and fuelwood (Barnes and Floor 1996). These results are similar to those revealed during focus group discussion (FGD) at Wachawaseme village in Inyonga

division. According to the results there should be more exploration of forests in Inyonga and Mpimbwe where NTFPs can be obtained, as some of NTFPs were not used for economic purposes such as wild-fruits and poles.

4.4.5 Effects of Illegal Wood harvesting on Local Livelihoods

The study results show that 58.3% and 41.7% of the respondents believed that illegal wood harvesting had negative and positive effect to the livelihoods of the residents respectively (Table 13). The study further revealed that 55.8% of the respondents claimed that illegal wood harvesting reduced bees' breeding grounds hence less honey was produced, 65% believed that illegal wood harvesting reduced rainfall and increased soil erosion hence poor conditions for agriculture. Fifty two percent of respondents declared that illegal wood harvesting disturbed wild animals as forests acted as their breeding and brooding grounds. About 42% believed that illegal wood harvesting destroyed some natural resources (forests and wildlife) thus future generation won't benefit from them. Fifty three percent of respondents claimed that illegal wood harvesting reduced the number of trees hence desertification.

A study by CARE (2000) observed that most of Jozani communities in Zanzibar were heavily dependent on forest resources, and these resources were declining due to human population increase. The harvesting of these resources was unsustainable and thus reduced harvests of fuel wood and building poles as well as decline in bush pig (*Potamochoerus larvatus*), Suni (*Neotragus moschatus*), Ader's duiker (*Cephalophus adersi*) and Zanzibar leopard (*Panthera pardus*) populations. These results were similar to those obtained from the current study where Mpimbwe WMA

communities were heavily dependent on forest and wildlife resources. They collected most of the products from the park (fuel-wood, poles, wild animals).

Table 13: Negative effects of illegal wood harvesting on the livelihoods

Negative effect to the livelihoods	Respondents	Percentage
Reduces rainfall, increases soil erosion		65
Reduced bees breeding grounds		55.8
Reduces the number of trees		53
Disturbances to the wildlife		52
Destruction of resources		42

Note: Multiple responses allowed

Source: Surveyed data

The results (Fig.5) further revealed that wood harvesting had positive effects on the livelihoods. Seventy point eight percent of the respondents perceived that they got income from selling wood, which helped them to acquire essential needs. Fifty three point four percent of respondents said that wood was obtained for construction purposes, and 48% responded that from harvesting wood in forests one could get food such as wild fruits.

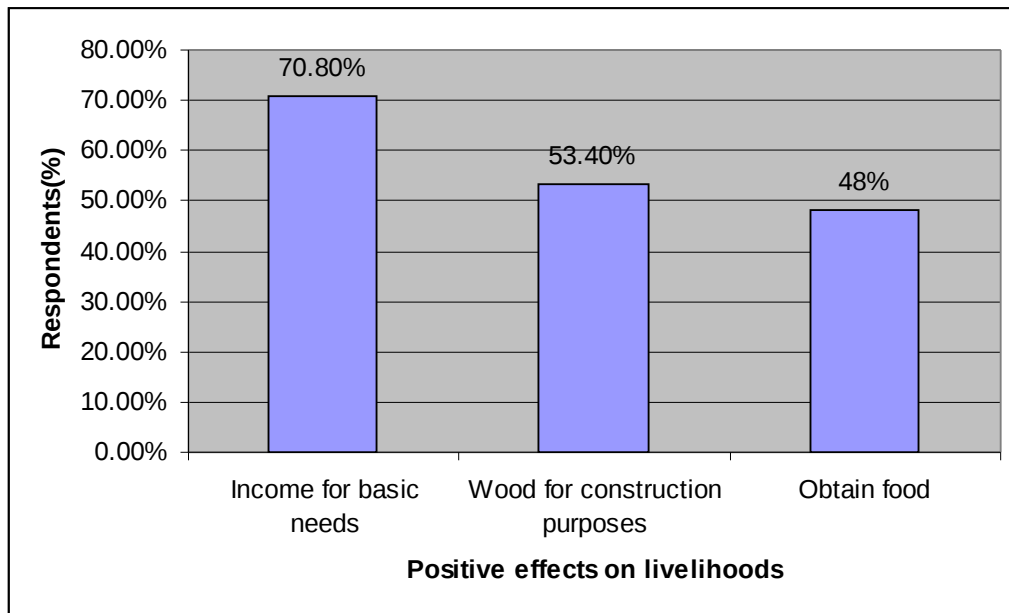


Figure 4: Positive effects of illegal wood harvesting on livelihoods

The study results reveals that wood harvesting have positive effects to the livelihoods of the study communities, since most of the villages sells what they harvest, and the amount of money obtained is used to maintain household livelihoods. This was discussed during focus group discussions in the study areas. A study by Kahyarara (2002) reveals that most people living around gazetted forests in the coastal belt of Tanzania depend heavily on the forests for income generation and other household uses. This reduces household expenditure costs hence poverty reduction.

4.4.6 Effect of Poaching on Livelihoods

The results also reveal that 77% of respondents claimed that poaching had negative effects on livelihoods, while 23% claimed that poaching had positive effect (Fig.6). Furthermore, 38% of the respondents claimed that there was reduction of manpower in Mpimbwe villages since able bodied men were arrested by village game scouts,

42% argued that poaching reduced the number of animals, 26% claimed that poaching is unsustainable due to extinction of some animals and 34% claimed that poaching activities destroy the environment through the use of fire.

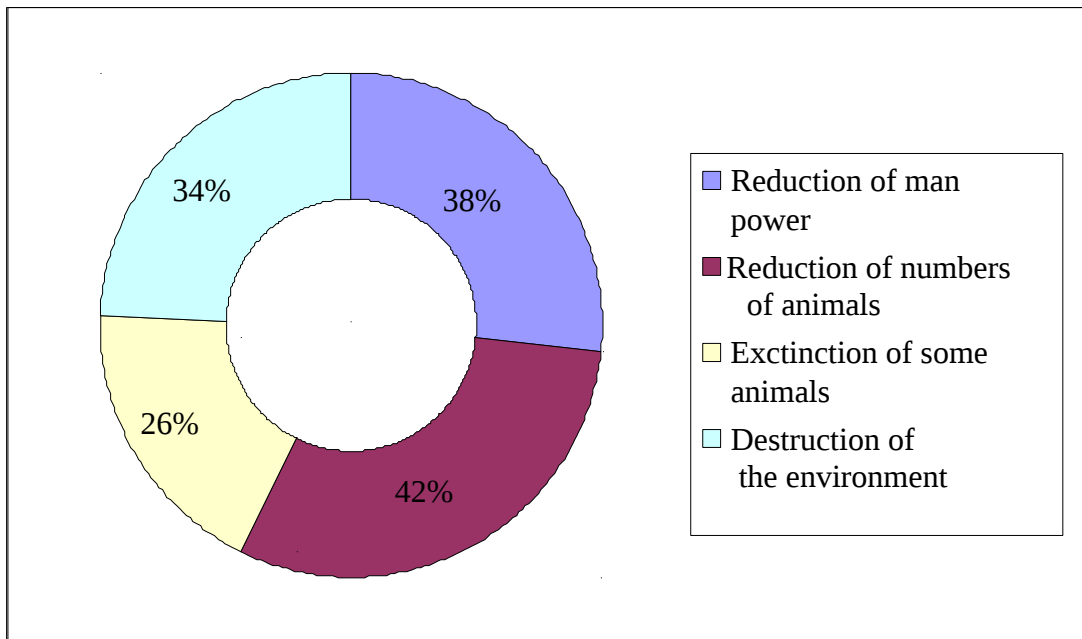


Figure 5: Negative effects of poaching on livelihoods

Hile (2004) argued that, African poachers use fire to burn off grass in the dry season to flush animals and for easy access. Magelah *et al.* (2007) reported that poaching has various direct impacts. Direct impacts include extinction, either globally or locally, and spread of diseases in both animals and humans. For example, in Uganda, the outbreak of Anthrax in early 2000 was associated with people eating or transporting infected animals from Queen Elizabeth National Park (Magelah *et al.*, 2007). In Mpimbwe WMA most of the Pimbwe and Fipa poachers poached large animals like elephants and giraffe. This reduced numbers of elephants and giraffes.

Poaching had positive effects to the livelihoods, as 65% and 55% of the respondents perceived that poaching activities generated funds to run their day-to-day activities and provided them with meat (protein), which protected them from malnutrition respectively (Table 14). Most of the poachers were from Mpimbwe WMA communities specifically Ikuba and Kibaoni villages.

Table 14: Perceived positive effects of poaching on livelihoods.

Poaching positive effect	Percentage
Provided fund	65%
Provided meat	35%
Total	100
N=120	

4.5 Strategies that Would Lead to Poverty Reduction

The study results (Table 15) reveal that 70% of the respondents suggested that there should be introduction of small and large farmers' groups that could concentrate on agriculture while 80% had the view that the government should provide villagers with agricultural inputs to improve agriculture. Moreover, 65% of the respondents suggested establishment of income-generating activities depending on locally available resources, which would involve different age and sex groups, 60% said that education should be provided to the villagers on the importance of beekeeping and they should be engaged in beekeeping associations and 70% wanted environmental conservation education to be emphasized.

Eighty five percent of the respondents wanted social services such as roads, power supply (electricity), hospitals and schools to be improved. It was observed in Mpimbwe division that there was only one dispensary at Kibaoni village (Appendix

4). Consequently, villagers at a neighbouring village (Usevya) have to travel all day long for health services. Furthermore, there was no electricity in both divisions, few schools were observed and roads were inaccessible (for example, the road from Mpanda town to Inyonga).

Table 9: Suggestions to reduce poverty reduction

Poverty reduction strategies	Respondents (%)
Improvement of social services	85
Provision of agricultural inputs by government	80
Introduction of small and large scale farmer groups	70
Emphasize on environmental conservation education	70
Establishment of more income generating activities	65
Educating the villagers on beekeeping and its importance	60

Note: Multiple responses allowed Source: Survey data

According to Hausser and Savary (2002), the project implemented by ADAP in Inyonga aimed at supporting the development of village-based sustainable economic activities with a view to increase contribution of natural resource management to the local economy. Regarding environmental conservation education, it was noted by Inyonga key informant that local communities in Inyonga (through Inyonga Beekeeping Association) were able to integrate conservation and development to achieve sustainable development. This made the local communities understand their rights and responsibilities over natural resource management. And, this achievement was in line with the National Forest Policy (MNRT, 1998b) and the Forest Act No.

14 of 2002 (URT, 2002), which emphasize on devolution of ownership and management responsibilities over forest resources to local communities.

Jones (2004) argue that establishment of community-based organizations in the communities in Botswana was a strategy for poverty reduction. In Zambia it was observed that new CBOs such as Nyae Nyae had potentials of raising revenues. During FGD respondents at Ikuba village in Mpimbwe division advised that people in the village should be educated in beekeeping and its importance as it was done by Inyonga Beekeeping Association in Inyonga village. In addition, there should be introduction of more CBOs, which could help communities to improve livelihood hence a strategy to poverty reduction.

4.6 Effectiveness of Poverty Reduction Strategies

The results reveal that 57% of the respondents said that the poverty reduction strategies raised awareness to the residents such as conservation awareness. For example, Inyonga residents conserved forests by reporting illegal wood harvesters while Mpimbwe residents reported poachers. About 70% of the respondents reported that they were provided with markets for their products. For instance, Inyonga residents got access to markets through IBA hence they got money to sustain their needs 45.5% of the respondents claimed that the strategies helped them to develop socially and economically such as provision of social services such as schools, dispensary and improved transport services from Mpanda to Mpimbwe. All these enabled villagers to transport their agricultural products to the market in Mpanda town easily.

Furthermore, the results reveal that 48% of the respondents revealed that there had been cooperation between the government, NGOs and residents (Fig 7). For example, cooperation between different stakeholders of CBWM in Mpimbwe WMA. Forty percent of the respondents claimed that the strategies increased agricultural outputs mainly through promoting small groups of farmers.

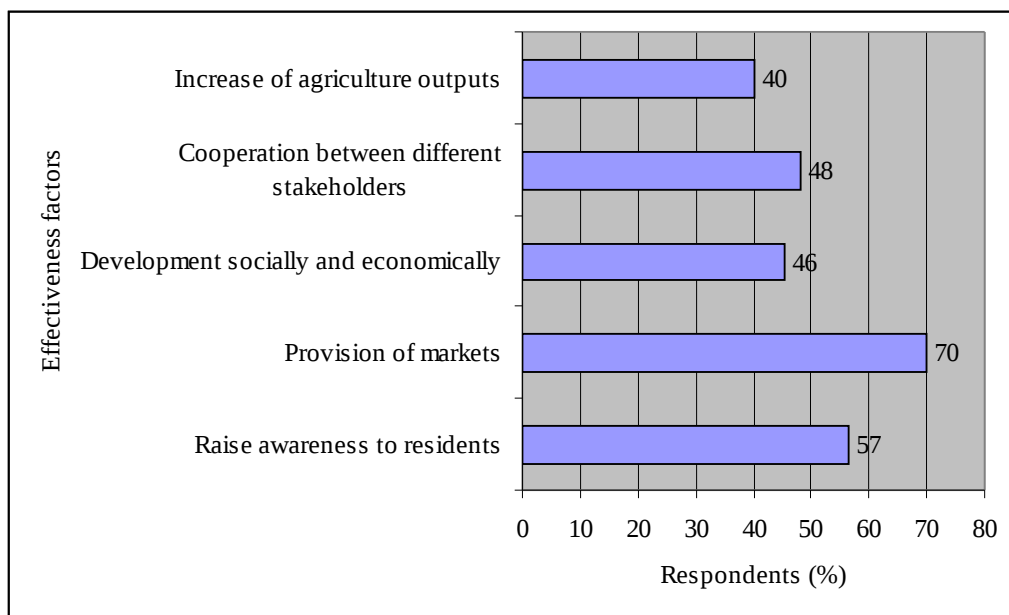


Figure 6: Effectiveness of implemented poverty reduction strategies

Observations made by Civil Society for Poverty Reduction CSPR (2005) showed that agriculture played a great role in poverty reduction in Zambian communities due to increased agricultural inputs, appropriate labourers, transportation and markets for agricultural outputs. Agriculture's role in poverty reduction was, and is still, among the implemented poverty reduction strategies in Zambia. These findings were related to the study results, which show that provision of agricultural inputs by government

leads to increase of agricultural outputs. Emphasis should be placed more on agriculture to the study communities.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

According to this study, CBWM has shown to be an important strategy that cannot be neglected. Community-based wildlife management has positive effect on improvement of the livelihood of the residents and wildlife in general. Thus, CBWM practises such as that conducted by Mpimbwe WMA can contribute to decreased poaching and illegal harvesting of forest resources, increase of agricultural outputs, increase of honey production, improved income and social services and increase of livestock production. Furthermore CBO practises as that conducted by IBA from Inyonga also contributed generally to the improvement of socio-economic conditions of the residents of Inyonga division hence, poverty reduction.

Additionally, local communities in the study area perceived CBWM as an important approach towards improving the wildlife resource management and their livelihoods. It can also be concluded that, communities' attitude towards CBWM was positive and their awareness on CBWM activities, involvement in conservation and management of wildlife and forest resources has increased than it was before.

Mpimbwe WMA CBWM and CBO (IBA) from Inyonga showed positive trend towards improving livelihoods of local communities in the study areas. This was possible through promotion on initiation of income generating activities to the local communities and sustainable utilization of wildlife and forest resources that can

benefit the present and future generations. The products collected from WMA and reserves for commercial purposes such as honey, timber, poles and wild edible fruits increased household income and minimized cost to be spent in buying medicine, building materials and food. This has increased diversification of economy and reduces poverty.

5.2 Recommendations

This study recommends:

- In order to insure sustainable management and utilization of wildlife resources under CBWM, communities should be provided awareness education on the importance of wildlife resources and to make them understand how wildlife resources are beneficial to them.
- Provision of soft loans to local communities to facilitate access to capital so as to initiate income generating projects. One of the sources could be National Strategy for Growth and Reduction of Poverty (NSGRP) (MKUKUTA) funds. Funds should be provided with more advanced agricultural equipments, permanent markets for their manufactured goods should be sought and taxes collected in villages should be organized and reduced so as to improve the income of the residents.
- Since CBWM activities have proven to be very beneficial to the residents, the MNRT and Inyonga division authorities should make efforts to mitigate conflicts between forest and wildlife divisions and Inyonga communities should be initiated with CBWM activities.

- There is a need of monitoring and evaluating the performance of CBWM activities. The monitoring should start after the local communities are involved in CBWM activities. Evaluation could be done in a specific period of time (every three or five years) to evaluate trend on the changes of wildlife resources and livelihoods of local communities.
- There is need to build institutional capacity at district and village level to ensure that technical services and advice is provided when needed.
- There is need of scaling up of CBWM activities to other areas like Inyonga division communities which are not currently involved in the CBWM activities.

REFERENCES

- Aalbaek, A. (2000). Farmer tree planting in Tanzania. In: *Off-forest tree resources of Africa*. (Edited by Temu, A.B., Lund, G., Malimbwi, R.E., Kowero, G.S., Kleinn, K., Malende, Y. and Kone, I.) A proceedings of a workshop on held at Arusha, Tanzania. The African Academy of Sciences (AAS). pp 156-170.
- Adams, J. and Hulme, D. (1999). *Community Conservation Research in Africa: Principles and Comparative Practice*, Draft Papers, Institute for Policy and Development Research, University of Manchester. pp 23-25.
- Adriayanti, D.T. (1994). Deskripsi jenis tanaman pioner pada lahan bekas kebakaran dihutan jati. KPH Madiun, Fak. Kehutanan, UGM. *Anthropology* 128:682-692.
- Agrawal, A. and Gibson, C. (1999). Enchantment and disenchantment: The role of community in natural resource management. *World Development* 27(4): 629–649
- Arntzen, J, Setlhogile, T and Barnes, I. (2007). *The impacts of CBNRM on livelihoods, poverty reduction and food security: what does it contribute and are there alternatives?* IUCN/ USAID FRAME. 73 pp.

Arntzen, J.W., Molokomme, D.K., Terry, E.M., Moleele, N., TShsosa, O. and Mazambani, D. (2003). *Main findings of the review of community-based natural resource management in Botswana*. CBNRM Support Network Occasional Papers No. 14, Gaborone. [Available at www.cbnrm.bw].

Ashley, C. and Barnes, J. (1996). *Wildlife Use for Economic Gain: The potential for wildlife to contribute to development in Namibia*. DEA Research Discussion Paper No. 12. Windhoek: MET. 54 pp.

Awimbo, J., Barrow, E.G.C. and Karaba, M. (2004). *Community-based Natural Resource Management in the IGAD Region*. Nairobi: IUCN-EARO and IGAD. 41 pp.

Azimi, A. (2004). *Technical Assistance to the Islamic Republic of Afghanistan for Natural Resources Management and Poverty Reduction*. Asian Development Bank TAR: AFG 38039.

Ba Diao, M., Carvalho, J.P., Koita, B., Ndour, B., Thiaw, D. & Touré, D. (2003). *Capitalisation des techniques et technologies de gestion durable des ressources naturelles*. United Nations Development Programme/Global Environment Facility consultation study for PGIES. Dakar, Senegal. [Available at: www.pgies.net/Etudes/Etudes3.htm]

- Bailey, B.K. (1994). *Methods of Social Research*. The Free Press collier. McMillan Publishers, New York. 60 pp.
- Barnes, J. (1996). Trophy Hunting in Namibia. In: *Namibia Environment*. (Edited by Tarr, P.) Vol. 1. Directorate of Environmental Affairs, Ministry of Environment and Tourism, Windhoek, Namibia. pp 100-103.
- Barnes, D. F, and Floor, W. M. (1996). Rural energy in developing countries: a challenge for economic development.
- Barnett, R. and Patterson, C. (2006). *Sport Hunting in the Southern African Development Community (SADC) Region: An Overview*. Johannesburg: TRAFFIC East/Southern Africa. Pp 220-223.
- Barrett, C.B., Brandon, K., Gibson, C. and Gjertsen, H. (2001). Conserving tropical biodiversity amid weak institutions. *BioScience* 51:497-502.
- Bartlett, E. J. I., Kotrilik, W. J. and Higgins, C. C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research. *Information technology, learning, and performance journal* 19(1): 43-50.
- Batchelde, K., Carlos, J., Hernández, C., Hernández, R., Sonia, J., Jiménez, N., Alcázar, R.S., Cruz, C.T., Vázquez, V.A., Zoraida, A. and Fonseca, M. (1999). *Participatory Conservation in Buffer Zone Communities*. INE. pp 34-40.

- Bhumibbamon, S. (1997). *Eatable multipurpose trees, subcommittee on Research coordinator of forest resources and multipurpose fast growing Trees*. Bangkok, Research council of Thailand 485pp.
- Bond, W.J. and van Wilgen, B.W. (1996) *Fire and Plants*. Chapman & Hall, London. 36pp.
- Boyd, H. K., Westfall, R. and Stasch, S. F. (1981). *Marketing research, texts and cases*. Richard, D. publisher, Illinois. USA. 738pp.
- Brockington, D. (2002). *Fortress Conservation: The Preservation of the Mkomazi Game Reserve, Tanzania*. Oxford: International African Institute. London.
- CARE (2000). Development of Jozani-Chwaka Bay National Park, Zanzibar Island, Tanzania. Report for Commission for Natural Resources and CARE Tanzania.
- Carney, D. (1998). '*Sustainable rural livelihoods: What contribution can we make?*' Papers presented at the DFID's Natural Resource Advisers' Conference, July 1998. London DFID.
- Caro, T.M. (1999a). Abundance and distribution of mammals in Katavi National Park, Tanzania. *African Journal of Ecology* 37 305–313.

Chacha, K. (2005). *Tourism Contribution to Poverty Reduction* Author: Resource Development and Administrative Director.

Child, B. and Dalal-Clayton, B. (2004). Transforming approaches to CBNRM: Learning from the Luangwa experience in Zambia. In: *Getting Biodiversity Projects to Work: Towards more Effective Conservation and Development* (edited by McShane, T.O., and Wells M.P.). New York: Columbia University Press. pp. 256- 289

De Vaus, D. A. (1993). *Survey in Social Research*. 3rd Edition. University College London Press. 379pp.

Driscoll, R. and Evans, A. (2004). “*PRSP Annual Progress Reports and Joint Staff Assessments. A Review of Progress*” London: PRSP Monitoring and Synthesis Project, Overseas Development Institute.

Forest and Beekeeping Division (2000). *A study on beekeeping in cross-sectional areas, National Forest Programme Formulation in Tanzania*. Ministry of Natural Resources and Tourism, Dar es Salam, Tanzania, 36 pp.

Getz, M. Fortmann, W., Cumming, D., Du-Toit, J., Hitly, J. and Rowan M, quoted by Li M.T. (2002). ‘Engaging Implications: Community Based Resource Management, market processes and State agendas in Upland Southeast Asia’, *World Development* 30(2): pp 265-283.

- Gezon, L. (1997). "Institutional structure and the effectiveness of integrated conservation and development projects: case study from Madagascar". *Human Organization* 56 (4): 462–470.
- Gibson, C.C. (1999). *Politicians and Poachers: The Political Economy of Wildlife Policy in Africa*. Cambridge University Press, Cambridge. UK. pp 221-230.
- Hadley, C. (2005). "Ethnic expansions and between group difference in children's health: A case study from the Rukwa valley, Tanzania." *American Journal of Physical Anthropology* 128(3): 682-692.
- Hadley, C.A., Mulder, B. and Fitzherbert, E. (2007). *Seasonal food insecurity and perceived social support in rural Tanzania*. Public Health Nutrition: in press.
- Hahn, R. and Kaggi, D. (2001). Selous Game Reserve. Development of CBC in the Buffer Zone. Facts and Figures. Pp. 1-4. In: *Experiences With Community Based Wildlife Conservation in Tanzania*. Editors: Baldus, R. D. & Siegel, L. Tanzania Wildlife Discussion Paper No. 29.
- Hamza, K.F.S. and Msalilwa, U.L. (2004). Contribution of some non-timber forests products (NTFP) to household food security and income generation: a case of villages around Mgori forest reserve, Singida, Tanzania. In: *proceeding of the second Worldwide Symposium on Gender and Forestry, College of African wildlife management, Mweka, Kilimanjaro, Tanzania*. 1st-10th August 2005.

- Hartley, D. (1997). *Community Wildlife management. A Review of ODA experience in Tanzania*. Report to the Overseas Development Administration. London.
- Hausser, Y. and Savary, J.F. (2002). ADAP: A cross-sectoral approach to beekeeping support. *Bees for Development Journal* 64: 6-7.
- Hile, J. (2004). *African Wildlife Poachers Are In His Sights*. Africa Conservation Foundation, Field report from Africa. Topic no.20.
- Holmes, C.M. (2005). Cultural variation, decision-making, and local institutions: an examination of fuel wood use in Western Tanzania. *Society and Natural Resources* 18:1-13.
- International Fund for Agricultural Development (IFAD) (2007). *United Republic of Tanzania, Poverty status Annual Report*. Government Printer, Dar es salaam, Tanzania. 20pp.
- Jazairy, I., Alamgir, M. and Panuccio, T. (1992). *The State of World Rural Poverty*. International Fund for Agricultural Development. Great Britain.

Jones, B. (2004). *CBNRM, poverty reduction, and sustainable livelihoods: Developing criteria for evaluating the contribution of CBNRM to poverty reduction and alleviation in southern Africa*. Commons Southern Africa Occasional Paper Series No 7. Centre for Applied Social Sciences and Programme for Land and Agrarian Studies.

Jones, B.T.B. (2002). Chobe Enclave, Botswana. *Lessons Learnt from a CBNRM Project 1993-2002*. CBNRM Support Programme Occasional Paper No. 7. SNV/IUCN, Gaborone.

Kahyarara, T. (2002). *Poverty and Deforestation around the Gazetted Forests of the Coastal Belt of Tanzania*. Research on Poverty Alleviation (REPOA), Report No: 02.3. Dar es salaam, Tanzania

Kajembe, G.C. (1994). Indigenous management systems as a base for community forestry Tanzania: A case study of Dodoma urdan and Lushoto Districts.

Kajembe, G.C. and Luoga, E.J. (1996). *Socio-economic aspects of tree farming in Njombe district*. Consultancy report to the National resources Conservation and Land-Use Management project (HIMA- Njombe), Funded by DANIDA. FORCUNSULT, Morogoro. 98 pp.

- Kamwenda, J.G. (1999). Analysis of “Ngitiri” as a traditional silvopastoralists of Meatu, shinyanga, Tanzania. (Unpublished MSc. Dissertation Sokoine University of Agriculture, Morogoro. Tanzania. 132pp.
- Kerario, E.J.C. (1992). Analysis of Farmers views on environmental conservation Programme of semi arid area: Case of HADO Project, Kondoia Tanzania. Unpublished Dissertation, Sokoine University of Agriculture, Morogoro, Tanzania. 110pp.
- Kessy, J.F. (1998). *Conservation and utilization of natural resources in the East Usambara forestry reserves: Convectional views and local perspectives.* Tropical Resource Management paper No.8. Wageningen Agricultural University. The Netherlands. 168pp.
- Kock, M. (2008). *Exploring the effectiveness of community based natural resource management in Salambala conservancy, Namibia.* Poverty and Natural Resource Management Seminar, 30 October 2008. Namibia, pp 2-3.
- Kyomo, A. (1994). *Economic benefits of climate and weather information in wildlife management, TANAPA policy, Tanzania.* pp 9-15
- Lalika, M.C.S. and Machangu, J.S. (2008). Beekeeping for income generation and coastal forest conservation in Tanzania. *Bees for Development Journal* 88:62-75.

- Lebora, H.I. (2006). The Contribution of participatory forest management to sustainable forest management and poverty reduction in Lindi rural district, Tanzania. Unpublished Dissertation for Award of Msc. Degree at Sokoine University of Agriculture, Morogoro. Tanzania. 77pp.
- Lewis, D.M. and Alpert, P. (1997). Trophy hunting and wildlife conservation in Zambia. *Conservation Biology* 11: 59-68.
- Lewis, D.M., Kaweche, G.B., and Mwenya, A. (1990). Wildlife conservation outside protected areas: Lessons from an experiment in Zambia. *Conservation Biology* 4: 171-180.
- Lewison, R. (2002). Spatially explicit behavioral models, foraging behavior, and population dynamics of the common hippopotamus. Ph.D. thesis. University of California. California pp 120-125
- Lowrey, P. (2003). Poachers routed by community patrol. Available on line at [<http://www.spc.int/coastfish/News/WIF/WIF13/Lowrey2.pdf>] site visited on 08/8/2009.
- Magelah, P., Codella, G. and Eid, Y. (2007). "Poaching" [<http://www.eoearth.org/article/poaching>] site visited on 22/09/2008.

- Maveneke, T.N. (1996) *Local Participation and Benefit Sharing in Wildlife Management: The Zimbabwe CAMPFIRE Programme*, Harare.pp 120-125.
- Mboya, S.D.B, Shechambo, F.C., Sosovele, H., Kulindwa, K., Naho, A.A. and Cromwell, E. (1995). *Structural Adjustment and Sustainable Development in Tanzania*. Dar es salaam University Press, Tanzania. 210 pp.
- Mbwambo, J.S. (2000). The role of local knowledge and organizations in sustainable conservation of biodiversity: A case study of Udzungwa mountains, Tanzania. (Unpublished), Msc. Dissertation. Sokoine University of Agriculture, Morogoro. 117pp.
- Mckean, S.D. (1998). Towards Sustainable Use of Palm leaves by a Rural Community in KwaZulu-Natal, Southern Africa. In *Min-Symposium on Common Property Resource Management* (edited by Shackleton, S.E. and Tapson, A.) (eds). CSIR, Pretoria, Nylsvley Nature Reserve, S. A. 67-70pp
- Mellor, J. (2001). *Faster more equitable growth agriculture, employment multipliers and poverty reduction*. Paper prepared for USADD/G/EGAD.
- Ministry of Natural Resources and Tourism (MNRT) (1998a). The Wildlife Policy of Tanzania. Dar es Salaam: Government Printer

Ministry of Natural Resources and Tourism (MNRT) (1998b). National Forest Policy. Dar es Salaam: Government Printer.

Ministry of Natural Resources and Tourism (MNRT) (2002). *Katavi-Rukwa Ecosystem Management Plan*. Wildlife Division and Tanzania National Parks TANAPA report. Ministry of Natural Resources and Tourism, Dar es Salaam, Tanzania.

Ministry of Natural Resources and Tourism (MNRT) (2007). The Wildlife Policy of Tanzania. The United Republic of Tanzania, Dar es Salaam, June 2007, Government Printer, Dar es Salaam, Tanzania. 23pp.

Mpanda District Agricultural and Livestock Development Officer (DALDO) (2003). *Mpanda district profile*. Mpanda District Council. Mpanda, Rukwa. pp32.

Mugabe, J. and Clark, N. (1998). *Managing Biodiversity. National systems of conservation and innovation in Africa*. African centre for technology studies (ACTS), National Kenya. 279

Mulder, M.B., Tim, C. and Msago, O.A. (2007). "The role of research in evaluating conservation strategies in Tanzania: the case of the Katavi-Rukwa ecosystem". *Conservation Biology*. 21 (3):647-658.

- Mwakatobe, A. and Mlingwa, C. (2005). *The marketing of bee products in Tanzania*. A paper presented at the Bees for Development Honey Trade Workshop held in Dublin, Ireland in August 2005. 15 pp
- Nelson, F., Nshala, R. and Rodgers, W.A. (2007). *The evolution and reform of Tanzanian wildlife management*. Wildlife Conservation Society of Tanzania (WCST). Dar es Salaam. Tanzania.
- Nyigili, B.R. (2003). Contribution of non-wood forest products to household food security in Mbozi district, Tanzania. Unpublished Dissertation for Award of Msc. Degree at Sokoine University of Agriculture, Morogoro. Tanzania. 118pp.
- Paciotti, B. and Mulder, M.B. (2004). The role of preexisting and evolving social institutions among Tanzanian vigilante organizations. *Human Organization* 63: 113-125.
- Park, J., Gasser, T. and Rousson, V. (2009). *Structural components in functional data*. Computational Statistics and Data Analysis volume 53. Elsevier Science Publishers B. V. Amsterdam, The Netherlands, p 3452-3465.
- Ribot, J.C. (2004). *Waiting for Democracy*. The Politics of Choice in Natural Resource Decentralization. WRI Report, World Resources Institute.

- Rodgers, W.A. (1996). The miombo woodlands. Pages 299-325 in T.R. McClanahan, and T.R. and T.P. Young, editors. East African ecosystems and their conservation. Oxford University Press, New York.
- Rotha, K.S. (2005). Understanding key CBNRM concepts. In: The Development of Community Based Natural Resource Management (CBNRM) in Cambodia. Selected Papers on Concepts and Experiences. CBNRM Learning Initiative.
- Schwartz, M.W., Caro, T.M. and Banda-Sakala, T.(2002). Assessing the sustainability of harvest of *Pterocarpus angolensis* in Rukwa Region, Tanzania. *Forest Ecology and Management* **170**:259-269.
- Sethi, P. and Kan, A. (2001). Structuring financial empowerment for localized development within JFM: Examples from Madhya Pradesh, India. *Sustainable Development* 9(2):10-24.
- Smith, R.D. and Maltby, E. (2003). *Using the Ecosystem Approach to Implement the Convention on Biological Diversity: Key Issues and Case Studies*. IUCN, Gland, Switzerland and Cambridge, UK. 118 pp.
- Sommerlatte, M. (1995). *Katavi-Rukwa conservation project*. Report. Kreditanstalt für

Songorwa, A.N. (1999). Community-based wildlife management (CBWM) in Tanzania: Are the communities interested? *World Development* 27(12):2061-2079.

Songorwa, A.N., Buhr, T. and Hughley, F. (2000). 'Community based wildlife management in Africa: A critical Assessment of the Literature', *Natural Resource Journal*, 40(3):603-643.

Songorwa, A.N. (2007). Poverty and conservation in Tanzania. available online at[<http://www.povertyandconservation.info/docs/20071201-Songorwa/Handout/PCLG/Symposium/2007.pdf>]

Thaxton, M. (2006). *Saadani National Park and Its Impacts on Surrounding Communities*. Population Reference Bureau. Park and poverty, 13 July 2006, Bagamoyo. Tanzania.1-14pp

United Republic of Tanzania (URT) (1998). *Tanzania Country Study on Biological Diversity*. Vice President's Office, Dar es Salaam, Tanzania

United Republic of Tanzania (URT) (2000). *Poverty Reduction Strategy paper (PRSP)*, Government printer, Dar es salaam, Tanzania, 63pp.

United Republic of Tanzania (URT) (2002). *Population and housing Census*. National Bureau of Statistics.

[<http://www.tanzania.go.tz/census/regions.tm>] Site visited on 14/4/2009.

United Republic of Tanzania (URT) (2003). *Household Budget Survey (2000/2001)*
Final Report. Dar es salaam, Tanzania.

United Republic of Tanzania (URT) (2005). *National Strategy for Growth and
Reduction of Poverty*. Dar es salaam, Tanzania. 63pp

United Republic of Tanzania (2005). *Poverty and human development report*. Mkuki
na Nyota Publishers, Dar es Salaam, Tanzania. 103pp

United States Agency for International Development (USAID) (2002). *Nature,
wealth and power in Africa: emerging best practice for revitalizing rural
Africa*. Discussion Paper. Environment and Natural Resources Team.
Sustainable Development Office. Washington, DC, USA.

Van der duim, R. and Caalders, J. (2002). Biodiversity and tourism: impacts and
interventions. *Annals of Tourism Research*, 29(3): 743-761.

Vice-President's Office (VPO) (2005). *National Strategy for Growth and Reduction
of Poverty (NSGRP)*. June 2005. Available at

[http://www.povertymonitoring.go.tz/documents/mkukuta_main_eng.pdf]

Walsh, M.T. (2000). The development of community wildlife management in Tanzania: Lessons from the Ruaha ecosystem. *Paper presented to the conference on African Page 14 Wildlife Management in the New Millennium*, held at the College of African Wildlife Management, Mweka, Tanzania, December 13-15, 2000.

Wasser, S.K., Mailand, C., Booth, R., Mutayoba, B., Kisamo, E., Clark, B. and Stephens, B. (2007). *Using ivory to track the origin of the largest ivory seizure since the 1989 trade ban*. Proceedings of the National Academy of Sciences of the United States, 104: 4228-4233

Weber, R.P. (1990). *Basic Content Analysis*, 2nd ed. Newbury Park, CA. Wiederaufbau, Frankfurt.

Wildlife Sector Review Task Force (WSRTF) (1995). *A Review of the Wildlife Sector in Tanzania*. Volume 1. Assessment of the Current Situation. Dar es Salaam. Ministry of Tourism, Natural Resources and Environment

Williamson, R. (1999). The international fur ban and public policy advocacy: the significance of Inuit cultural persistence. *Practicing Anthropology* 21(1):2-8.

Willis, R.G. (1966). *The Fipa and related peoples of south-west Tanzania and north-east Zambia*. International African Institute, London

Wood, J. (2007). *SNV to fight poverty through Education*. Available online at allafrica.com/stories/200710301223.html

World Bank, (2002). *Agriculture in Tanzania since 1986: Follower or leader of growth*. Washington D.C: World Bank: International Food Policy Research Institute.

APPENDICES

Appendix 1: Demography and population attributes

Division	Village	No of H/Hs	H/Hs surveyed	Average H/Hs income/annum
Mpimbwe	Usevya	500	28	419750Tsh
	Kibaoni	567	32	401500Tsh
	Ikuba	350	10	328500 Tsh
Inyonga	Inyonga	560	35	456250Tsh
	Wachawaseme	423	15	438000Tsh

Appendix 2: Household questionnaire

Village: Division:

Enumerator: Household No:

Date: Time: Place of interview:

SECTION 1: DEMOGRAPHIC AND SOCIAL-ECONOMIC INFORMATION

I would like to begin by asking questions on demographic characteristics and the economic activities of each individual household. Please note that the information you give will be treated strictly confidential.

1.1 Demographic Data (Please fill on the spaces provided)

1. Village.....

2. Division.....

3. Sex: (Circle the number of your answer) 1. Male 2. Female

4. Your present age: (Write the answer on space provided) YEARS

5. Marital status. (Circle the number of your answer)

1. Never married 2. Married 3. Divorced 4. Widowed

6. Education level (You are required to circle the number of your answer)

1. Informal education

2. Primary education

3. Secondary education

4. University degree(s)

1.2 Economic Activities (Please mark on brackets of the correct answer)

7. Household income generating activities

1. Farming ()

2. Livestock keeping ()

3. Employed ()

4. Retail business. ()

6. Both (please specify and fill on space provided).....

9. Which kind of crops do you grow? You are required to fill on space provided in yield (buckets), amount-consumed (Buckets), volume-sold (Buckets) and Cash-obtained (TShs).

S/NO	Crop	Yield (buckets or sacks)	Amount Consumed(buckets Or sacks)	Sold volume (buckets or sacks)	Cash obtained (TShs)
1	Maize				
2	Beans				
3	Sesame				
5	Potatoes				
6	Cassava				
7	Sorghum				
8	Cabbage				
9	Tomatoes				
10	Onions				
11	Others (Please specify)				

10. Do you own livestock? (Circle the number of your answer) 1. Yes 2. No

11. If yes in above what kinds of Livestock do you own? (Please circle the number of your answer provided)

1. Cattle 2. Goat 3. Pig 4. Lamb 5. Chicken 6. Both (please specify and fill on space provided)..... 7.Others (please specify).....

12. If No in 12 above, what do you think is the reason.....

13. Does CBWM has impacts on livestock production? (Circle the number of your answer)

1. Yes 2. No (Skip to Question 15) 3. No idea (Skip to Question 15)

14. If yes in question 15 above what are the kinds of impacts? (Write the answer on spaces provided)

SECTION 2: ACTORS/BENEFIT SHARING SYSTEM IN CBWM

The purpose of this section is to assess the actors and benefit sharing system in CBWM found in the villages of the mentioned divisions.

A. ACTORS

15. Which of the following actors do you represent? (Circle the number of your answer)

- i. Central government
- ii. Local government
- iii. Non government organization
- iv. Local community
- v. Others (specify)

16. What role do you play in 17 above? (Fill on the spaces provided)
.....

17. Do your roles contribute to residents' livelihood? (Circle the number of your answer)

- 1. Yes
- 2. No.....Skip to Question 19

18. If yes in no. 19 above could you please explain how your roles contribute to residents' livelihood?
.....

B.BENEFIT SHARING SYSTEM

In the following questions please fill on spaces provided and circle the number of your answer.

19. What kind of resources do you have in your village? 1.Wildlife 2. Forests 3. Water 4. Minerals 5. Land 6. Both (please specify and fill on spaces provided)
..... 7. Others (please specify).....

20. From which resources do you benefit?.....

21. How do the resources mentioned in 31benefit you?.....

22. From which resources you do not benefit.....

23. What benefits do you share with other stakeholders?.....

24. What benefits you do not share with other stakeholders?.....

25. What do you think are the reasons of not sharing the benefits?

26. What are your views on what to be done to reduce poverty in your village?.....

SECTION 3. CBWM CONTRIBUTION TO THE LOCAL LIVELIHOOD AND POVERTY REDUCTION

27. How was the condition (socio-economic) of the residents before and after implementing the activities? (Fill on the spaces provided)

Before implementing activities	After implementing activities

Now I would like to ask some questions about Community-based wildlife management awareness and its contribution to local livelihood and poverty reduction.

28. Do you know what CBWM is? (Circle the number of your answer)

1. Yes 2. No Skip to Question 30

29. If yes, what is it? (Fill on the spaces provided).....

30. Does CBWM contribute anything to your village? (Circle the number of your answer)

1. Yes 2. No

31. If yes what does it contribute? (Fill on the spaces provided).....

32. If No in (33) what do you think is the reason?

33. Does CBWM contributes anything to your agricultural activities? (Circle the number of your answer) 1. Yes 2. No

34. If yes how does it contribute? (Fill on the spaces provided)

35. If no in (44) above what do you think are the reasons?.....

36. Does CBWM contributes anything towards your livestock keeping? (Circle the number of your answer) 1. Yes 2. No

37. If yes, how does it contribute? (Fill on the spaces provided).....

38. If no in 47 above, what do you think are the reasons?

39. What do you think should be done for CBWM to improve income in your area?...

40. What are the main achievements you know in your village through CBWM?.....

41. How should the performance of CBWM in your village be improved.....

42. What are your perceptions regarding CBWM in improving local livelihood.....

43. When comparing the residents' conditions before and after CBWM establishment, what are your views about the contribution of the CBWM to livelihoods of communities?

SECTION 4. ROLE OF LEGAL AND ILLEGAL PARK USE IN POVERTY REDUCTION

The following questions are intended to gather information on how legal and illegal park use accelerates or decelerates poverty.

44. What type of products do you collect from the park? (Please fill in the empty columns).

Products	Species	Season available	Amount	Value (Sh Per unit)	Current status
1.Firewood					
2.Timber					
3.Wild animals					
4.Poles					
5.Honey					
6.Wild edible fruits					
7.Others					

45. How do you access these products? (Circle the number for the most appropriate answer)

1. By permission 2. Illegally

46. What are the benefits of the products to residents?.....

47.Do the products contribute to poverty reduction? (Circle the number of your answer) 1. Yes 2. No

48. If yes/no in above can you please, give details?.....

49. Does wood harvesting affect your livelihoods? (Circle the no. of your answer)

1. Yes 2. No

50. If yes/no in above, can you please give reasons

51. Does poaching affect your livelihoods? (Circle the number of your answer)

(1) Yes (2) No

52. If yes/no, please explain how it affects your livelihood.....

SECTION 4. STRATEGIES THAT WOULD CONTRIBUTE TO POVERTY REDUCTION

The following section focus on strategies to poverty reduction that would be used on the villages of the mentioned divisions.

53. Are there any strategies that are used to reduce poverty in your village? (Circle the number of your answer) 1. Yes 2. No

54. If yes in 53 above what are they? Can you please give details?.....

55. If no in 53 above what do you think are the reasons?.....

56. Are the strategies effective? (Circle the number of your answer) 1. Yes 2. No

57. If yes in 69 can you explain how effective are they?.....

58. If no in 69 can you please give reasons?.....

61. What do you think should be done to reduce poverty in your village?.....

Appendix 3: Checklist for key informants.

These will be village leaders, Village Natural Resources Committee Leaders, Regional Wildlife/Agricultural Officers, District Natural Resources Officer, District community Development officer, District Wildlife Officer, and ADAP leader.

(A) Actors and benefit sharing system in CBWM of Mpimbwe and Inyonga divisions

1. Actors involved in CBWM
2. Roles of CBWM actors
3. Benefit- sharing in CBWM
4. Distribution of benefits among actors

(B) Contribution of CBWM to local livelihoods and poverty reduction

1. Activities done to improve livelihood
2. Activities related to CBWM
3. Benefits from CBWM
4. Benefits not accrued from CBWM
5. Contribution of accrued benefits to reducing poverty
6. Changes of economic conditions after CBWM introduction
7. Conditions of the wildlife resources before and after CBWM
8. Opinion with regard to the introduction of mentioned approach (CBWM) in this area.
9. Linkage of activities to household income.
10. Indicator of success or failure of Wildlife management under CBWM.

(C) Role of Legal and illegal park use in poverty reduction

1. Resources/products collected from the park
2. Contribution of products to poverty reduction
3. Legally and illegally collected products
4. Restricted products to be collected
5. Importance of the restricted products to the livelihood

6. Disadvantages of the products to the residents
7. Strategies to improve the number of products that would lead to poverty reduction

(D) STRATEGIES THAT WOULD CONTRIBUTE TO POVERTY REDUCTION.

1. Strategies that can be used to reduce poverty in your village.
2. Effectiveness of the strategies
3. Things to be done to reduce poverty in your village

Appendix 4: Direct observations

Observation made was of physical surroundings of the villages or ongoing activities which described the respondent's poverty status.

	MPIMBWE DIVISION		INYONGA DIVISION	
Villages name	Kibaoni	Ikuba	Inyonga	Wachawaseme
Types of Houses	Many huts (built by mud and grasses) Few built by blocks(soil made) and iron-sheet	Many huts compared to kibaoni Very few houses built by blocks(soil made and iron-sheet	Few huts with most of the houses are iron-sheet roofed and blocks(soil and cement)	Many huts and few houses which are iron-sheet roofed and blocks(soil made)
Health services	One dispensary	No dispensary(villagers have to travel to Usevya village	One dispensary and One health service	One dispensary
Presence of shops	Few shops	Few shops	Many shops	Very few shops
Presence of Markets	No market	No market	One market	No market
Schools	One primary school	One primary school	One primary school and sec. school	One primary school
Power	Few people use solar energy, No electricity	No electricity or solar energy	No electricity Few people with generators	No electricity or solar
Roads	Improved road	Improved road	Poor road	Poor road
Water services	One well, and a river	River and one well	Presence of wells	Presence of a well

Appendix 5: Community development projects supported by Katavi National Park, GTZ and USAID (2000 – 2009)

WARD	VILLAGE	YEAR	CONTRIBUTIO N	TYPE OF PROJECT/ACTIVITY
Kibaoni	Ilalanguru	2001 – 2002	3,427,146.55	Construction of 3 classrooms and 1 teachers' office.
	Mirumba	2005 – 2006	8,133,606,000	Construction of 1 teachers' house.
Usevya	Usevya	2006 – 2007	11,023,858.00	Construction of 1 secondary school and classroom.
Kibaoni	Kibaoni	2008 – 2009	50,000,000.00	Construction of Secondary School Administration block
		Total	8,198,057,004.55	

Source: Katavi National Park Ecology Department

Appendix 6: Participants in FGD

Focused group discussion from Mpimbwe division

Mr. Selemani Kaputa
Mr. Sypirino Bululu
Mr. Henery Benedicto Kanyengele
Mr. Mary Thomasi
Mr. Alexanda Mapelani
Mr. Michael Sungura
Mr. Victor Mchafu
Mr. Charles Atanazi Kaputa
Mr. Joseph Victor Sungura

Names of key informants from Mpimbwe division

Mr. Kusekwa Susuma – Katavi national park ecologist
Mr. A.M. Yongolo – Village executive officer
Mr. C. Mwanisawa – Village executive officer
Mr. Wolfgang Mizengo Pinda – The chairman of Kibaoni village

Focused group discussion from Inyonga division

Mr. Dominick John
Mr. Venance Ngozi
Mr. Noel Malilo
Mr. Richard Andrea
Mr. Wilfred Siwango
Mr. Miraji Mrisho
Mr. Leonard Kiyungi
Mr. Michael Kashata
Mr. Paulo Ndegeulaya
Mr. Dominick Kasikiwe
Mr. Julius Kapelamigila
Mr. Jacob Singiwe
Mr. Petro Kamsweke

Key informant interview

Mr. H. Mwita	Village executive officer
Henry Felix Ogeja	ADAP project Coordinator
Wilfred Siwango	ADAP member

Appendix 7: Focus Group Discussion

This involved 8 villagers in each village (Ikuba, Kibaoni) at Mpimbwe and (Inyonga, Wachawaseme) at Inyonga divisions. The topic of CBWM was introduced based on objectives with the guide of checklists.

MPIMBWE DIVISION**(A) Actors and benefit sharing system in CBWM of Mpimbwe division.**

Most of the villagers at Mpimbwe said that the actors involved in CBWM are villagers and Local government for examples in MITI NA MAZINGIRA MPIMBWE (MIMAMPI), most of the villagers are employed in the organization in activities such as afforestation programmes, conservation of Forest and Wildlife resource. Wild animals are not hunted as they go to drink water and feed in MIMAMPI area which is open area with a depression where water is filled during rain season.

The actors are very responsible as they get advantage such as some money to afford the basic needs also day to day activity than staying idle, education provided by the conservationists such as wildlife officers and forest officers. The Mpimbwe villagers get benefits such as schools, dispensary, road improvement which enable them to transport some of the crops to the market (Mpanda town) thus the benefits are shared among the villagers.

(B) CBWM contribution to the local livelihood and poverty reduction

Mpimbwe division consists of Sukuma who are agro-pastoralist and the Pimbwe are who are hunters. The conversationalist (ecologists) from Katavi National park educates the villagers to practice agriculture and pastoralism rather than hunting as most of the Pimbwe hunt illegally. This type of education brings awareness to most of the villagers which reduces ignorance hence poverty is reduced.

Apart from this, some of the villagers are employed as village scouts thus helps the anti-poaching units to report and restrain the poachers. Some of the fund obtained from MIMAMPI is used in infrastructure construction and during the activity most of the villagers are employed and earning some income hence poverty reduction. MIMAMPI area is a site of attraction to both local and few international tourists, students from Mpimbwe (Kibaoni and Usevya) sometimes are offered to visit the area.

(C) Role of Legal and illegal park use in poverty reduction

MPIMBWE villagers proposed that products obtained from the park are wood, wild animals and timber. The products are obtained legally and illegally. Legally obtained product is timber to some of the villagers and illegally obtained products are timber, wild animals and wood. Once the villagers sell the products to other villagers they get cash to run their basic needs hence poverty reduction, the problem come to when the villagers are caught with illegally products are taken to court later prison or required to pay fine hence reduces village man power.

(D) Strategies that would contribute to poverty reduction

The strategies proposed by most of the villagers are introduction of groups (women, men and youths) pertaining to the economic activities such as agriculture in MPIMBWE for example small scale farmers groups. Also insist women continue weaving of mats and baskets which can advertise the MPIMBWE culture to the tourists thus can get money to sustain their needs. Apart from these, educations should be provided to the villagers from primary level to higher learning institutions if possible.

INYONGA DIVISION

(A) Actors and benefit sharing system in CBWM of Inyonga division

Most of the Inyonga division villagers said that the actors involved in CBWM are villagers, Local government and Non-Governmental Organization. For stance in Inyonga Beekeeping Association (IBA) most of the villagers are employed in the beekeeping activities. Participate in the IBA seminars as listeners (villagers), idea providers, educators (Local government, and NGOs) and planners (NGOs, local government). The actors are very responsible as they get advantage such as some money to afford the basic needs also day to day activity than staying idle, also more education provided to them is an advantage. The benefits the Inyonga villagers get are such as schools, dispensary thus the benefits are shared among the villagers. Beekeepers get advantage as IBA assist them to get markets if the honey brought to IBA by a villager is pure.

(B) CBWM contribution to the local livelihood and poverty reduction

Successfully community-based wildlife management to poverty reduction is due to hard work done by the IBA in Inyonga division as it educates the beekeepers, villagers to practice good agriculture practices, looking for markets for beekeepers. This alleviates poverty of the region. Apart from this IBA also work hand in hand with natural resources by giving out information if there are wood harvesters and poachers who delays development of the area. The association also promotes food processing, sunflower cultivation, land use planning hence poverty reduction. Apart from these the association provide money for infrastructure constructions such as schools and dispensaries.

(C) Role of Legal and illegal park use in poverty reduction

Most of Inyonga villagers proposed that products obtained from the park are wood, wild-fruits, timber and honey. Legally obtained products are honey and timber. Illegally obtained products are wild fruits, wood and. Once the villagers sell the products to other villagers they get cash to run their basic needs hence poverty reduction, the problem come to when the villagers are caught with illegally products are taken to court later prison or required to pay fine hence reduces village man power.

(D) Strategies that would contribute to poverty reduction

The strategies proposed by most of the Inyonga villagers are introduction of more groups pertaining to the economic activities such as agriculture and beekeeping in INYONGA and asking for foreign aid, and loans that can help

small-scale farmers and beekeepers. Apart from these, educations should be insisted to the villagers from primary level to higher learning institutions as most of the Inyonga villagers are from primary education level. Also more social services should be provided by the government such as electricity should be supplied and roads should be constructed to simplify transportation of people and goods towards the market or more services like hospital services in town.