

**PAN AFRICAN INSTITUTE FOR DEVELOPMENT – WEST AFRICA
P.O. BOX 133, BUEA, CAMEROON**



DEPARTMENT OF DEVELOPMENT STUDIES

**A BASELINE ASSESSMENT OF LAND USE AND
LIVELIHOOD PRACTICES OF IN-PARK VILLAGES IN
THE KORUP NATIONAL PARK (KNP), SOUTH WEST
REGION, CAMEROON**

A Thesis Submitted to the Department of Development Studies, in Partial
Fulfilment of the Requirements for the Award of a Master of Science (M.Sc.)
degree in Environment and Natural Resource Management

By

ROSALINE MUJONGE TAMBE
PAIDWA00117

Supervisor
Uwem Essia (PhD)

BUEA, DECEMBER 2015

*The author assumes total responsibility for meeting the requirements set by Copyright Laws for the
inclusion of any materials that are not the author's creation or in the public domain.*

THESIS FINAL SUBMISSION FORM

This is to confirm that I have formally submitted my thesis titled "*A Baseline Assessment Of Land Use And Livelihood Practices Of In-Park Villages In The Korup National Park (KNP), South West Region, Cameroon*" to the Pan African Institute for Development – West Africa (PAID-WA) as an original research report for the award of the *Master of Science (M.Sc) degree in Environment and Natural Resource Management* this 29th Day of January, 2016.

To the best of my knowledge, this thesis has neither infringed upon anyone's copyright nor violated any proprietary rights. The ideas, techniques, quotations, and other materials obtained from other scholarly works included in my thesis, published or otherwise, are fully acknowledged. I declare also that this thesis has not been submitted for a degree to any other University or Institution of Higher Learning.

I agree that information and findings contained in this thesis – in the form of statements, graphics, equations or otherwise - shall remain the property of PAID-WA. PAID-WA further retains the exclusive right to publish or disseminate it in all languages, and publications arising from this thesis.

The author assumes total responsibility for meeting the requirements set by Copyright Laws for the inclusion of any materials that are not the author's creation or in the public domain.

Name of Student Submitting Thesis:	ROSALINE MUJONGE TAMBE
Matriculation Number of Student:	PAID-WA00117
Title of the Thesis	A Baseline Assessment Of Land Use And Livelihood Practices Of In-Park Villages In The Korup National Park (KNP),South West Region, Cameroon
Degree/Diploma/Certificate in View:	Master of Science (MSc)
Date of Submission:	29 th January ,2016

Signature of Student Submitting Thesis:

Tambe



Dedication

To people of goodwill everywhere
who strive tirelessly for the betterment
of mankind.

Statement of Originality

I certify that I am the sole author of this thesis done with the counseling of my supervisors and that no part of this thesis has been published or submitted for publication.

I certify that to the best of my knowledge, my thesis has neither infringed upon anyone's copyright nor violated any proprietary rights, and that any ideas, techniques, quotations, and other materials from the works of other people included in my thesis, published or otherwise, are fully acknowledged.

I declare that this thesis has not been submitted for a degree to any other University or Institution of Higher Learning.

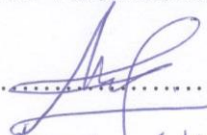
Supervisor: Uwem Essia (PhD)

Signature: 

Date: 18-02-16



Co-supervisor: Valentine Asong (PhD Research Fellow)

Signature: 

Date: ... 18/02/2016

DECLARATION

I hereby declare that, I am the sole author of this thesis done with the counseling of my supervisors and that no part of this thesis has been published or submitted for publication.

I declare that, to the best of my knowledge, my thesis has neither infringed upon anyone's copyright nor violated any proprietary rights, and that any ideas, techniques, quotations, and other materials from the works of other people included in my thesis, published or otherwise, are fully acknowledged.

I declare that this thesis has not been submitted for a degree to any other University or Institution of Higher Learning.

Students name: Rosaline Muyonge Tamba

Signature:

Date: 29th / 01 / 2016

Acknowledgements

Many people have contributed towards the realization of this thesis and it would not have been possible without their help. I am sincerely grateful to all of them. In particular, I would like to thank my supervisors, Professor Uwem Essia and Mr. Asong Valentine for their patience, flexibility, encouragement, moral and academic support; the Divisional delegate of Forestry and wildlife for the South West region, Mr. Eben Ebai who sponsored the work.

I am very fortunate to have an extensive support network of friends and advisors. I want to say a big thank you to the director of academic affairs and her team for the extra care with which they treated our academic documents; Mr. David Okon, Dr. Forboseh Philip, Mr. Oemar Idoe, Dr. Julien Dupuy, Mr. Frank Stenmanns, Ms. Anja Barth, Mr. Ekpe Inyang and Mr. Mor-Achankap Bakia, who were working for the “Programme for the Sustainable Management of Natural Resources in the South West Region (PSMNR-SW),” for their capacity building and logistic support throughout the exercise. No words can adequately match the depth of my gratitude to you all.

I will never forget the support from my team members: Mrs. OfundemTataw, Dr. Amungwa Athanasius, Dr. Samalang Patrick and Mr. Itoe Constantine throughout the fieldwork, data analysis and reporting phases of this exercise. During the course of data collection I was delighted and honored by the support and hospitality of the people of Erat, Esukutan and Bera.

I am grateful to the array of colleagues, classmates and friends who have been so nice and supportive to me. I want to express special thanks to Stella, Nelson, Claudine and Marion.

Special thanks to my husband, Mr. Arrah Emmanuel and my kids for their love, support and comfort throughout this work.

Abstract

Since the creation of KNP in 1986, stakeholders have faced serious difficulties in designing and implementing successive management plans. One major hurdle has been how to handle human settlements, especially considering the mounting national and international awareness in favor of participatory park management strategies. This work used a situational analysis in three in-park villages (Erat, Esukutan and Bera) to propose areas for permanent use zones (PUZ), as an appropriate alternative to resettlement, for the implementation of the current management plan for the Korup National Park. Socioeconomic data was obtained through the use of questionnaires, focus group discussions, interviews and observations, while land use information was obtained through the use of participatory geographic information system (GIS) and global positioning system (GPS). Relevant lessons of community based natural resource management were also obtained through desktop review of similar initiatives in Africa. Data was analyzed to determine current land use, social development indicators and livelihood activities within the Park. The results show that the current land uses include: settlement, agriculture, and collection of NTFPs over a total area of 1049ha. 32 ha are utilized for settlement while 443.4 ha are used for the cultivation of both food and cash crops. The communities have an average household size of 5 persons and the three villages have resident populations of 452, 195 and 27 individuals for Erat, Esukutan and Bera respectively. Technical services were mostly absent and social amenities were grossly lacking. The main livelihood activities were hunting, farming and collection of forest products. Income and agricultural productivity were revealed to be low and livelihood within the in-park village was therefore shown to be unsustainable resulting in high pressure on the natural environment. In order to enhance sustainability in this region, land use planning, environmental education, institutional strengthening and enabling environment for CBNRM should be effected.

Keywords: *Permanent use zone, situational analysis, land use planning, enabling environment for CBNRM.*

Résumé

Les parties prenantes ont rencontré d'énormes difficultés dans l'élaboration et l'application des plans de gestion successifs depuis la création du parc national de Korup (PNK) en 1986. L'un des obstacles majeurs a été comment gérer les établissements humains, particulièrement en tenant compte de la sensibilisation nationale et internationale croissante en faveur d'une approche participative des stratégies de gestion du parc. Cette étude a employé l'analyse situationnelle dans trois villages (Erat, Esukutan, et Bera) entourés par le parc, dans le but de proposer des espaces pour les zones d'exploitation permanente (ZEP), comme une alternative idoine à la relocalisation, pour l'application de l'actuel plan de gestion du parc national de Korup. Les données socio-économiques ont été obtenues grâce aux questionnaires, aux groupes de réflexion, aux entretiens et aux observations, alors que les informations relatives à l'utilisation des sols ont été obtenues grâce au Système d'information géographique (SIG) participatif et au Système de positionnement universel (système GPS). D'importantes leçons relatives à la Gestion communautaire des ressources naturelles (GCRN) ont également été tirées grâce à une revue assistée par ordinateur des initiatives similaires en Afrique. Les données ont été analysées pour déterminer l'utilisation actuelle des sols, les indicateurs sociaux du développement et les activités de subsistance au sein du parc. Les résultats révèlent que l'utilisation actuelle des sols comprend: l'établissement humain, l'agriculture, et la collecte des Produits forestiers non-ligneux (PFNL) sur une surface totale de 1049ha. 32 ha sont utilisés pour l'établissement humain alors que 443,4 ha servent aux cultures vivrières et aux cultures de rente. Les communautés ont un ménage constitué en moyenne de 5 personnes et les trois villages ont des populations résidentielles de 452, 195 et 27 personnes pour Erat, Esukutan et Bera respectivement. Les services techniques étaient en grande partie absents et les équipements sociaux manquaient cruellement. Les principales activités de subsistance étaient la chasse, l'agriculture et la collecte des PFNL. Le revenu et la productivité agricole se sont révélés faibles et les moyens de subsistance dans le village entouré par le parc sont conséquemment apparus insoutenables entraînant une forte pression sur l'environnement naturel. Pour améliorer la viabilité écologique dans cette région, l'aménagement du territoire, l'éducation environnementale, le renforcement des institutions, et l'environnement favorable pour la Gestion communautaire des ressources naturelles (GCRN) doivent être remis en œuvre.

Table of Contents

STATEMENT OF ORIGINALITY-----	Error! Bookmark not defined.
DEDICATION-----	iv
DECLARATION-----	v
ACKNOWLEDGEMENTS-----	vi
ABSTRACT -----	vii
RESUME-----	viii
TABLE OF CONTENTS -----	ix
LIST OF TABLES -----	xii
LIST OF FIGURES -----	xiii
LIST OF ABBREVIATIONS -----	ivx
CHAPTER ONE -----	1
INTRODUCTION -----	1
1.1 Background of the Study-----	1
1.2 Statement of the Problem -----	6
1.2 Objectives of the Study -----	7
1.3 Research Questions -----	7
1.5 Significance of the Study -----	7
1.6 Organization of the study -----	9
1.7 Definition of terms-----	9
CHAPTER TWO -----	12
LITERATURE REVIEW AND THEORETICAL FRAMEWORK -----	12
2.1 Literature Review -----	12
2.2 Theoretical Framework -----	15
2.2.1. Conservation Management Model for the KNP -----	17
2.3 Gaps Identified in the literature and how the work shall attempt to fill them-----	18
CHAPTER THREE -----	20

METHODOLOGY OF THE STUDY -----	20
3.1 Model of the study -----	20
3.2 Study Design -----	21
3.2.1 Sampling method-----	21
3.2.2 Tools for data collection -----	21
3.3 Analytical Approach-----	24
3.4 Validation of the Results-----	24
CHAPTER FOUR -----	26
PRESENTATION AND ANALYSIS OF DATA -----	26
4.1. Land use patterns in the three in-park communities -----	26
4.1.1 Characteristics of Land Uses -----	27
4.1.2 Current Land use spatial distribution-----	30
4.1.3 Land Use Types and Associated Problems -----	35
4.2 Social profile of communities -----	40
4.2.1 Demographic characteristics of the respondents-----	40
4.2.2 Social development indicators -----	41
4.3. Learning points from sustainable forestry and wildlife management in Namibia and Mozambique -----	46
4.3.1 Community-based natural resource management in Namibia -----	46
4.3.2 Co-management of natural resources in Mozambique-----	49
4.4. Livelihood activities and potential livelihood systems -----	52
4.4.1 Characterization of the different livelihood Activities-----	52
4.4.2 Contribution of livelihood activities to Household incomes -----	58
4.4.3 Main items and patterns of Expenditure in the villages -----	61
4.4.4 Land Use and Livelihood projections -----	61
4.5. Implication of the Results -----	64
4.6. Limitations of the Study-----	65
CHAPTER FIVE-----	67
SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS -----	67

5.1 Summary of Findings -----	67
5.2 Conclusion -----	69
5.3 Recommendations -----	69
5.4 Suggested Areas for Further Research -----	71
References -----	72
Annexes -----	76
Annex 1: Questionnaire -----	76
Annex 2: Spatial data collection sheet -----	92
Annex 3: Checklist for group diagnosis -----	93
Annex 4: Current Food Crop Husbandry Technical Bulletin -----	94
Annex 5: Projected Elements for PUZs of Esukutan, Erat and Bera -----	97
Annex 6: Description of Proposed PUZ management sectors -----	99
Annex 8: SWOT Analysis of Livelihood Activities -----	101

List of Tables

Table 3.1: Main baseline information needs and Research Tools used	23
Table 4.1: Land cover, land use class, and land uses	26
Table 4.2: land Uses and Associated Problems.....	36
Table 4.3: Food Crop Production Statistics (Annual) for ERAT	53
Table 4.4: Food Crop Production Statistics (Annual) for ESUKUTAN	53
Table 4.5: Food Crop Production Statistics (Annual) for BERA.....	54
Table 4.6: Cash Crop Production Statistics.....	55
Table 4.7: Involvement of HHs in NTFP in Esukutan	56
Table 4.8: Contribution of livelihood activities to Household incomes.....	60

List of Figures

Figure 1.1: Map of Korup National Park showing both in-park and Peripheral villages.....	5
Figure: 4.1: Surface area of the different land use classes in the three in-park village.....	30
Figure 4.2: Map showing Current land Use of Erat village	32
Figure 4.3: Map showing Current land Use of Esukutan	33
Figure 4.4: Map showing Current Land Use of Bera	34
Figure 4.6: Number of HH involved in different Livelihood activities in Erat.....	57
Figure 4.7: Number of HH involved in different Livelihood activities in Esukutan	58
Figure 4.8: Number of HH involved in different Livelihood activities in Bera.....	58
Figure 4.9: Average amounts spent on various items	61

List of Abbreviations

AFZ	Agro forestry Zone
AGFA	Agro Foresters Association
CBD	Conservation of Biodiversity
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organizations
CCA	Community Conserved Areas
CDP	Council Development Plan
CIFOR	Center for International Forestry Research
CIGs	Common Initiative Groups
CITES	Convention on International Trade in Endangered Species
FAO	Food and Agricultural Organization
FGD	Focus Group Discussion
GIS	Geographic Information System
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>
GoC	Government of Cameroon
GPS	Global Positioning System
HH	Household
HWC	Human Wildlife Conflict
ICDP	Integrated conservation and Development projects
IGAs	Income Generating Activities
IPM	Integrated Pest Management
IPV	In Park Villages
IUCN	International Union for Conservation of Nature
JFM	Joint Forest Management
KNP	Korup National Park
LC	Land Cover
LU	Land Use
LUC	Land use class
LUP	Land Use Plan
LUMP	Land Use Mapping and Planning
MINADER	Ministry of Agriculture and Rural Development-Cameroon
MINEPIA	Ministry of Livestock, Fisheries and Animal Industries-Cameroon

MINEDUB	Ministry of Basic Education- Cameroon
MINFOF	Ministry of Forestry and Fauna- Cameroon
MINSANTE	Ministry of Public Health- Cameroon
M&E	Monitoring and Evaluation
NRM	Natural Resource Management
NTFPs	Non-Timber Forest Products
PA	Protected Area
PAID-WA	Pan African Institute for Development –West Africa
PLUM	Participatory Land Use map
PRA	Participatory Rural Appraisal
PSMNR-SWR	Programme for the Sustainable Management of Natural Resources in South West Region
PUZ	Permanent Use Zone
SDR	Sustainable Development Reserve
SOWEDA	South West Development Authority
SWOT	Strengths Weaknesses, Opportunities and Threats
UNEP	United Nations Environment Program
UN-REDD+	United Nations Collaborative Programme on Reducing emissions from Deforestation and Forest Degradation in Developing Countries
UTM	Universal Transverse Mercator
VDP	Village Development Plan
VFM	Village Forest Management Committee
VTC	Village Traditional Council
WASH	Water, Hygiene and Sanitation
WCS	Wildlife Conservation Society
WWF	World Wide Fund for Nature

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

At present, about 11.5 per cent of the earth's surface is in protected areas (Dudley and Phillips, 2006) and most international and national conservation policies revolve around these vital ecosystems. The importance of these areas to the global community in the conservation of biodiversity, maintaining genetic resources, protection of ecosystem functions, ecotourism and preservation of natural and cultural heritage cannot be overemphasized. In Cameroon, the protected areas, including the national parks, are important to both the national and local communities in several ways. At the national level, there is income earned from tourism and funding for conservation activities from a number of international organizations. The benefits for local communities include economic, cultural, traditional, as well as spiritual. The economic benefits comprise food, income and shelter. The cultural and religious base of most rural communities in Africa is closely linked to their environment and in the south west region including the KNP communities, secret societies have forest bases where rites and ceremonies are performed. According to Inyang (1998), the life and power of the traditional societies lie in the forest since most rural communities in Cameroon and Nigeria regard the forest as the home of their ancestors and the abode of malevolent and benevolent spirits. Such beliefs contribute in the designation of certain areas as sacred with the prohibition of activities such as hunting, farming and trapping.

Despite these apparent benefits at the different levels, conflicts usually arise between the various categories of stakeholders mainly due to the fact that international and national level stakeholders view protected areas as places of particular interest which should be preserved from human interference while local communities consider these environment as their heritage on which they depend for livelihood and survival. Conflicts of interest also arise as a result of mutual suspicion between conventional ecologists and local communities. Schmidt-Soltau and Brockington (2007), state that most ecologists consider that rural peoples' habitat modification renders wildlife more vulnerable to extinction and Gartland (1998) cited in Schmidt-Soltau and Brockington (2007), affirmed this by saying that it is unrealistic and irresponsible to hand over the duty for the protection of these unique ecosystems to local communities who have neither the resources nor the biological education necessary to manage them. The local communities on the other hand question the motives of the other stakeholders and regard most conservation initiatives as ploys to deprive them of their inheritance and livelihood. The non-recognition of the economic and socio-cultural costs and impacts arising from the establishment and maintenance of protected areas for

indigenous communities is also a serious cause of conflict (Schmidt-Soltau and Brockington, 2007).

Local communities therefore play vital roles in the management of protected areas since the success of such management schemes depend largely on the participation of indigenous populations. Certainly, livelihood activities such as hunting and farming are detrimental to precious landscapes and these undertakings should be regulated to ensure sustainability. On the other hand there are some practices enshrined in traditional societies that contribute to conservation such as protection of specific habitats, total protection of certain species, rituals, taboos, and temporal restrictions of harvest, resource rotation, social sanctions and the transmission of ecological knowledge (SchmidtSoltau and Brockington (2007). Jimoh et al. (2012) actually affirms that incorporating cultural norms and taboos into conservation programs may provide incentives to communities to conserve natural resources.

Most conventional ecologists ignore such indigenous aspects including the fact that local residents are the best guardians that valuable habitats can have (Schmidt-Soltau and Brockington, 2007). The potential for conservation agendas to both benefit from and empower local groups is recognized in many quarters. Yet the full impact of these schemes requires a good understanding of their impact on local peoples' livelihoods and of the opportunity costs incurred by setting aside land for conservation. Considering the fact that the existence of protected areas can be obliterated by noncooperation or outright resistance by the local communities, policies should be developed to ensure that such costs and impacts are equitably compensated so that the establishment and management of protected areas should provide real and tangible benefits to local communities. It is in a bid to establish harmony between global, national and local interests in protected areas that co management strategies aimed at the establishment of accord between human livelihood concerns and protection of valuable landscapes are developed by state organizations.

Description of the study area

The Korup National Park (KNP) covers a surface area of about 1260km² and it was established in 1986. It is located in the South Western part of the South West region of Cameroon and is situated between Mundemba and Eyumojock sub-divisions. It is bordered on the west by neighboring Nigeria and lies between latitudes 4°54' and 5°28' N and longitudes 88° 42' and 98° 16' E (Diaw et al. 2009). The KNP has a reputation to be one of the oldest and most diverse rain forests in Africa (MINFOF, 2008). Many plant and animal species found in the park are endangered species and they cannot be found anywhere else in the world. The area has been managed over the years using various exclusive and inclusive management systems which have had inadequate successes due to

a number of factors including the limited participation of the indigenous population in the conception, elaboration and implementation phases. Presently the main instrument for management within KNP is guided by the collaborative management (CM) approach elaborated by the program for the sustainable management of natural resources in the South West (PSMNR-SW, 2014). The main goal of the CM approach is to create an enabling environment, needed for shared governance of protected areas within the South West region. It aims at preserving the integrity of the KNP while supporting the development of the local population who are viewed as collaborating partners towards guaranteeing the sustainable management of the park environment. The main elements of the CM approach include the conservation development agreement, cluster conservation zones, cluster platforms, cluster facilitators, collaborative management activities, conservation bonuses, conservation credits and village development measures (PSMNR-SW, 2014). These interlinked elements cover important co-management aspects such as formal agreement, effective communication and support to communities. This strategy compensates communities for their participation in conservation but its sustainability, upon project completion is doubtful. However, an effective conservation of protected areas can be achieved when local communities are convinced about the benefits of conservation; when they initiate activities to protect their environment and are not just coerced into participation with the expectation of rewards. Scenarios where local communities demonstrate ownership of the conservation process can be described as “Community Based Natural Resource Management” (CBNRM). Therefore, this research which attempts to enhance sustainable park management through a study of land use practices will contribute to propose strategies necessary for the establishment of community based management, rather than co management approaches. This fits in with the stipulations of the revised current management plan of the park (2009-2013) which foresees the demarcation of Permanent Use Zones (PUZs) for all the in-park villages through a broad based and participatory process involving all stakeholders (Ministry of Forestry and Wildlife – MINFOF, 2008).

The research focused on three villages within the KNP, namely; Bera, Erat and Esukutan. The three villages are bounded on all sides by the national park and accessibility is by trekking along trails for periods ranging from 3 to 9 hours. Topographically Erat is characterized by a relatively flat terrain with altitudes generally lower than 200m above sea level while Bera and Esukutan have steeper altitudes ranging between 200 – 400m. Administratively all three villages are in Ndian Division with Erat and Bera being part of Mundemba subdivision and Esukutan belonging to Toko Subdivision. The hydrology of the villages consists of networks of streams that serve as bathing points and source of drinking water. The climate in the area is marked by two distinct seasons; the dry and rainy season. The dry season ranges from November to March with the peak being in January and

February while the rainy season extends from April to October with the peak observed in July and August. Rainfall is unimodal with annual rainfall that is less than 5000mm per year (MINFOF, 2008). There is a relatively high humidity with little annual or diurnal variation. The soils are predominantly sandy, low in nutrients and possess poor water-retention qualities. These soils are acidic and infertile with low levels of soil nutrients and organic matter (MINFOF, 2008). The map in figure 1 shows KNP boundaries including 5 in-park villages and 28 others within a 3 km radius of the park limits that constitute the buffer zone. The target villages Bera, Erat and Esukutan are encircled. Erat village is located in the South western edge of the park and it is situated at the Cameroon-Nigerian border, while Esukutan and Bera are located towards the North.

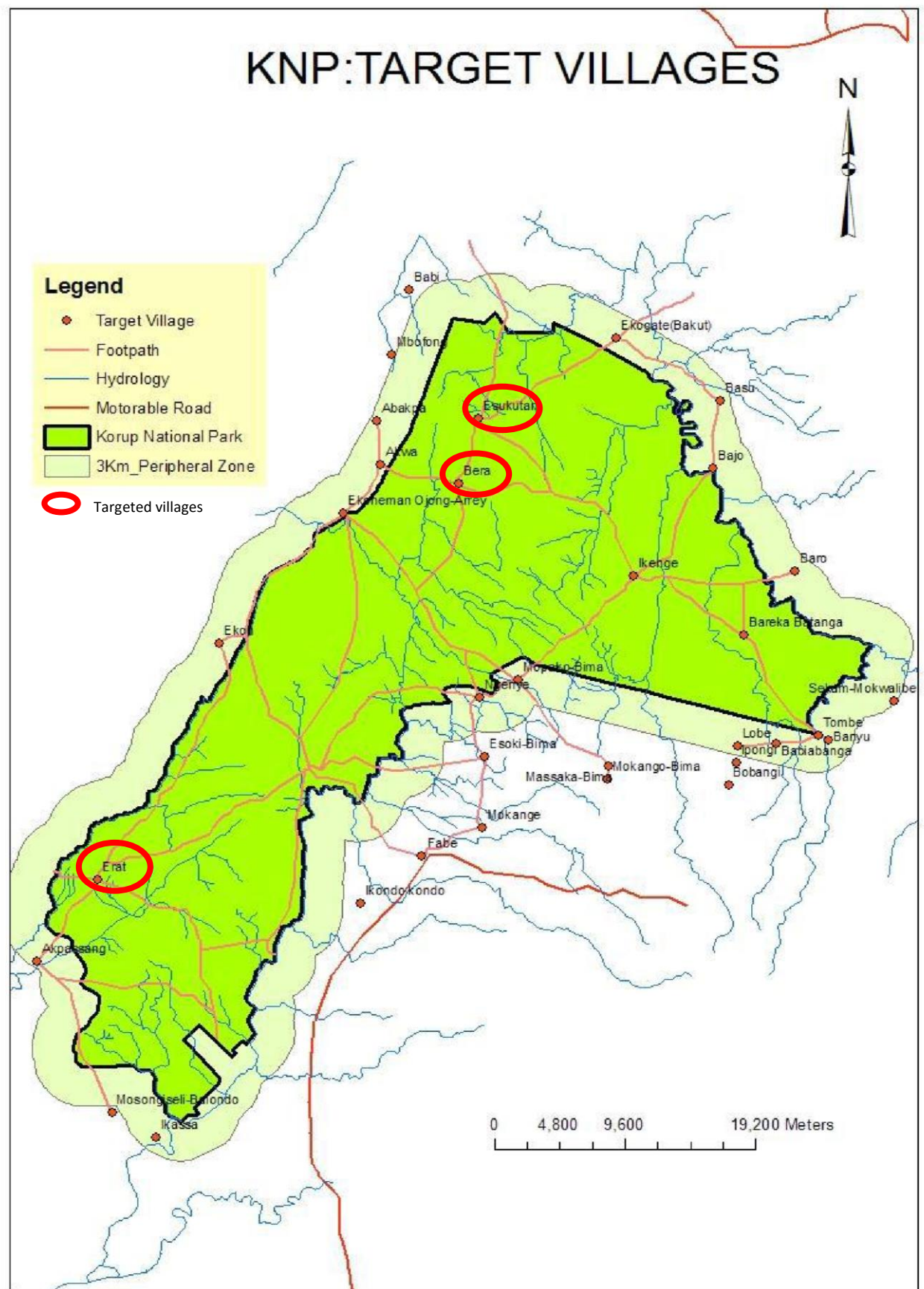


Figure 1.1: Map of Korup National Park showing both in-park and Peripheral villages

When Korup National Park was created from the Korup Administrative Forest Reserve; the Reserve had three legal enclaves: Erat, Esukutan and Bera. By extending the park's surface area

beyond the former Korup Forest Reserve, three new villages were enclaved in the Park and these include: Ikondokondo, Ikenge and Bareka-Batanga. With the creation of the National Park all these enclaves were considered illegal, and it was planned to resettle the villages.

1.2 Statement of the Problem

A National Park according to the Decree of Application of MINFOF law 95 of 20th July 1995, is an uninterrupted area whose fauna, flora, soil, subsoil, atmosphere, water, and natural environment, as a whole, is of particular interest and should be preserved from any natural deterioration and protected against any human interference likely to alter their outlook, composition and evaluation. Considering such specifications, human settlements were therefore considered illegal within National Parks. Accordingly, the in-park villages were targeted for resettlement elsewhere outside the National Park area. Consequently in-Park villages were restricted from extending farms or building permanent structures since 1986, and in 2000 the Korup Project succeeded to resettle only one village – Ikondokondo. Following the unpleasant experiences of the first relocation exercise and the global debate on conservation of national parks and human displacements, resettlement of the remaining five in-park villages became uncertain.

The first KNP Management Plan (2002-2007) sought to demarcate “Temporary Use Zones” (TUZs) for in-park villages. But that initiative was not carried out, and the restrictions on extending farms and building permanent structures were poorly enforced, hence villages did not actually know how far they could continue their agricultural development and economic activities. Moreover, the revised Management Plan of the Park by MINFOF (2008), did not consider resettlement as a feasible option, but rather shifted focus towards demarcation of TUZs for in-park villages. So far, the in-park resources have been managed using various management systems but there were still challenges due to a number of factors including: undefined boundaries for different activities; and limited participation by the villagers in preparation/implementation of KNP Management Plans. However, the revised Management Plan (2009-2013) envisaged demarcation of the PUZs for the in park villages through a broad based and wholly participatory process that balances the needs of all stakeholders, while ensuring sustainable resource use. More recently, the Program for the Sustainable Management of Natural Resources (PSMNR) is facilitating the establishment of Conservation and Development Agreements (CDAs) between Park Services and the in-park villages. The agreements aim to serve as a collaborative management tools to ensure that the needs of Park Management and in-Park villages are considered. It is within the context of providing vital information for the CDAs that the present study sought to carry out a review of the land use practices of in-Park village members in the KNP, to assess their relevance to sustainable

forest and wildlife management, and propose sustainable ways to facilitate the intended demarcation of PUZs for three in-park villages.

1.2 Objectives of the Study

The overall goal of this research is to obtain and analyze baseline information on land use practices of in-Park villages in the KNP, to support the establishment of PUZs for the sustainable management and development of clearly defined portions of land within the KNP.

The specific objectives of the research assignment are:

- a) To determine land use patterns of the three in-park communities.
To analyze the social profiles of the three communities.
- b) To obtain learning points from sustainable forestry and wildlife management in other African countries.
- c) To determine the livelihood activities and potential livelihood systems for the three in-park villages.

1.3 Research Questions

- 1. What is the land use situation for each in-park village?
- 2. What are the social profiles of the three communities?
- 3. What learning points can be obtained from sustainable forestry and wildlife management in other African countries?
- 4. What are the livelihood activities and future livelihood systems for the three in-park communities?

1.5 Significance of the Study

The results of this study will be of benefit to several categories of individuals and institutions at international, national as well as local levels. These include KNP management, Cameroon government and its forest management partners, Africa and other global forestry hotspots, international and national organizations involved in conservation, scholars/researchers in the area of forest management, in-park communities and other communities in the vicinity of protected or forested areas.

Benefit to KNP management: The maps that will be produced for the current land use situation would most definitely be useful for the management of Korup National Park for monitoring of land use, park integrity and decision support tools. The challenges of conservation and development that will be identified during community profiling would likewise guide park management in choice of co-management strategies and initiatives in the different communities. The information on the social environment would also be used in designing institutional strengthening packages for community-based organizations that would participate in conservation processes. Enhancement of community participation in forest management activities such as the on-going revision of the management plan would improve on the implementation of wildlife management and forestry laws.

Benefit to Cameroon government and its forest management partners: the state ministries responsible for aspects such as forestry, environment, nature protection, agriculture, rural development, planning and tourism would definitely use the information provided in this work as a guide for monitoring land use activities in the area as well as similar regions. The proposed elements in the management plan could be used to identify donors and Aid partners to build capacities for other income generating activities in the area. Lessons learned from the present process could also be applied in other zones which have human settlements within protected areas limits.

Benefit to Africa and other global forestry hotspots: The process and outputs would be useful to other wildlife and forestry schemes in Africa and the rest of the world in the provision of adapted land use planning methodology; data on the social profiles of such forest based economies and models for calculation of optimum resources required by such communities.

Benefit to international and national non-governmental organizations involved in conservation: Organizations involved in conservation and related aspects such as carbon sequestration and climate change could utilize the outputs of the study as part of their database for protected areas. Protected areas are important to the entire global community for ecological, economical, medicinal, cultural, aesthetical and ethical benefits and organizations like the United Nations Environment Protection Agency (UNEP) and the UN program for Reduction of Emissions from Deforestation and Degradation (UN-REDD+) can utilize such outputs for determination of the status of protected areas, preparation of action plans and monitoring of results of conservation initiatives.

Benefit to in-park communities: In-park communities would benefit significantly from the study through the identification of development challenges and potentials in their environment. The

demarcation of the permanent use zone would terminate the uncertain land tenure situation which has hindered development in the communities since the creation of the park. The communities would also be able to use the elements of the management plan to seek for funding for conservation and development initiatives. These communities could also use the outputs and recommendations of the study for generation of options during subsequent revision of the national park management plan.

Benefits to scholars and researchers in the area of forest management: The outputs can also serve researchers and other students who intend to pursue studies in forestry and livelihood strategies of forest based systems. The methodology as well as challenges could be used to guide similar ventures in protected areas and lessons learned could be used to modify the research designs of similar initiatives. The geographical, historical, socioeconomic, ecological and conservation collected could be of immense importance.

Benefit to tourism agencies: The land use maps will show areas with important touristic potential such as mountain ridges, salt licks and fishing sites that could be of interest to tourists and touristic agencies. This will enhance tourism hence increase funds generated by tourism to the state and local communities.

1.6 Organization of the study

The study is arranged in five chapters. Chapter one is the Introduction. Chapter two is literature review and theoretical framework. Chapter three discusses the research methodology, while chapter four presents and discusses the study findings. Chapter five is summary of the main findings, conclusion, and recommendations.

1.7 Definition of terms

Some terms and concepts used in this write up are defined below in order to ensure a shared understanding of their utilization.

Permanent use zone refers to an area within the Park set in a participatory manner by the community and the Park officials to sustain community livelihood and mitigate land and resource use conflicts. The zone should ideally be divided into management sectors with accompanying management guidelines. It is intended to be a permanent area to accommodate current and future land and resource uses for the community. According to the Korup national park management plan they are referred to as zones established for each of the five remaining Park villages and surrounding areas of influence for the purposes of cultivation and the collection of NTFPs. The boundaries of these zones will be determined after rigorous agro-socio-economic, demographic and

wildlife surveys. These boundaries could later constitute the limits of the enclaves (MINFOF, 2008.)

Co-management can be defined as a partnership arrangement in which the community or local resource users, government, other stakeholders and external agents share the responsibility and authority for decision making over the management of natural resources (Pereira *et al.*, 2013). Another definition that is more explicit depicts a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources and also as a pluralist approach to managing natural resources, incorporating a variety of partners in a variety of roles, generally to the end goals of environmental conservation, sustainable use of natural resources and the equitable sharing of resource-related benefits and responsibilities (Borrini-Feyerabend *et al.* 2007).

Protected area can be defined as a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long term conservation of nature with associated ecosystem services and cultural values (Dudley and Phillips, 2006). Protected areas, national parks, wilderness areas, and community conserved areas, nature reserves and so on are a mainstay of biodiversity conservation, while also contributing to people's livelihoods, especially at the local level.

Land use denotes the human use of land. It involves the management and modification of natural environment or wilderness into built environment such as fields, pastures, and settlements. It also has been defined as the arrangements, activities and inputs people undertake in a certain land cover type to produce, change or maintain it" (FAO/UNEP, 1999).

Land use planning is a recurrent theme within the write-up, and it is a systematic and iterative procedure carried out to create an enabling environment for sustainable development of land resources which meets people's needs and demands. It assesses the physical, socio-economic, institutional and legal potentials and constraints concerning an optimal and sustainable use of land resources, and empowers people to make decisions about how to allocate those resources (FAO/UNEP 1999). It is based on dialogue among the different stakeholders in the definition of sustainable land uses in rural areas.

Conservation refers to an effort to maintain and use natural resources wisely in an attempt to ensure that those resources will be available for future generations.

Management plans in the context of the present study can be defined as a tool to guide managers and other interested parties on how an area should be managed, today and in the future (Thomas and Middleton, 2003). As a management tool, planning helps protected area managers to define and then achieve the mandate of the protected area under their care. It is described as a process and not an event. It likewise does not end with the production of the plan but requires ongoing monitoring to benefit from lessons learned during the revision of such plans.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Literature Review

Creation of PUZs within protected areas is not unique to the KNP. Dudley and Phillips (2006) noted that protected areas cover 11.5 percent of the land surface of the earth, and are therefore affected by human presence through a range of varying ecological and social contexts. The establishment of sectors for livelihood activities within such areas is generally aimed at linking human well-being and environmental sustainability. Such schemes referred to as integrated conservation and development projects (ICDPs) utilize land use planning, socioeconomic and field survey approaches to accomplish sustainable resource management, enhanced livelihoods, national park management, protection of biodiversity, conflict management, and responsible governance.

A related study on landscape conservation in the Amazon region was reported by Painter et al. (2008) for the Mamirauá and Amanã Reserves of Brazil. The study explained that the reserves were the most endangered ecosystem in Brazil and that it was responsible for the survival of many rare animal and plant species whose populations have been drastically reduced elsewhere in the Amazon. Also, the vulnerability of the reserves was associated with its location within one of the most densely populated regions in Amazonia state. The study was jointly carried out by the Wildlife Conservation Society (WCS) and Mamirauá Sustainable Development Institute in 1983 and it was geared towards the development and implementation of a conservation approach based on a combination of a strong knowledge-based scientific methodology and local participation. The aim was to produce a structure described as a sustainable development reserve (SDR) from which lessons learned could be adapted and applied to other ecosystems in the country. The researchers collected information on population and ecological studies, human activities, traditional practices, resource use, demographic trends as well as educational and health status to prepare a management plan. This provided baseline data which facilitated the monitoring of trends to determine improvement in the quality of life. They established land use management plans, and the lessons learned were used in other areas. Interestingly, the project led to the improvement of household incomes by 110 percent over a ten year period, reduced infant mortality and resulted to better commercialization mechanisms for products. However, the project caused an influx of people from other areas due to the better standards of living. This was undesired because very high population growth rate in the vicinity of protected areas usually results in unsustainable resource use. This approach can be adapted for the baseline assessment of land use and livelihood practices of in-park villages in the Korup national park.

The Joint Forest Management (JFM) in Andhra Pradesh community in India provides another example of co-management of natural resources. According to Saxena (2007), forest management policy in India within the post independent era was characterized by massive government control and minimal community participation. The study revealed that this management conditions caused general neglect of village commons and resultant deforestation and degradation of family holdings. Irresponsible felling was also reported to be rampant and all these culminated in heightened poverty and misery of the population. Based on a report by Apte and Pathak, (2004), a fundamental change occurred in Indian forest policy in 1988 with the implementation of the joint forest management. This management system involved more participation of village communities, and some of the strategies used included the establishment of forest management committees, strengthening of tribal-forest linkages, safeguarding customary rights, provision of alternative energy sources, definition of user rights and protection of non-timber forest products (NTFPs). Based on the assessment of Saxena(2007), JFM improved the management of forest resources in Andhra Pradesh, but the program objectives were mostly unachieved due to shortcomings such as monopoly of project by local elites, enhanced marginalization of weak stakeholders, irregular committee meetings, and poorly defined benefit sharing mechanisms. These the failures reported in the JFM approach could be used to provide major lessons for the improvement of the present study in KNP.

Painter *et al.* (2008) reported on a similar project carried out in Antogil Bay in North Eastern Madagascar. The bay is described in the report as a biodiversity hotspot with several Islands. The fauna and flora in these Islands were described as critically endangered and the major challenges to their survival were revealed as bush meat hunting, forest burning, and overexploitation/collection of NTFPs and illicit commercialization of hardwood forest species. The project to link livelihoods, land stewardship, and resource conservation in this area resulted in improved agricultural productivity and infrastructure, diversification of cultivated commodities, increased involvement of state organs in natural resource management, restriction of immigration into enclaves, considerable reduction in dependence on forest products, as well as development of mechanisms for carbon commercialization. Key lessons from the Antogil Bay exercise for the present baseline study in KNP include the multi-stakeholder approach and in-depth socioeconomic studies that enrich the local content of the study.

Several studies have been carried out within the KNP, including; socioeconomic surveys, agro ecological zonation, biodiversity, and demographic movements. One such study described in Diaw, et. al. (2009) was a livelihood survey carried out between 1998 and 1999 to support revision of the KNP Management Plan. The researchers utilized both qualitative and quantitative methods including participatory GIS to study farming systems, marketing channels, household

income/expenditure patterns, social infrastructure, demography, wildlife abundance and ethno biology. Some of the main findings reported were high dependence on hunting and gathering; considerable ineffectiveness of law enforcement by game guards; and the system of administrative instruments consisting of chiefs, traditional council and cultural societies. Among other things, Diaw, et al. (2009) proposed that the landscape management approach which involves the recognition of broader spatial, social and economic relationships in the management of multifunctional landscapes should be adopted for KNP. The researchers likewise recommended that KNP Park Management should partner with the local communities in designing management strategies, and identifying environmental problems, alternative income generation activities and adoption of landscape management approach.

Another study executed on a previous management strategy in KNP is a case study reported on by Schmidt-Soltau and Brockington(2007). The study focused on the assessment of the resettlement process in Ikondokondo village of KNP. The researchers utilized interviews, field visits and study of documents to determine the degree of voluntariness that characterized the process. The case study on the process was mostly motivated by the controversy that surrounded the utilization of the resettlement strategy during the latter part of the 20th century with the conservation community being sharply divided on the issue (Wilkie et al. 2006, cited in Schmidt-Soltau and Brockington, 2007). The study uncovered flagrant cases of this controversy in the case of KNP with the WWF regional director at the time expressing satisfaction with the Ikondo Kondo process while the European Union described it as involuntary and a failure (Schmidt-Soltau and Brockington, 2007). The research revealed that the park was created without consultation of the local communities but rather motivated by growing international concerns over tropical forest degradation, loss of biodiversity and the rising awareness of conservation movements (Schmidt-Soltau and Brockington, 2007). The findings also showed that the government of Cameroon utilized a combination of threats and promises of assistance to convince the village to participate in the process. There was also little evidence found of the villagers being convinced of the benefits of conservation during the process which is a vital element to guarantee sustainability of such initiatives. The study further revealed that these shortcomings resulted in the World Bank and the European Union suspending funding for KNP. These donors advised the state of Cameroon to discontinue resettlement, modify laws to enable settlement in parks, offer full compensation for reduced access to natural resources and provide comprehensive development programs to enhance social infrastructure for in park communities.

Du Plessis and Faure (2011) also exposed efforts made at harmonizing conservation and development in the African countries in a work that examines the instruments and challenges

associated with the implementation of environmental law in the continent. The report portrays the incompatibility of laws inherited from colonial era and current international agreements with the African reality. According to Du Plessis and Faure (2011), the crucial question for environmental law in Africa is how to balance adequately the need for economic development and environmental protection. The report demonstrated that all countries face this dilemma to varying extents but showed that the environmental preoccupations in African countries differ from those in the north in aspects such as high reliance on natural resources for development, limited institutional capacity, deforestation threats, human wildlife conflict potential, limited human capital, important role played by traditional authorities and endemic corruption of civil servants. The study utilized elements such as the constitutions, environmental framework law, enforcement possibilities, environmental impact assessment (EIA) practice and public participation to show how balance is achieved between economic and environmental issues. The researchers also indicated that even though most African countries have signed international agreements and legal tools for the protection of the environment, the enforcement modalities are grossly ineffective; while economic interests are often given preference to environmental issues by the courts and the administration. Of the seventeen case studies examined, four countries including Cameroon were found to balance more towards economic considerations while five countries were considered to exhibit balance between economic, social and environmental aspects. Just Botswana was judged to balance more towards environmental considerations. The study recommended that, Africans must be prepared to give life to their environmental laws, Africanize their environmental framework and EIA legislation, and ensure that interests are balanced between environmental, economic, social and cultural concerns. This study is important to the present research in some of ways. Firstly, it provides a description of the current environmental policy and institutional conditions prevalent in Cameroon, including the challenges that the state faces. Secondly, it proposes some amendments that could enhance enforceability and bring about change in attitudes. Thirdly it emphasizes on the policy and regulatory framework which is important for the attainment of sustainability in conservation initiatives. This present research which is geared towards the identification for mechanisms of enhancing sustainability of forest and wild life resources in protected area vicinities could, therefore, adapt and utilize some of the above- mentioned recommendations.

2.2 Theoretical Framework

Human relations with wild lands and wildlife have evolved throughout history under the influence of varying theories, movements and management methods. Hunting had always been looked upon in most societies as a proof of manliness. With the expansion of Europeans to Americas, Africa and Asia, opportunities for hunting were enhanced. Initially, mankind viewed wildlife and wild lands as unlimited right up to the 1700s. Animals were killed for food, clothing items, sport and as

a protection measure for crops. In the 1800s, some enlightened individuals realized that the notion of wildlife inexhaustibility was a myth and through surveys, rudimentary bio monitoring, newspaper articles and books they were able to establish in the public mind that wildlife numbers were dwindling and the prospect of human-induced extinction was taken more seriously, especially when some previously abundant species became extinct (Jepson and Whittaker, 2002; Robert Brown, 2009).

The reality of human-induced extinction of vegetal and animal species culminated in the birth of conservation movements in the latter part of the nineteenth century. The characteristics of this primal conservation movements included lobbying for game laws and hunting seasons. They also advocated for the banning of traps, snares and bush burning. Some early conservationists in America and Europe include Thomas Jefferson, George Washington, Alexander Wilson, John Muir, and Rachel Carson, who highlighted the potential dangers of excessive pesticide use on wildlife. Another notion of natural resource protection that developed in the late nineteenth century was the movement for preservation. The creation of the first national park, the Yellowstone Park, in the United States of America was greatly influenced by the contemporary preservationists who believed that such areas should neither be used for harvesting nor hunting. In the 1930s a special component of natural resource management known as wildlife management characterized by manipulations of habitats or populations and the incorporation of environmental education developed (Brown, 2009)

Another noteworthy development was the establishment of international conventions related to wilderness management. In the early part of the 20th century, it became apparent that international action was required to guarantee nature's conservation and this led eventually to the establishment of certain institutions and conventions, such as the following:

- The International Union for Conservation of Nature (IUCN) established in 1948, and the Convention on Biodiversity (CBD) of 1992.
- The Convention on Wetlands of International Importance in 1971, and the Convention on International Trade in Endangered Species (CITES) in 1973.

The above institutions and treaties, among other important ones, jointly provide the international network and forum to guide signatory nations and civil society organizations through the development of a range of tools and mechanisms for achieving conservation goals.

2.2.1. Conservation Management Model for the KNP

Diaw, et. al. (2009) describes two management models; the exclusive and the inclusive conservation management models. The exclusive model developed largely in the United States, consists of decoupling the interest of local communities from the protected areas, ranging from openly anti participatory attitudes to outright resettlement of the resident communities. The inclusive model promoted largely by European states, is based on the premise that the well-being of in-park dwellers should be of primary concern to the park managers. The two models were in application for most of the twentieth century with some management systems using elements of both approaches.

Recent natural resource management practice has shifted more towards the inclusive model. According to Nelson and Sportza (2006), in the early mid-1980s, national parks and protected area entered a different phase where the theory, methods and practice were embodied into a new framework. Key elements of this new framework include consideration for cultures and values of native peoples, co-management approaches, sustainable development and landscape concepts. The landscape approach of protected area management is an innovation of the currently evolving framework and according to Nelson and Sportza (2006), such areas previously thought of as fortresses are presently viewed as part of a network including local as well as larger landscapes or regions. Community-based natural resource management (CBNRM) with apt examples from Southern Africa can be described as inclusive. CBNRM describes the management of resources such as land, forests, wildlife, and water by collective, local institutions for local benefit (Roe, et al., 2009). This concept usually embraces development and conservation objectives and is accompanied by devolution of resource rights and control to the lowest units of society. At the creation of KNP in 1986, the exclusive management model was the predominant approach but due to the influence of the new evolving framework, more and more elements of the inclusive approach are being incorporated in the management strategy.

The IUCN, which currently emphasizes that protected areas should not be seen as isolated entities, but part of broader conservation landscapes including both protected areas systems and ecosystem approaches to conservation is more in favor of the inclusive model while emphasizing the necessity of some exclusively managed units therein. Dudley (2008) insists that the term protected area should refer to both inclusive and exclusive models based on an IUCN six category classifications. This classification ranges from strict nature reserves (class 1 a) which are managed mainly for science such as the Dipperto National park in Australia to areas of managed resource PA (class 6) such as the Expedition National park in Australia through habitat/species management area (class 4) with the Pallas Ounatunturi National Park example in Finland. The IUCN progression from

categories one to six implies a gradation of human intervention. The ongoing demarcation of permanent use zones and strategies for CBNRM process is in line with the current approach proposed by the IUCN which is basically the inclusive model with management of the different zones ranging from community conserved areas (CCAs); defined as natural ecosystems containing significant biodiversity and conserved by communities (Phillips, 2003) to units where strict control would be enforced and human visitation would be limited to scientific research and monitoring.

2.3 Gaps Identified in the literature and how the work shall attempt to fill them

The literature reviewed have main goals including land use planning, sustainable forestry policy development, linking of livelihood and conservation methodologies, production of KNP management plan revision elements, evaluation of previous KNP resettlement process and an assessment of efforts made by African states to balance environmental and economic imperatives. They are all geared towards the improvement of environmental protection in the developing world. With regards to the elements necessary for sustainability of resource management in in-park villages, however, the following shortcomings were identified:

- The data on the social environment within KNP was sketchy and insufficient. This information is very vital for appropriate stakeholder participation in conservation management and monitoring of impacts.
- No models for the implementation of land use planning in situations where the area of land is undefined were described. Normally land use planning is executed on a well-defined land area on which characterization and zonation are implemented to determine suitability for different uses.
- There were no guidelines for management of conflicts that would normally be associated with such land use planning in uncertain tenure situations.

The present study, used land use projections in order to determine the surface area and disposition of land to serve as permanent use zone. After determination of area needed for different conservation activities, suitability exercises and subsequent zonation were carried out. Such a process was therefore fraught with a high conflict potential. In spite of the numerous examples of co-management studies that have been executed in other parts of the world, Africa and Cameroon, this particular study was very pertinent because it would produce relevant methodology necessary for determination of PUZs for in-park communities. The developed methodology elements such as multi stakeholder sensitization strategy, data collection, analysis and development of future land use instruments are apt for such areas where co-management is viewed as a threat rather than as an

opportunity for development. Some protected areas in Cameroon and Africa have human settlements and these seemingly incompatible land uses can only be harmonized by the determination of management sectors and accompanying management guidelines.

CHAPTER THREE

METHODOLOGY OF THE STUDY

3.1 Model of the study

The research was carried out in three stages. Firstly, a situation analysis of socioeconomic factors to determine conditions, activities and needs of households was conducted. Secondly, the demographic structure of families and potential growth in economic activities was assessed. Thirdly a population growth model was utilized for the analysis of future population projection and future land use.

The population growth model used in the study utilized situational analysis outputs, previous population data, in the forecast of future population patterns. Situational analysis of socioeconomic elements helped in the estimation of future livelihood needs, to be met by a combination of resources. These perspectives were required for adequate planning for the provision of basic amenities and natural resource needs. Due consideration was also accorded to gender balance, current land use patterns, and ongoing livelihood strategies and potentials. The approach was considered necessary because the demarcation of PUZs required the estimation of land use evolution over time.

Demographic projections were therefore carried out using the exponential method $P_t = P_o e^{rt}$ which is suitable for any period beyond eight years.

Description of Variables in the Model

In the formula, P_t = projected population at the end of t number of years

date; P_o = base population for current year; r = growth rate; t = number of years;

The projection exercises focused on the following components that have specific relevance to future natural resource needs:

- Number of households
- Number of persons per household
- Age bracket between 21 and 50
- Number of buildings

- Number of female headed households
- Number of males headed households
- Percentage of individuals in each bracket that return home
- Percentage of households including hunting in livelihood strategies
- Percentage of households excluding hunting in livelihood strategies
- Death rate and birth rate
- Net migration
- Per capita based on income
- Level of education
- Total population

3.2 Study Design

The research design was descriptive involving the acquisition of graphic data of the villages' situation including the strengths, weaknesses, opportunities, and threats. Descriptive analysis is relevant for such exercises because it assists in the description of the groups, in the projections of likely scenarios, determining the variation of specified variables among the studied population as well as an assessment of the frequency with which certain things occurs such as land uses and choice of particular livelihood strategies. The research was carried out in three stages. Firstly, a situation analysis of socioeconomic factors to determine conditions, activities and needs of households was carried out. Secondly, the demographic structure of households and potential growth in economic activities was assessed. Thirdly a population growth model was utilized for the analysis of future population projection and future land use.

3.2.1 Sampling method

Three out of the five in park villages of KNP were purposively selected based on the following criteria: relative openness to co-management initiatives; availability of previous village development plans; and involvement in previous agricultural assessment exercises. The selected villages are Bera, Erat, and Esukutan.

3.2.2 Tools for data collection

Primary data used for the study was collected through questionnaires, interviews, field visits and focus group discussions (FGDs) while the secondary data were collected from review of reference documents relevant to land use planning, co-management, and CBNRM initiatives in Cameroon, Namibia and Mozambique.

3.2.2.1. Primary data collection

The questionnaire (see Annex 1) used for collecting households data has three sections. The first section is concerned the household identification, while the second and third sections elicit information on households, demographic characteristics, economic activities and sources of income respectively. The questionnaires were administered to all 127 household heads in the three villages by data collectors who had been trained during a one day workshop.

Consultative interviews were carried out with key informants such as the village chiefs, head teachers, group leaders and elders. The interview schedules had sections with structured, semi structured and unstructured questions. Information about village institutions, migration, gender relations, land tenure, areas of high conservation value, biodiversity and hunting practices were obtained and corroborated during such discussions with key informants. Equally, FGDs were carried out with selected representatives of different categories of stakeholders (that is, women, men, youths, farmers, gatherers, Hunters, traders, traditional councils, producer associations, and cultural organizations) on a number of community research themes using some guiding questions, participatory rural appraisal (PRA) tools and techniques to obtain baseline information about each community. The primary baseline information needs and adopted research tools and techniques are summarized in Table 3.1

Table 3.1: Main baseline information needs and Research Tools used

DATA NEEDS	MAIN RESEARCH TOOLS AND TECHNIQUES
Ethnography of the in-park Villages	Historical Profile/Timeline, SSI with Key Informants, Questionnaire, Focused Group Discussions, Field Observations
Demography (Population Growth and Density)	Census, Focused Group Discussions
Demography and migration	Census, Focused Group Discussions
Political Associations	Focused Group Discussions
Religious Organizations	Focused Group Discussions, Questionnaire,
Village Organization and Administration	Questionnaire, Focused Group Discussions,
Gender Relations	Questionnaire, Focused Group Discussions, Field Observations, interviews
Socio-Cultural Associations	Questionnaire, Focused Group Discussions
Government Institutions	Questionnaire, Focused Group Discussions
Private and Civil Society Organizations	Questionnaire, Focused Group Discussions
Social Services (Education)	Questionnaire, Focused Group Discussions, Field Observations
Social Services (Health and Others)	Questionnaire, Focused Group Discussions, Interviews with Key Informants, Field Observations
Livelihood activities	Focused Group Discussions, Field Observations
Farming systems, Marketing channels for forest products	Historical timelines, agricultural calendar, seasonal calendar, pie charts, SSI, mapping.
Forest user groups	Stakeholder analysis template focused group discussions.
Household income and expenditure patterns	Income/expenditure matrix. Questionnaire.
Current land use	Field survey, ArcGIS, topographic maps, participatory land use maps.

Field surveys were used to obtain information on current land use by the communities. The process commenced with the establishment of hand drawn participatory land use maps (PLUM) by the communities. Village guides subsequently assisted the researchers in identification and mapping of the different land use areas described in the PLUM. Spatial data collection sheets (Annex 2), global positioning system (GPS) and observation were utilized in the collection of data during field surveys. Sites of important livelihood activities such as farming, NTFP collection, fishing and

hunting were identified, geo referenced and described. Important cultural sites, location of minerals and important conservation sites were also mapped. Soil types and varying suitability were determined based on observation, physical feel and interview of guides.

3.2.2.2. Secondary data collection

Some vital reference documents were consulted including; the village development plans, agricultural assessment reports of the PSMNR from 2008 to 2011, and Vabi (1996), which provided useful information on livelihood systems, land use, village organization and challenges to development and conservation. Additionally, information on experiences in co-management of protected areas in other regions were culled from UNEP website, a CIFOR publication on co-management edited by Diaw, et al. (2008), successive KNP Management Plans and other related reports of the Ministry of Forestry and Wildlife prepared in 2002 and 2008. Other reports, working papers and publications of partner organizations and stakeholders like USAID, WWF, GIZ and CIFOR were exploited. Furthermore, case studies of relevant conservation experiences in Namibia and Mozambique were reviewed for insights on appropriate approaches for improvement of CBNRM in protected areas.

3.3 Analytical Approach

Analysis was carried out for physical, social and livelihood findings using several tools and methods. Physical findings were analyzed using geo processing tools of ArcGIS and SWOT analysis; social findings were analyzed using SWOT analysis while livelihood findings were analyzed using SWOT analysis and the livelihood evaluation grid. The livelihood evaluation grid assesses economic, social and environmental sustainability of various livelihood strategies. Socioeconomic data were displayed using tables and charts while physical data was portrayed on maps and diagrams.

3.4 Validation of the Results

The accuracy of results obtained from this study such as livelihood strategies and land use patterns were verified through ground truthing on the field. Population projection results were validated after specific durations using linear or exponential growth models. Furthermore, the results from this research can be generalized because it was triangulated and conformed to other research findings generated by different data collection methods. Moreover, the researcher took necessary measures to ensure the reliability of the data collection instruments, the validity of data collected, the appropriateness of data analysis procedures and correctness in the interpretation of data

analysis results. To ensure the reliability of the data collection instruments i.e. questionnaires, pretesting was carried out. At the end of this pre-test, some questions were added, some rephrased to reduce ambiguity, while others were discarded completely. Also, all of the variables captured in the questionnaires have been used extensively in studies of similar nature. Finally, the variables chosen were directly related to the objectives of the study.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

4.1. Land use patterns in the three in-park communities

The major land cover types and land use patterns were identified and classified in the study area. Table 4.1 presents the land cover types consisting of trees (forest), crops, buildings, bare soils, and water bodies, while the associated land use patterns comprised settlement, food crop land/fallows, ancestral farm lands, cash crop land, reserved land, non-timber forest collection sites, hunting sites, sacred/cultural sites, fishing sites, and salt licks. The different uses included a range of crop types, fallow, and sites for NTFP collection, hunting, fishing and Cultural activities.

Table 4.1: Land cover, land use class, and land uses

Land cover type	Land use	Land use class (Classification)
Buildings	Social infrastructures (Primary School, Church, Ekpe Hall, Chief's palace, provision store)	Settlement
	Residential buildings (Homesteads)	
Crops (Arable land)	Mixed food crop farm; Cassava, cocoyam, maize, egusi, pepper, plantains, bananas, vegetables, fruit trees.	Food cropland
	Fallow	Fallow land
	Cocoa farms	Cash cropland
	Oil palm farms	
Trees	Conservation sites	Primary forest (Natural vegetation)
	NTFP collection site	
	Hunting and trapping sites	
	Sacred/cultural site	Secondary forest Ancestral farm lands Reserve land for future use
	Trapping, fuel wood collection	
Hydrology (Water bodies)	Fishing, spawning site	Rivers
	Fishing, spraying, bathing, drinking	Streams
	Tourism	Waterfall
	Tourism	Salt lick
Bare soil	Tourism	Rocks

4.1.1 Characteristics of Land Uses

a. Settlement

Village settlement is the area of land occupied by the inhabitants and used for the construction of houses, social infrastructures, home gardens and development initiatives. Tajoacha, (2010) described this intensive cultivation in home gardens as backyard farming system. This intensive cultivation close to the homestead is rationalized by frequent crop raiding by animals in farmlands distant from the settlement. The villages all have linear settlement patterns with houses on both sides of main paths. The buildings are made up mostly with splashed mud walls; while a few are constructed of wood or cement bricks. Roofing is either with thatched roof or corrugated roofing sheets. There are drinking and bathing water points with water flowing all year round. The Ekpe halls in the villages are conspicuously central in position; some churches have built structures while others have worship sessions in primary school structures.

b. Farmland

Farm refers to land units utilized for agricultural activities for the cultivation of food or cash crops as well as fallow for re-establishment of soil fertility. The management of the farms range from active to inactive and intercropping is the dominant practice on food crop farms.

c. Food crop systems in the first year is usually characterized by the association of cassava (*Manihotesculenta*), maize (*Zea mays*), egusi (*Cucumismelo*), cocoyam's (*Colocasiaesculentus*, *C. gigantea*, *Xanthosomamafafa*) and in some cases including yams (*Dioscorearotundata*, *D. cayensis*, *D. alata*), vegetables (*Telfeiraoccidentalis*, *Amaranthussp*, *Vernoniaamygdalina*, *V. hymenolepis*, *Cucurbitamoschata*, *C. pepo*, *Gnetumaficana*), groundnuts (*Arachis hypogea*), okra (*Abelmoschusesculentus*), and pepper (*Capsicum annum*, *C. frutescence*). Longer cycle crops like cassava and cocoyam persist in the second year. The plots are usually left to fallow for 3-5years, after all, the crops have been harvested. In all three villages the current farming system can be described as shifting cultivation with the farmers moving to new plots to commence the cycle periodically. Thus, in a land use unit subjected to food cropping system, each cycle takes an average of five years. This practice is pertinent in the determination of future land use needs for the villages.

d. Ancestral (old) farms were farmlands found in Esukutan and Bera villages, and these are areas cultivated by past generations more than 50 years ago. They are presently covered by secondary forests due to inactive management by the present generation. They were

located in hilly areas, and it was revealed that the areas were abandoned due to animal raiding and steep topography. In Bera, the ancestral farm lands are very extensive and are also located in the vicinity of historical settlements.

- e. **Cash cropping system:** The principal cash crops cultivated in the focal in-Park villages (Esukutan, Erat, and Bera) were cocoa and oil palm. Additionally, plantains and bananas were grown as shade plants in newly established cash crop farms.
- f. **Reserved Forest:** This category of land use was found in Erat village. It consists of an area of land carved out by the villagers as a reserve for use by future generations for farming and acquisition of building materials. It was reported that this measure was adopted to restrict speculative procurement of land by some residents.
- g. **NTFP collection site:** These were sites for the collection of different non-timber forest products and it cuts across farmland, secondary and primary forest. NTFPs traditionally represent an outstanding source of income for women and increasingly for men and youths. These products include kola nuts (*Cola* and *Garcinia* spp.), bush onion (*Afrostryaxlepidophyllus*), njabe (*Baillonellatoxisperma*), bush mango (*Irvingiagabonensis*), eru (*Gnetum* spp.), shell nut (*Pogaoleosa*), njansang (*Ricinodendronheudelotti*), chewing sticks (*Garciniamannii* and *Massulariasp*), carmel stick (*Carpolobialutea*) and numerous medicinal plants including *Enantiachlorantha*.

The results revealed that bush mango and njansang have predominant economic value. However, collection or gathering is carried out in the forest, fallow, and farmland but harvesting methods and periods depend on the products, Huts were constructed in the woods during collection and collectors spend days in the forest to gather and extract considerable quantities before returning home.

- h. **Hunting and Trapping sites:** Sites for hunting of animals were located in the forests (primary and secondary) and farm lands. Hunting was carried out by a cross-section of community members, especially adult males. There were no specific hunting areas but hunting and trapping signs such as empty cartridge boxes, batteries, trapping lines, and gun shots were observed and heard during spatial data collection. The animal species hunted and trapped were used for consumption and commercial purposes and these included; duiker, porcupine, cane rat, rat moles, deer, and iguana.
- i. **Fishing sites:** Fishing was carried out in most of the streams and rivers in and around the villages. It was done with the aid of baskets and fishing nets (size 2 to 3 - to regulate the sizes of fishes caught). Huts are constructed around the streams and rivers during the

fishing period for processing. Crayfish were also found in the streams using the baskets, and this activity is dominated by women in Erat village.

- j. Cultural sites:** These were sites designated by the community for cultural purposes and sacrificial rites. Such sites had been in existence for generations. The purposes of the cultural sites include cleansing rituals, burial of women who die in childbirth, collection of *Diara* plant the summoning of women court when feminine dignity is insulted, and location of the Ekpe shrine.
- k. Salt licks** are wet spots with salty taste where certain wildlife species visit regularly to obtain essential minerals.

Figure 4.1 shows the surface area and percentage distribution of the different land use classes mapped in the study. The land use types of settlement, crop farms, fallow and forests are found in all three villages. Some land use classes such as reserve land and extensive old settlements were found only Erat and Bera. Bera is observed to have the smallest settlement area but the largest area of secondary forest (852ha). Figure 4.1 also shows that the crops cultivated in the villages include cassava, maize, yam, corn, cocoa oil palm and plantains, while NTFP collection, hunting, and fuel wood are obtained from fallows and secondary forests.

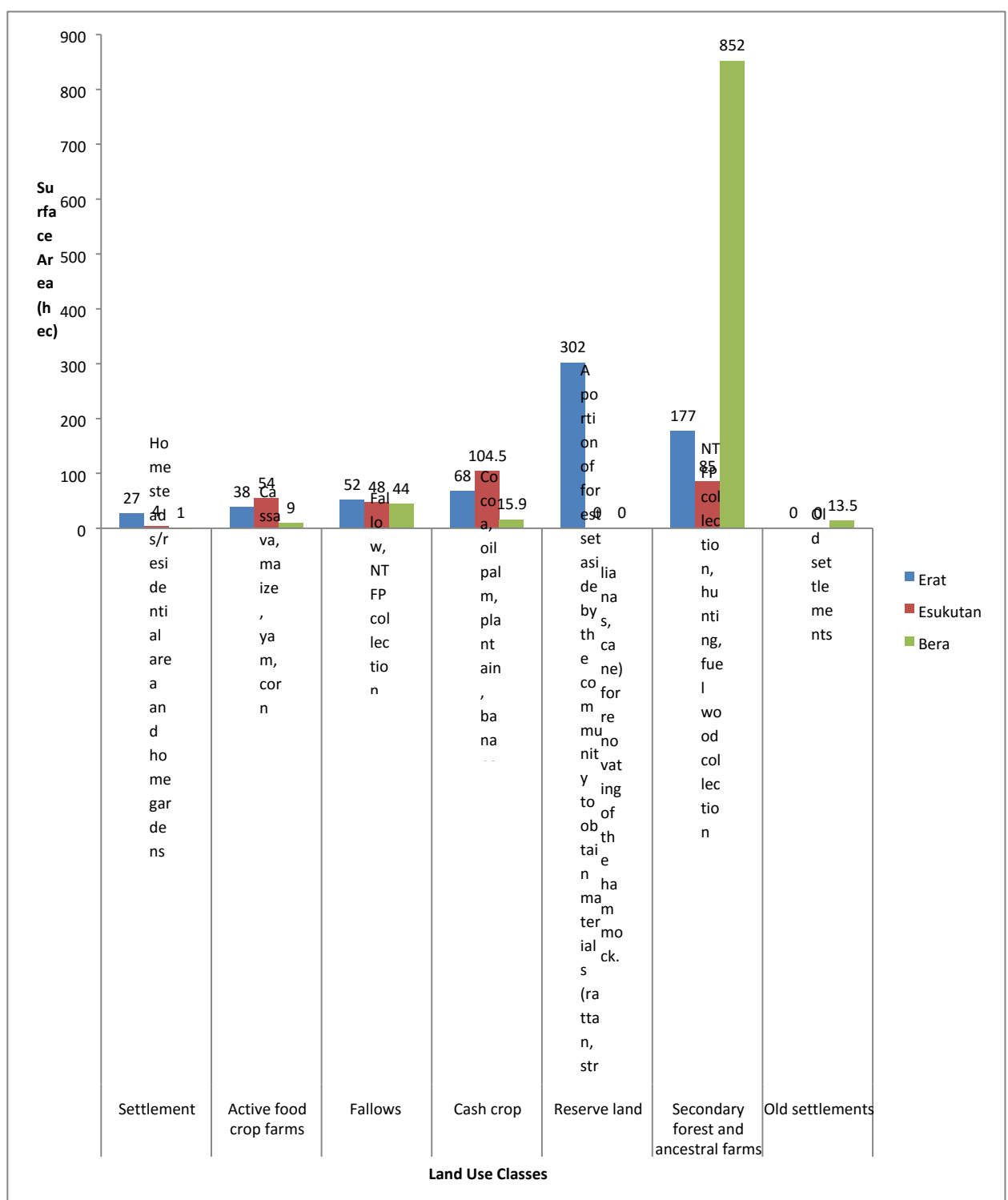


Figure: 4.1: Surface area of the different land use classes in the three in-park village

4.1.2 Current Land use spatial distribution

Figures 4.2, 4.3 and 4.4 present the current land use situation in the three villages. The map shown in figure 3 of the current land use of Erat village shows that the community uses 664 hectares for settlement, cropland, NTFP gathering, fishing and areas reserved for future use. Settlement and home gardens occupy a central position while farmlands are located mainly along trails leading to Mundemba in the East, Ekon 1 to the North, Ekong-anaku (in Nigeria) to the west, and Akpasang in the south. Fishing sites are found in most of the rivers while a saltlick is located in the north. NTFP collection and hunting sites were identified in most of the forest and fallow areas. Reserved

land occupies the greatest area (302ha) while secondary forest has an area of 177 ha. Although 158 ha are utilized for crop cultivation, just 48 ha is active while 110 ha are either in semi-active or inactive management.

The digitized map in figure 4.3 shows the current land use of Esukutan village. The community utilizes 296.5 ha for settlement, cropland, NTFP gathering, fishing, and hunting. Of this area, 78 ha consist of ancestral farmlands located to the east and northeast of the village settlement. 206.5 hectares are covered by cropland and 135,5ha of these are actively managed while the rest of the 71 ha include 48 ha of fallow land and 21ha of inactive farms. A comparison with the agricultural practices in Erat village reveals that a higher proportion of the farms in Esukutan are in active management than is the case in Erat. The settlement and home gardens are seen to be at the center, and sequentially food cropland, cash cropland, and forest are situated in all directions. In spite of its being an enclave, the settlement can be described as a junction village due to trails traversing it to Babi, Ekogate, Bera and Ikenge. NTFP gathering, fishing and hunting sites are located in farms and forested areas. Cultural sites, waterfalls, and swamps situated in certain areas have ecological and touristic importance.

The digitized map in figure 4.4 shows the current land use of Bera village. The community currently utilizes 89 hectares for settlement, cropland, NTFP gathering, fishing, and hunting. It can be seen however on the map that a vast area of ancestral farmland amounting to 852 ha brings the total community land to 941 ha. Settlement and home gardens presently occupy just 1 hectare. In ancient times, the settlement areas to the north east and southern sections covered a total area of 13.5 hectares. Croplands which roughly surround the settlement occupy 69 ha which includes 44 ha of fallow, 20.5 ha of actively managed farms and 4.5 ha of inactive and abandoned farms. The trails are traversing the village lead to Esukutan, Ikenge, Mopako and Akwa. Cultural sites are located in the western and northern forests.

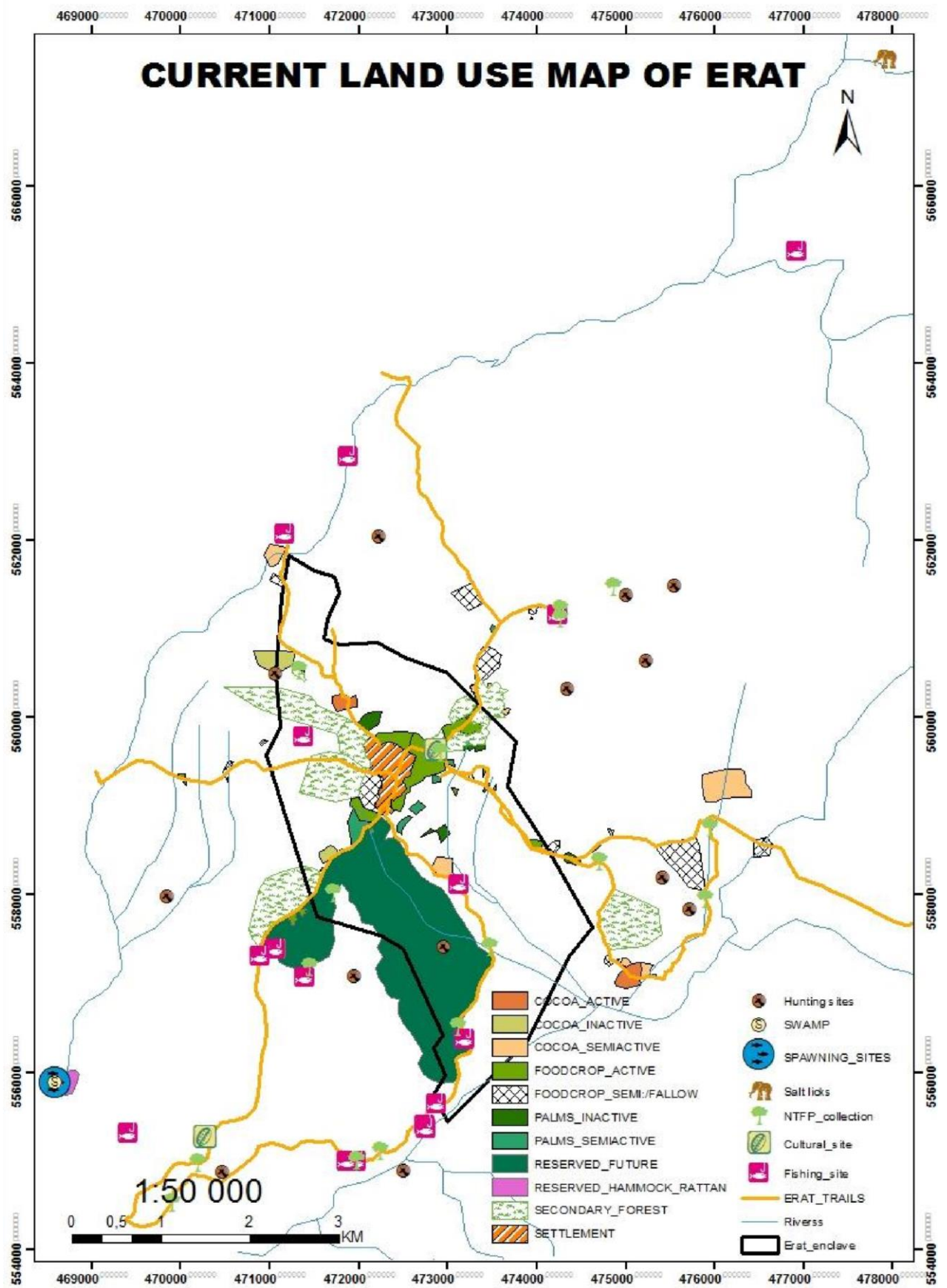


Figure 4.2: Map showing Current land Use of Erat village

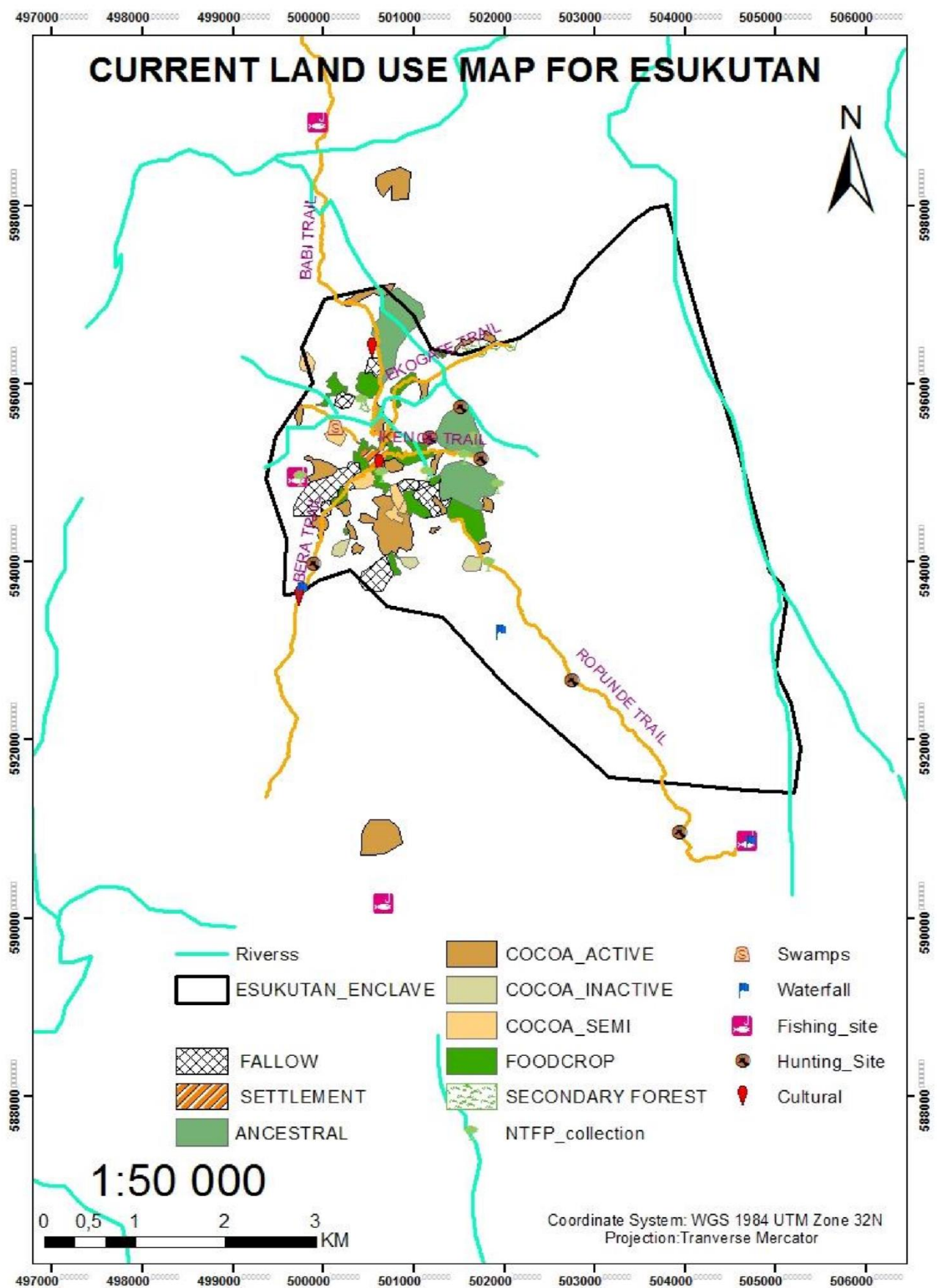


Figure 4.3: Map showing Current land Use of Esukutan

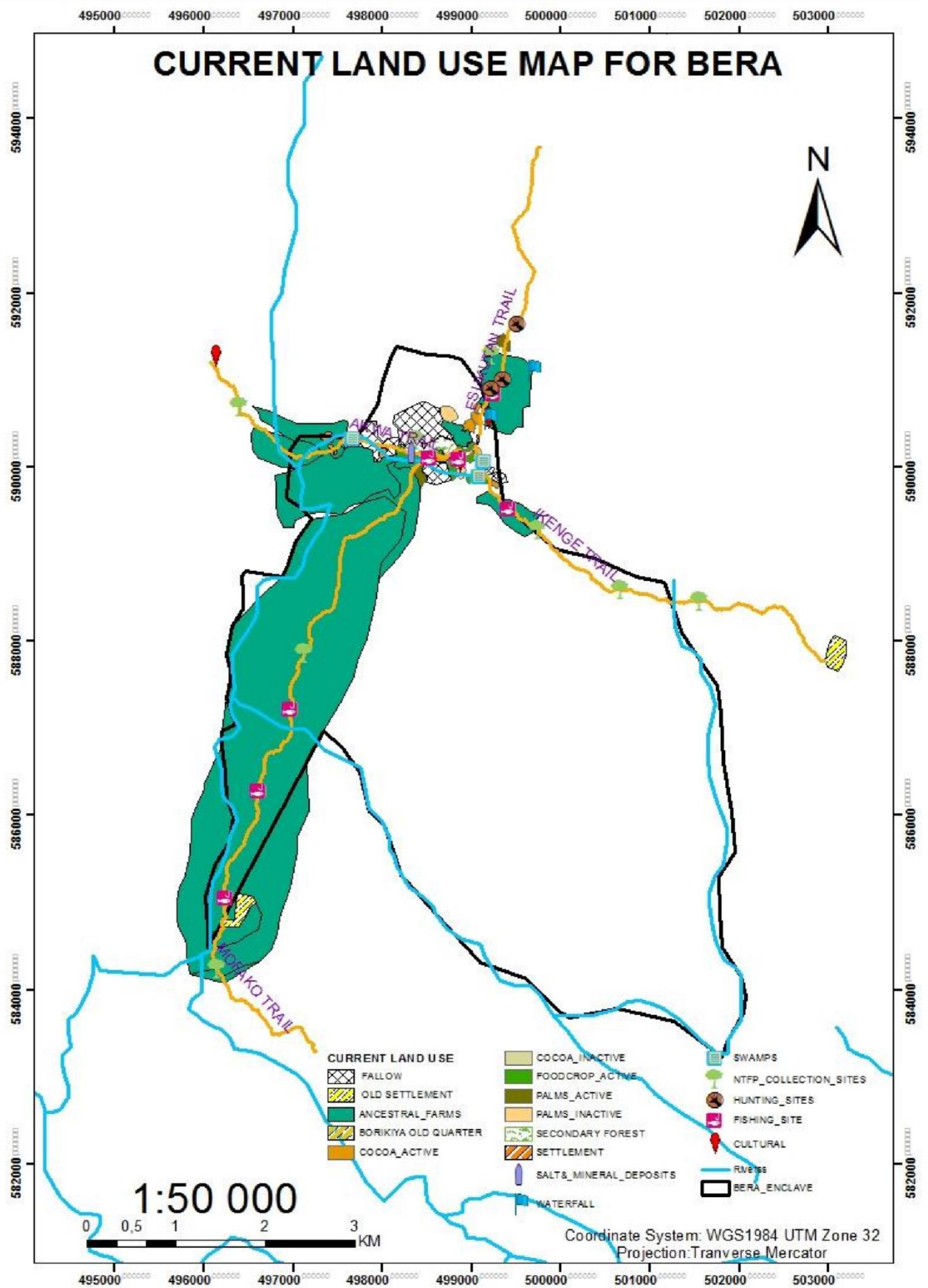


Figure4.4: Map showing Current Land Use of Bera

4.1.3 Land Use Types and Associated Problems

Evidently land uses in the three communities had both similarities and differences. In all three communities, the main economic uses for land were settlement, farming, hunting and gathering. Equally, the settlements were surrounded by food and crop farms, and in all three villages cocoa is the main cash crop. Shifting cultivation was the main agricultural system with incorporation of fallow. The land tenure in all the communities can be described as open access to the indigenes with acquisition of agricultural land determined by the first occupancy of primary forest and inheritance.

Variations in land use observed in the three villages had to do mainly with the following:

- a. Oil palm farms were more predominant in Bera and Erat. Esukutan had just two oil palm farms.
- b. Erat community had reserve land while Bera and Erat had none.
- c. Ancestral farmlands were found in Esukutan and Bera.
- d. Bera was the only village with old settlement areas. Bera equally had a very high proportion of secondary forest and ancestral farmlands.

SWOT analysis was carried out to identify possible mitigating measures to be incorporated into the management plan. The problems highlighted in table 4.2 are the key challenges related to land use upon which special attention has to be paid. The challenges associated with the 14 different land use classes include inaccessibility, limited infrastructure/social amenities, poor toilet and sanitary conditions, limited knowledge of improved production techniques, low yields, poor fallow management, absence of land use regulations, insufficient teaching staff, indiscriminate hunting, reduction of animal population and poor management of touristic sites and infrastructure. The mitigation measures identified (table 4.2) to contribute in improvement of life quality and sustainable natural resource management include construction of access roads, establishment of basic social/communication infrastructure, assignation of agricultural staff, training on improved production techniques, subsidization of inputs, training on fallow management, provision of processing equipment, zoning and development of management regulations for all land use classes, domestication of forest products, training on wildlife laws, formation of land use management structures, certification of produce and restoration of degraded park areas.

Table 4.2: land Uses and Associated Problems

Land use class	Key Challenges of in-Park villages and Sustainable Forest/wildlife management	Possible Mitigation Measures
Settlement	Limited access to social infrastructures, no electricity, no potable water, no toilet facilities (Esukutan) and very few permanent buildings, difficult accessibility	• residential area assessment and planning • construction of access roads • opening of village streets • construction/rehabilitation of social infrastructure • posting of more teachers to primary schools • opening of market place • introduction of construction techniques and equipment • Provision of electricity and water supply • enhancement of communication • Construction, equipping and staffing of health center in Esukutan. • Construction of ranger posts • Construction of toilets
Food cropland	Low crop yields, animal destruction, poor farming techniques, limited access to improved varieties, limited access to processing equipment, limited capacity building , and limited access to agricultural services.	• Assignment of MINADER staff • Development of restoration program for old farms and fallows • Development of work plan for farmers • Training on improved production techniques, rational pesticide/fertilizer use, post-harvest techniques • Facilitate acquisition of improved varieties, pesticides, production and post-harvest equipment. • Subsidization of inputs • Construction of processing and storage units • Development of access roads to farms

Land use class	Key Challenges of in-Park villages and Sustainable Forest/wildlife management	Possible Mitigation Measures
		• Institutional strengthening and formalization of groups • Development of agricultural calendar
Fallow land	Poor fallow management and longer fallow period, no agroforestry plants left to facilitate soil enrichment.	• Training on fallow management • Development of productive fallow by planting NTFP and cover crops before allowing land to fallow. • Promotion of alternative land use for fallows (fishing, livestock)
Cash cropland	High cost of production, low yields, no access to farm implements and tools, unstable prices, inadequate training on improved farming techniques and processing, no processing equipment (oven, palm oil press), on road	• Assignment of MINADER staff • Development of work plans for farmers • Utilize farmer field school and farmer business school approach (demonstration farms, seed farms) • Training on improved production techniques, rational pesticide/fertilizer use, post-harvest techniques • Facilitate acquisition of improved varieties, pesticides, production and post-harvest equipment. • Subsidization of inputs • Construction of processing and storage units • Develop access roads to farms • Institutional strengthening and formalization of groups • Certification of produce • Establishment of multipurpose community nurseries • Development of agricultural calendar
Reserved area	No clear regulations on	• Survey of all lands designated as reserved for

Land use class	Key Challenges of in-Park villages and Sustainable Forest/wildlife management	Possible Mitigation Measures
(Forest)	acquisition modalities.	future agricultural expansion • Development of regulations for management of reserved land for coming 25 years until conversion to farmland • Creation of land allocation committee to control assignation of reserved land to new households.
Primary forest	Haphazard acquisition of land for farming activities, indiscriminate hunting and trapping	• Sensitize and enforce laws concerning hunting seasons both within and out of the park by the VFMC and KNP authorities • Training of the VFMC members on their role in community sensitization and conservation • Restoration of degraded park areas. • Setting up of sign posts • Identification of nesting sites within park and education of community and tourists on periods of accessibility. • -Organization of joint training sessions and refresher courses for VFMC members and Eco guards, to create a sense of oneness and team spirit between them. • Launch VFMC regular activities and funding for attendance at external meetings. - Training of hunters to be guides for tourists(this will provide hunters alternative sources of income) • Training should also be provided to guides on rescue procedures • Perform inventory of timber and non-timber resources • Inventory of fishing points

Land use class	Key Challenges of in-Park villages and Sustainable Forest/wildlife management	Possible Mitigation Measures
		• Development of NTFP harvesting calendar and management guidelines • Train VFMC on monitoring and reporting modalities • Equipment of VFMC
NTFP collection site	Limited access to NTFP extraction and storage facilities, unstable prices, buyers dictate prices for commodities.	• Establishment of Agroforestry plots and multipurpose nurseries to be managed by groups as well as on individual farms and fallows • NTFPs will also be collected from within 10kilometres from the settlement boundaries. • Establishment and training of NTFP producer/commercialization cooperatives
Hunting site	Reduction in animal population	• Traditional methods should be used for hunting • The VFMC to supervise interventions and to limit excessive hunting and trapping • Sensitization of community members • Cameroonian wildlife laws.
Sacred/cultural sites	Population pressure and loss of cultural values	• Access to such sites should be guaranteed and respected by indigenes and non-indigenes
Secondary forest	Land claims and ownership of available NTFP in the area.	• Perform inventory of timber and non-timber resources • Inventory of fishing points • Development of NTFP harvesting calendar and management guidelines • Prohibition of agricultural activities.
Rivers	Clearing around rivers to construct huts. River poisoning by neighboring villages.	• Farming should not be carried out less than 40 m to streams • VFMC and TC should educate and enforce regulations on sustainable fishing practices

Land use class	Key Challenges of in-Park villages and Sustainable Forest/wildlife management	Possible Mitigation Measures
		• Size 2 mesh should be used in big streams. • Fishing should be controlled during spawning season
Streams	Some dry off during the dry season	• Farming should not be carried out less than 40 m to streams • VFMC and TC should educate and enforce regulations on sustainable fishing practices
Waterfall	Poor development and management	• Identification, geo referencing and inclusion in tourism development strategy
Salt licks	Poor development and management	• Geo referencing and participatory establishment of management strategy.

4.2 Social profile of communities

4.2.1 Demographic characteristics of the respondents

The population characteristics of the three villages described below are portrayed in figure 6.

- **AGE AND GENDER STRUCTURE OF RESPONDENTS:** The respondents were predominantly youthful; 54.3 percent (366 out of the 674 residents) were in the age brackets 0 to 20 years, and only 10 percent were above 50 years. In all three villages, there were more men than women with 52.9 %(357) of the population being male and 47.1 %(317) being female.
- **EDUCATIONAL CHARACTERISTICS**

As shown in figure 6, 57.8% (361 out of 532) of the adult population have just primary school level of education in the three villages. 43 adults have received no formal education;132 persons completed secondary school and five individuals have benefitted from tertiary/professional studies. Level of scolarisation is pertinent in resource management studies because this characteristic usually determines livelihood choices. Generally individuals with low level of education and training have a higher dependence on natural resources for survival.

- ETHNICITY

Ethnically the population in the three villages as portrayed in figure 4.5 consists mostly of indigenes. The indigenes in Erat village belong to the Korup clan while indigenes of Esukutan and Bera are of the Bakoko clan. Non-indigenes in the villages originate from

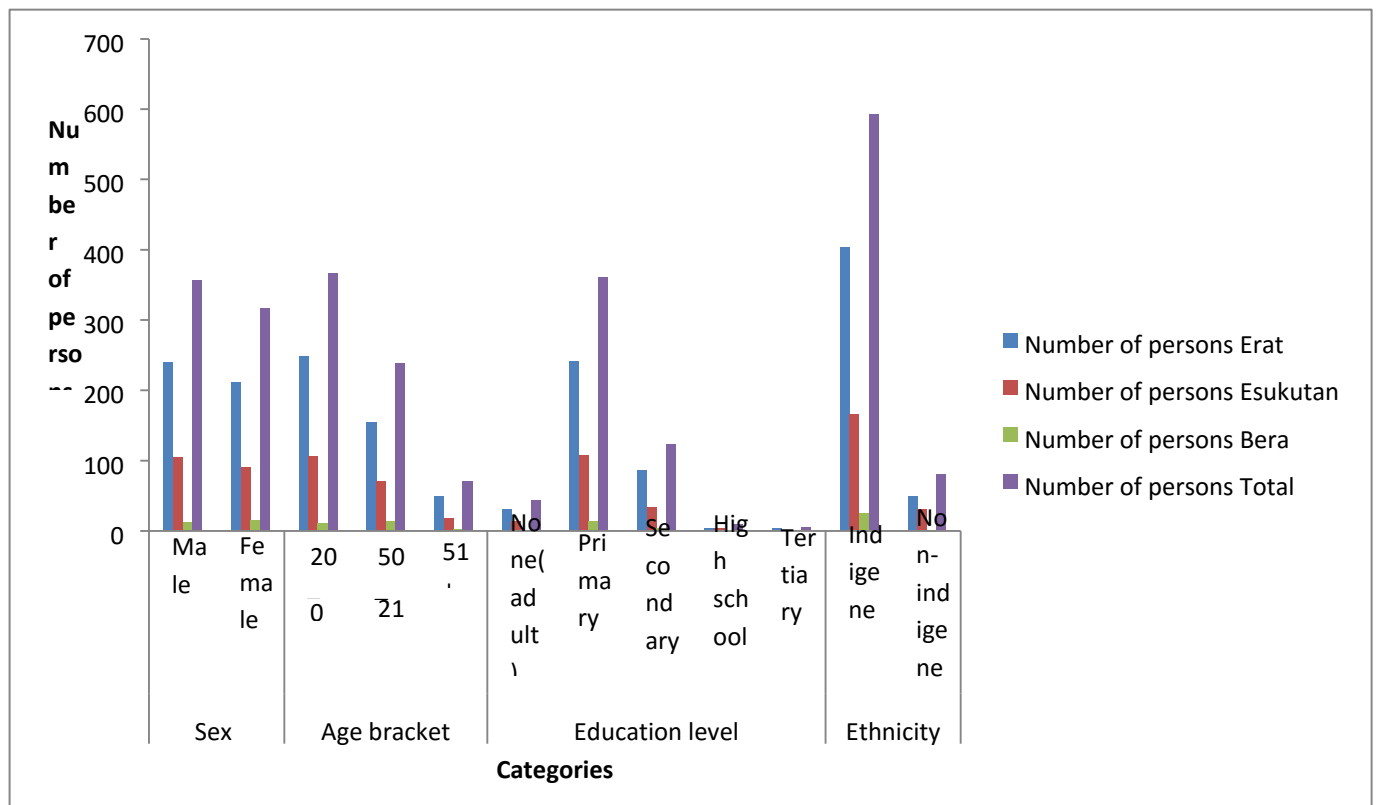


Figure 4.5: Demographic Characteristics per village

other parts of Cameroon and Nigeria. The indigenes sum up to 593 while the non-indigenes are 81 in number. The male non-natives in the villages have some restrictions with regards to access and control of resources and are mainly involved in activities such as teaching, farming, gathering, jobbing and hunting while the women from other villages are married to the indigenes and have the same rights to natural resource use as the indigenes.

4.2.2 Social development indicators

4.2.2.1 Traditional Governance Structures

- The villages were headed by traditional chiefs assisted by traditional councils. The Chiefs generally resided out of the villages, and the day-to-day administration was coordinated by the regents.

- The traditional council was responsible for settling disputes and supervision of development/conservation initiatives and they were assisted by the council of elders, the health committee, the village development committee, the PTA, and the village forest management committee (VFMC).
- In its conflict management role, the traditional council was assisted by the Ekpe society. Njomekpa and Diara are sacred female societies that regulated the moral rectitude and preservation of cultural norms for the entire population.
The traditional council, parent teacher association, road and health committee are development and welfare improvement institutions that were also involved in village administration.
- The traditional council and its associated committees were key stakeholders in past KNP Management Plan implementation, although their capacity contribution needed to be enhanced through effective collaboration and training.
- Members of the VFMCs were generally enthusiastic about conservation issues but could not clearly understand their required roles and how they can fit into the execution modalities.
- The Ekpe, Njomekpa and Diara societies, though being cultural societies, had enormous influence on the people than the traditional council due mainly to fear of their sanctions.
- Additionally, the presence of women in all decision-making organs (except for the Ekpe society) is an important asset in attaining the sustainability of development initiatives.

4.2.2.2 Socio-cultural organizations

- Socio-cultural organizations within the villages were age-based and family groups. These associations were potentials for the involvement of more individuals and groups in decision making.
- Groups focused more on family solidarity and identity, cultural promotion, and mutual assistance. Groups' potential for mopping up funds for development activities both at individual and community was generally strong.
- Being family and age-based, the villagers maintained strong ties with relatives and other close associates abroad, which could open a potential channel for remittances. The age grade and family connectedness could also play a vital role in consolidating the social fabric of the community.
- During group diagnosis, it was found that poor group dynamics, non-legalization of groups, low level of capital and capital formation, conflicts with KNP, financial mismanagement,

and infrequent scheduling of meetings, limited groups' capacity to contribute effectively to development.

4.2.2.3 Social Services and Infrastructure

Education

- The primary school in Esukutan had no permanent buildings. It consisted of a three classroom mud walled structure which was used by the six levels of pupils. The other two villages have permanent structures constructed by the state.

Benches and didactic materials were generally insufficient in the schools. In Esukutan and Bera villages, many children of school going age had to attend schools elsewhere because trained teachers were few.

Healthcare, and water, sanitation and hygiene (WASH) conditions

Healthcare and WASH conditions of Erat

- Village had a health center with a resident nurse and pharmacy attendant. There were available wards in the health center for admitted patients, a kitchen and water closet toilets.
- The patients of other villages often trek long distances to this health Centre. The nurse treated only basic healthcare problems. Complicated cases are referred to hospitals in towns in Cameroon or Nigeria.
- Patients requiring surgical operations were registered and on request, a team of two medical doctors from the Divisional Hospital in Mundemba town visits the Erat Health Centre occasionally to consult patients and undertake minor surgical operations.
- The common diseases in order of prevalence as reported by the health committee were malnutrition, malaria, typhoid, and hernia.
- Erat was generally clean and the hygiene and sanitation conditions of the environment were relatively fair. But water for household use was fetched in streams, where the community members often bathe and do laundry.
- The surroundings were generally neat and the domestic wastes were disposed of in pits behind houses or around plantain stands in home gardens. Pit toilets were dug to control disposal of human wastes and reduce incidence of diseases.

Healthcare and WASH conditions of Esukutan

- There was no health center in the village. Villagers were served by the Manyu health board, who visited the village infrequently. Women and children had to cover long distances to obtain ante-natal and post-natal services.
- The nearest health center was at Oguran; it was poorly staffed and it took, at least, five hours trekking to reach it. Well-equipped and staffed hospitals situated at Mamfe, Babong, Manyemen, and Mbakang could be reached after two days of travel. Many villagers resorted to traditional practitioners and quacks.
- The common diseases in order of prevalence as reported by the health committee are malaria, filaria, typhoid, high blood pressure and hernia.
Water for drinking and other household needs is obtained from streams. Specific streams are reserved for supply of drinking water and bathing sites are separate for men and women. Most of the streams for domestic use are permanent.
- Of the 40 houses, 22 (55%) had pit toilets. The rest had rudimentary structures locally described as “goal keeper toilets”. Just six of the pit toilets had roofs, and the general situation of human waste disposal was unhygienic with some individuals depending on open defecation (OD) and streams for disposal of human waste.

Healthcare and WASH conditions of Bera

- There was a health center in the village but no resident personnel. The nearest staffed health unit to the village was at Oguran in Manyu Division. The villagers therefore usually consulted well-equipped and staffed hospitals situated at Mamfe, Manyemen, and Mundemba, which were reached after two days of travel.
- The common diseases were malaria and typhoid. The houses are all equipped with proper toilets.
- Water for drinking and other household needs is obtained from streams. *Mafeng* stream is the primary source of drinking water especially in the dry season while *IribaMekora* serves as drinking source during the rainy season when *Mafeng* is flooded and dirty. *Mafeng* also has separate bathing sites for men and women. Most of the streams for domestic use are permanent.

Electricity, housing, roads, and communication

Housing, electricity, roads, and communication in Erat

- The village settlement had 84 buildings with construction materials including splashed mud, wood, and cement blocks while the thatch and corrugated iron sheets are used for roofing.
 - 81 buildings are constructed with splashed mud, 2 with wood and one building (health center) is of cement bricks.
 - The village had no access to cable supplied electricity. There was a leister generator acquired by the community with the potential of supplying electricity to all the houses which is currently in need of repairs. The health centre was equipped with a functional generator.
 - It is at the center of the Korup villages in Cameroon and Nigeria. Footpaths enter the village from Mundemba, Ekon I and Akpasang. There were footpaths that led to Ekong-anaku across River Korup. Movement therefore to and from Erat was only by foot and rendered commercialization of farm and forest produce very difficult.
- Radio signals were received from Cameroon CRTV and local radio stations in Nigeria. There are unstable signals of MTN mobile telephone network and particular spots in front of the Health center have been identified as telephone sites.

Housing, electricity, roads and communication in Esukutan

- There were 43 houses with 40 being inhabited. The houses were all made out of mud walls and have mud floors. Eleven buildings including the Ekpe hall had corrugated roofing sheets while the rest of the rooms had thatch roofs.
- Cable supplied electricity was absent in the village, but six individuals, and one group possessed gasoline-fuelled generators that were utilized to illumine certain households during special occasions or festivities.
- Two footpaths entered the village in the north from Babi and Ekogate. The footpath to Ikenge is towards the east while the trail to Bera leads from the south. Movement therefore to and from Esukutan was only by foot and this rendered commercialization of farm and forest produce very tough.
- Radio signals were received from a voice of Manyu and some radio stations in Nigeria. There was no reception of telephone network signals in the village.

Housing, electricity, roads, and communication in Bera

- The village settlement had ten buildings, four of which were constructed with splashed mud, three with wood and three with bricks. Seven of the buildings were roofed with corrugated iron sheets while the other three had thatched roofs.
- Cable supplied electricity is absent in the village, but there is a community generator that provides electricity during special occasions to all houses. Fuel for powering the generator is bought from Esukutan.
- Bera is traversed by a network of roads from Esukutan, Ikenge, Akwa and Mopako. The footpath to Ikenge is towards the east while the trail to Akwa leads from the south. The Movement to and from Bera is only by foot, and this renders commercialization of farm and forest produce very tough.
- Communication in Bera is very difficult. Information is sent or received by letter writing or verbal message. There is no telephone network coverage in the village.

Market

An avenue for buying and selling of goods is vital in the socioeconomic scenario of a community. There are no markets in villages, and this creates a set-back in the marketing of the commodities resulting to a very little market value of their products.

4.3. Learning points from sustainable forestry and wildlife management in Namibia and Mozambique

4.3.1 Community-based natural resource management in Namibia

The natural environment of Namibia is characterized by diverse flora and fauna, varied wildlife habitats and beautiful landscapes (USAID, 2008). With a very low population density of 2.5 persons per Km, the country has a total of 21 parks and reserves bordered by communal lands. The management and control of these natural resources have evolved during the last half century from systems characterized by high levels of state control to enhanced levels of devolution of authority to resident communities. This has resulted in Namibia becoming one of the most successful national examples of CBNRM. Ownership and control of resources in pre-independence were vested mostly with the state. According to Brown and Bird (2011), in the 1960s all wildlife and wild game was protected and state-owned and wildlife populations“ plummeted due to high levels of poaching, insufficient resources for law enforcement, limited livelihood strategies in rural areas, broken down traditional mechanisms for resource management, and creation of almost open access conditions. In

1968, a law was developed which devolved wildlife user rights to white-owned freehold farms including rights to retain all income derived from the use and sale of game animals. Consequently, sustainable use was observed to increase on such farms with an increase in wild life numbers of more than 80% while wildlife populations on communal lands continued to nose-dive (Brown & Bird, 2011). Recovery of wildlife populations on freehold farms, high desire for the empowerment of locals, lessons learned in other southern African countries as well as a yearning for reduction of all forms discrimination in the post independent environment, contributed to the development of the community-based natural resource management program in Namibia (USAID, 2008).

The achievements of the CBNRM program in Namibia were in the economic, environmental and social domains. Economically, CBNRM activities raised rural revenue in Namibia. A WWF study as cited in Brown & Bird (2011) reveals 51 percent increase in rural income from 1998 to 2008, and the main income sources include tourism ventures, trophy hunting, plant products, crafts, and game meat. Additionally, there has been a steady rise in employment and income earned by communal conservancies. The major environmental benefits of the CBNRM program in Namibia are the increase in buffer zones around protected areas, the recovery of wildlife populations, the creation of buffers and corridors, and consequent increase in the area available for wildlife by more than half (Brown and Bird, 2011). In addition, to increasing in household income, conservancies promoted healthy social practices such as improved land-use patterns across Namibia's arid and semi-arid communal areas as well as more environmentally appropriate forms of game production that integrate wildlife and tourism enterprises into their livelihood strategies. Conservancies have also been observed to evolve into social movements (USAID, 2008) and vehicles for achieving broad-based sustainable and equitable rural development in spheres beyond natural resource and wildlife. Other benefits include the incorporation of CBNRM in tertiary education, involvement of historically disadvantaged populations, institutional capacity building, improvement of good governance, and democratic practices in rural institutions (USAID, 2008).

Several lessons can be garnered from the Namibian experience which could be utilized to improve the outcomes of conservation and development initiatives in Cameroon and particularly in the KNP and surrounding areas. Some key learning points are pertinent:

- a. The core pillars of CBNRM program in Namibia include participatory socio-ecological planning, community institutional and capacity development, enterprise development, viable partnerships/collaboration between stakeholders at all levels and shared distribution of benefits from forestry and wildlife management. A major lesson learned from Namibia's success in CBNRM is the importance of linking economic incentives with environmental management. One main reason for low levels of community participation in conservation

initiatives in Cameroon is due to the lack of substantial benefits accruing from such ventures to rural households. Namibia's ability to establish a framework which allows communities and rural households to access directly economic benefits through better management of wildlife and other natural resources has certainly greatly contributed to its success in CBNRM (USAID,2008).

- b. The strategy is sustainable management of natural resources through the use of conservancies for the protection of wildlife. According to Ashley (2000), wildlife integration for livelihood diversification workshops was carried out in rural communities by government ministries in partnership with local NGOs. These were aimed at the identification of opportunities for sustainable wildlife use and integration into livelihood strategies. The devolution of authority and rights to community-led institutions was primordial in the attainment of success in Namibian natural resource management strategy. The approach currently used in natural resource management in Cameroon can be described as co-management characterized by state-led initiatives for protected areas with communities given some rights and responsibilities. The transfer of authority to conservancies enhanced the level of ownership, leadership, participation and commitment to equity in the execution of community social programs. These are aspects that are observed to be substantially lacking in the co-management initiatives previously implemented in the vicinity of Korup national park. Due to the devolution to the lowest units, CBRNM activities were deeply rooted in experience at the grassroots level, rather than simply being a product of theory in top-down government planning.
- c. In-depth analysis were carried out to determine the different wildlife use options such as luxury tourism, small-scale tourism, and hunting. Alternative scenarios for different combinations of options were explored with assessments of risk, land use rights, likely employment, required inputs, likely outputs, conservation, and distribution of benefits as well as impacts on different categories of stakeholders. Prioritization and Ranking of different scenarios for livelihood enhancement and sustainable wildlife management were subsequently utilized in the development of plans and selection of strategies for conservancies.
- d. The nature conservation act of 1996 provided the appropriate institutional framework for the development of viable conservancies (Brown and Bird, 2011). This legal instrument accorded wildlife and tourism rights to local communities that formed management bodies referred to as conservancies. The basic elements for the establishment of a conservancy consisted of the organization of the residents and application for a land area to be declared a conservancy (USAID, 2008).

- e. Some strategies utilized by conservancies include appointment of community game guards, re-introduction of wildlife species, negotiation of contracts with private businesses, building of school/roads, payment of teachers' salaries, construction of campsites, zoning of land use sectors, training on craft production, harvesting of plant products and establishment of shoot and sale agreements (USAID, 2008).
- f. Organizational development and capacity building of CBNRM stakeholders were very instrumental in the enhancement of wildlife management in Namibia. Community-based support services were developed, and tourism was improved to become the most important revenue source for conservancies (USAID, 2008).
- g. An enabling environment for institutional development was greatly developed with conservancies being assisted to become self-sustaining, expand their spheres of activities and become more effective resource managers (USAID, 2008). Within the CBNRM program, intensified support was further provided for management of natural resources through participatory land use planning, financial management, leadership, budgeting, project development, partnerships with private businesses and the development of community natural resource monitoring.
- h. The monitoring system developed was extremely innovative and participatory. Typical indicators included wildlife conflicts, wildlife mortality, levels of rainfall, and meeting frequency/attendance. The participatory system of indicator design, data gathering and analysis enabled communities to see easily the relevance of collected data as well as the linkages between their actions, resources, and benefits (USAID, 2008).

4.3.2 Co-management of natural resources in Mozambique

An overview of the natural resource management in Mozambique show an evolution from state controlled authoritarian systems of governance of pre-independence era to a period of recognition of customary land rights that resulted in the enactment of CBNRM enabling laws in 1997, 1999 and 2004.(Salomao, 2006). The Mozambique wildlife and forest policy are the main instrument through which the government is seeking to create space for local community participation in resource management, and it centers on the involvement of local actors in the planning processes. This shift in control of natural resources was therefore intended to enhance conservation of natural resources, increase the involvement of natural resource-dependent populations in the planning of their use, and enhancing the tangible benefits derived from such resources by resident communities (Salomao, 2006).

These actions and policies resulted in a variety of people-centered natural resource management initiatives in the wildlife and forestry sector. Some examples described in Salamaao (2006), include the Ancuabe project in Cabo – Delgado; the ChipangeChetu project in Niassa; the Muchanaglane project in Sanhote, Nampula; the Pindanyanga project in Manica; and the DerreMorrumbala project in Zambézia. The community management project of Ancuabe, which is a region rich in wildlife and forest resources such as Umbila, Chanfuta, Elephants and antelopes are likewise suitable for agriculture and cattle-raising (Salomao, 2006). Before the development of the project, there was uncontrolled exploitation of these resources as community members depended on the forest for animal protein, family income, construction materials and fuel wood (Salomao, 2006). The initiative including 11 villages was aimed at instituting a regulated and integrated approach to exploitation of natural resources.

The strategies used in the program included the organization of participatory start up workshops, formation/empowerment of broad-based resource management committees and training of different interest groups on relevant legislation about resource use. The committee membership included all participating groups and provincial government services. During the planning phase, stakeholder and needs analysis were carried out for the various groups by the committee. The management committees constituted the main institution responsible for project implementation and its roles included the initiation of contracts with private sector operators, formalization, and identification of training needs of different categories of stakeholders and determination of development priorities in collaboration with local communities. The training of interest groups was mainly organized by the private sector on aspects such as relevant legislation for the management of natural resources, forest and wildlife law, land law, fisheries law, and the environment law. The benefits associated with the community management project in Ancuabe were the capacity building, institutional strengthening, social and economic domains. Institutionally the training needs of each interest group were identified, and training were organized on economic and environmental themes. There was also a remarkable improvement in the collaboration between the local, government and private sector partners. The training on environmental and land law aspects increased awareness on rare species as well as methods of minimizing human/wildlife conflicts. The committee likewise ensured that resource exploitation by private operators and community user groups were sustainable and resulted in ecological benefits. There has also been an increase in funding for social and economic elements. These include social infrastructural benefits such as school construction, tourist campsite and potable water infrastructure as well as household funding for livestock, improved seeds, fishing equipment and wood processing units. Key learning points from the Mozambican experience include the following:

- In Mozambique, an important strategy responsible for the positive change in conservation outcomes can be linked to the change in role of the forest and wildlife services. The observed change is from policing to a participatory policy where they serve as facilitators, conflict managers and promoters of partnerships. Suspicion and distrust presently prevail between most forest communities and the services of forestry and wildlife in Cameroon and this working atmosphere would most definitely be improved if the role of the government services similarly shifts towards people-oriented approaches.
- A pertinent lesson learned from the Mozambican experience is the importance of clearly understood benefit sharing mechanisms for ensuring ownership of such projects by all involved parties. Several initiatives were established mainly to guarantee equity in benefit sharing (Filimao, n.d). An example is the TchumaTchato (our wealth) project (Filimao, n.d) where considerable conflicts arose between hunters, poachers, elephants and community members on the use of resources derived from the safari operation. The participatory establishment of an acceptable tax revenue sharing system between parties contributed to motivating participation in collaborative management and sustainable use of the area.
- In Mozambique indigenous conservation and monitoring, approaches were utilized to substantially improve the NRM practices. Clear examples are fire control for elephants and large carnivores. Such an approach would be very useful in Cameroon because the animal destruction of crops in the vicinity of protected areas is very frequent and results in considerable losses to the resident populations. Such communities usually have the conception that conservationists consider wildlife to be more important than their welfare. CBNRM outcomes may improve in Cameroon if human/wildlife conflicts are reduced due to the incorporation of some indigenous methods.
- The licensing modalities for resource use in Mozambique could also be analyzed for useful lessons in Cameroon. The devolution of rights is partial in this respect because communities require hunting licenses to use wildlife resources. Issuance of licenses likewise requires conditions such as proof of technical capacity to harvest, transport and process resources. There are similar burdensome requirements associated with licensing for resource use in Cameroon, and these are most definitely incompatible with customary practices and contribute in alienating several categories of stakeholders from participation in NRM initiatives.
- A key insight culled from the Mozambican experiences involves the role of NGOs in guaranteeing the sustainability of CBNRM in Africa. In several localities (Salomao,2006) NGO withdrawals associated with project closures occurred when community participation

was not yet evidents and the communities were still in need of the lobbying services and support which these organizations could furnish.

4.4. Livelihood activities and potential livelihood systems

This section contains information on how in-park villages ensure their livelihood within their environment. Information collected and analyzed here were related to a characterization of the prevailing system, the livelihood strategies, activities, the households involved, their seasonal calendar of activities and the income and expenditure patterns.

4.4.1 Characterization of the different livelihood Activities

4.4.1.1. Farming

The livelihood systems in the focal villages were in two broad categories. First was the food crop system that aims at food security, characterized by the slash and burn system and natural soil fertility management through fallow. Second was the cash or export crop system aimed at income generation. Cash crop farms had permanent tree crops such as oil palm and cocoa. For new cocoa farms, the banana and plantain are planted to provide shade.

4.4.1.1.1. Food Crops

The main crops produced in this system are cassava and cocoyam. The cropping operations, tools, inputs, and associated constraints of the system are summarized in Annex 4 developed with the focus groups. Very few modern techniques were utilized in food crop production. Field operations are carried out manually with the use of hoes or cutlasses. Post-harvest loses high due to limited knowledge and skills in good agricultural practices, use of low-quality seed material, pest damage and lack of appropriate facilities and recommended equipment. The incidence of crop damage by wild animals also constituted a major food production constraint. The food crop production statistics for the three villages is provided in Table 4.3, 4.4 and 4.5 for Erat, Esukutan, and Bera respectively.

The main food crops cultivated in Erat as shown in table 4.3 are cassava, banana, cocoyam, yam, and plantain. In this natural resource based economy, food crop cultivation is carried out by 42 (55%) out of the 76 households. The majority of food crop farmers are engaged in the cassava (47.6%) and banana (52.3%) cultivation, producing 2.8tons and 11.1 ton respectively. More than 50% of the quantities produced are consumed with excesses commercialized in the village.

Table 4.3: Food Crop Production Statistics (Annual) for ERAT

Major food crop	HH	Total production (kg)	Average Production/ HH(Kg)	Quantity consumed(Kg)		Quantity sold(Kg)	
				Quantity	Consumption ion/HH	Quantity	Sale/HH
Cassava	20	2854	142.7	1712	85.6	1142	57.1
Banana	22	11148	506.7	6332	287.8	4816	218.9
Plantain	15	1080	72	730	48.6	350	23.3
Cocoyam	2	107	53.5	102	51	5	2.5
Yam	5	596	112.2	380	76	216	43.2

The main food crops cultivated in Esukutan as shown in Table 4.4 are cassava, banana, cocoyam, yam and plantain. In Esukutan, all the 42 households are actively engaged in food crop cultivation and consequently the village has a higher level of food self-sufficiency than Erat village. The majority of farmers produce cassava (22.8 tons), plantains (20 tons) and banana (26.6 tons). Most of the plantain (71.5%), cassava (46.8%) and banana (82.5%) were consumed by the households with the rest commercialized in the village.

Table 4.4: Food Crop Production Statistics (Annual) for ESUKUTAN

Major food crop	HH	Total Production (kg)	Production/HH	Quantity consumed		Quantity sold	
				Quantity	Consumption/HH Form	Quantity	Sale/HH
Cassava	30	22854	761.8	10712	357.1	12142	404.7
Banana	19	26591	1399.5	21961	1155.8	4630	243.6
Plantain	11	20260	1841.8	14490	131.7	5770	524.5
Coco yam	6	2107	351.2	1440	240	667	111.2
Yam	2	498	249	45	22.5	215	107.5

In Bera, the crops cultivated as shown in Table 4.5 are cassava, banana, cocoyam and plantains. All nine households are engaged in food crop cultivation. Annually over 1.3 tons of cassava, 0.37 tons of cocoyam, 0.8 tons of banana and 0.3 tons of plantains are produced. Most of the food produced is

utilized for home consumption with 92.4 % of cassava and 80 % of cocoyam being consumed. Banana and plantains were not commercialized. This low rate of commercialization of food crops can also be attributed to the remoteness of Bera village as well as the small population size.

Table 4.5: Food Crop Production Statistics (Annual) for BERA

Major food crop	HH	Total production (KG)	Production/HH	Quantity consumed		Quantity sold	
				Quantity	Consumption /HH	Quantity	Sale/ HH
Cassava	9	1330	147	1230	136	100	11
Cocoyam	7	375	54	300	43	75	10
Banana	4	800	200	800	200	0	0
Plantain	4	300	75	300	75	0	0

The survey indicates that food crop production is low. Compared to regional production figures, the quantity of cassava produced per household is very low especially in Erat (142.7kg) and Bera (147 kg). The quantities of food crop commercialized are also low due to insufficiency and absence of commercialization opportunities as seen in the case of Bera which is the most inaccessible of the three villages studied.

4.4.1.1.2. Cash crops

Cash crop production was similar for all communities. Cash crops are produced following a typically traditional pattern with low adoption of modern techniques and practices. The land is free while the ownership and control are predominantly for the men. Field operations are carried out manually with the use of the sprayers, hoes, and cutlasses. Post-harvest losses are high due to limited knowledge and skills in good agricultural practices, non-availability of good quality seed material, pest damage and lack of appropriate processing equipment. During stakeholder characterization, it was realized that the limited access to the Ministry of agriculture and rural development (MINADER) services is one of the main causes of the extremely low level of agricultural productivity recorded in the village. Table 4.6 shows the cash crop production statistics of Erat (typical for all three) compared to the regional statistics. In Erat 40 and 27 households are involved in cocoa and oil palm cultivation respectively with average farm sizes of 0.925ha for cocoa and less than a hectare for oil palm. The yields for cash crops are very low compared to

regional averages. When compared to regional averages, the cash crop yields are extremely low in the in-park villages for both cocoa (22% of regional average) and oil palm (31% of regional average).

Table 4.6: Cash Crop Production Statistics

Cash crop	No HH	Average Farm size per HH	Total Area	Total Production (kg)	Average Yield (kg/ha)	
					Erat	SW Region
Cocoa	40	0.925ha	37 ha (active and semi-active farms)	4188	113	500
Oil palm	27	0.37ha	10 ha	3160 of palm oil	316	1000

Source: Regional production statistics from MINADER-SW Annual Report 2010

The actual quantities commercialized are much reduced due to poor storage facilities as well as insufficient post-harvest infrastructures such as ovens, fermentation boxes, and oil mills. In the three villages, cash crop production is mostly a masculine activity with just 4 % of the cash crop farms owned by female-headed households.

4.4.1.2. NTFP Collection

The major NTFPs collected for income generation are bush mango, njangsang, and country onion. Most of the bush mango and other NTFPs are collected from the primary forest. However, the area of planted bitter bush mango is increasing due to the effective demand from Nigeria. There has been irregular fruiting of bush mango for the past three years in Bera, and the diagnosis revealed that the trees flower and the fruits later fall off thus, reducing the quantity of bush mango produced, as well as income generated. From the seasonal calendar (Annex 7), it can be observed that NTFP collection is a main income generation activity (IGA). The irregular fruiting and production of bush mango in the village reduces the sources of income and certainly contributes to the higher rate of hunting and trapping observed. The three major NTFPs (Bush mango, Njangsang and county Onion) account for 23%, 35% and 14% of total village income for Erat, Bera, and Esukutan respectively. Other NTFPs collected from the forest in small quantities are bitter cola and bush pepper.

4.4.1.3. Hunting

Hunting of animal species for commercial purposes is very important in the village economies. 44.2% of the households are involved in hunting activity. Most of the hunters are males in the 20-50 age brackets. The species hunted were mainly deer, duiker, porcupine, cane rats and bush cat. The

hunted animals are smoked and taken to Mundemba, Mamfe or Nigeria for sale. Occasionally, buyers come into the community to purchase “bush meat”. Table 4.7 shows the involvement of Esukutan households in non-wood forest products segregated along age and gender lines. The main NTFPs are bush mango, country onion, and njangsang. Table 4.7 shows that hunting is mainly a masculine activity with all female-headed households being involved in collection from the wild. The contribution of NTFPs to the per capita is also significant with more than 0.8million being derived annually from such sources. It is indicative and typical of the profile of stakeholders engaged in the different forest-based activities.

Table 4.7: Involvement of HHs in NTFP in Esukutan

Livelihood commodity	No of Households per age bracket				total	Total Income Derived(FCFA)	Average income per HH(FCFA)
	21-50		51+				
	M	F	M	F			
Hunting	13	0	4	0	17	4896500	288000
Bush mango	14	6	8	2	30	3197800	106000
Njangsang	8	2	4	1	15	395000	26000
Country onion	6	2	3	1	12	339375	28000
Total						8828675	

4.4.1.4. Petty trading and fishing

Petty trading involving items such salt, Maggi soap, cigarette, drinks, petrol and wine was carried in all three villages. Esukutan and Erat had one and two stores respectively while Bera had no store but trading was carried out from homesteads. Both men and women engaged in this activity, and it accounted for 10, 9, and 0.1 per cent of village income for Esukutan, Erat and Bera respectively. Fishing was an important activity carried out by both men and women in the three villages. It involves 56% of the population and contributes 9% of Erat village income, 0.3 % for Esukutan and 1.4% for Bera. All the fish produced in Bera is used for home consumption and not commercialized.

4.4.1.5. Craft and animal rearing

Craft making activities were carried out by several households in the villages. The main craft items are baskets for transportation and fishing, as well as mats for drying of cocoa and bed covers. In both Erat and Esukutan, dogs, goats, and fowls were on free range and in very small numbers per household. While the dogs serve for hunting, the goats and fowls fetched small amounts of money

and were also as a source of protein for the household especially during the end of year festivities and traditional ceremonies. In Bera, just one household was engaged in goat rearing.

4.4.1.6. Remittances

Remittances constituted a substantial income source for both Bera and Erat villages due to the strong relationship between internal and external residents. In Esukutan, the weak relationship between internal and external residents was identified during profiling as one of the challenges to development and flow of information. Figures 4.6, 4.7 and 4.8, show the level of involvement of households in the three communities in the different livelihood activities while Table 4.8 shows the contribution of livelihood activities to village and household incomes.

The livelihood activity in which the highest number of households in Erat is engaged is NTFP collection. 63 out of the 76 households are engaged in this activity, and this is closely followed by farming in which 43 households were engaged. Fishing, livestock, and petty trade activities are carried out by about half of the households while crafts, preaching, carpentry, tailoring and teaching activities are performed by less than ten persons in Erat community. Another important source of income for development in Erat is remittances from external indigenes as a total of 10 households reportedly receive regular income from family members resident out of the village.

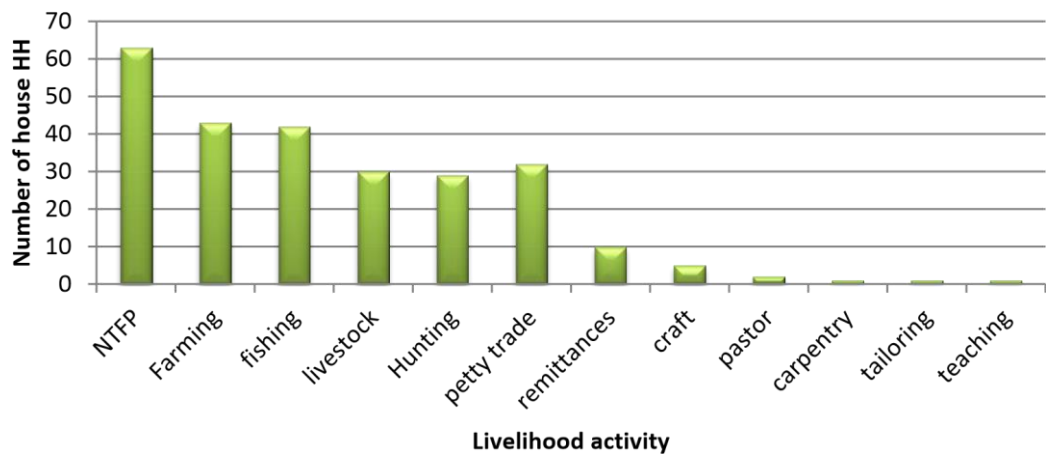


Figure 4.6: Number of HH involved in different Livelihood activities in Erat

Seven main livelihood activities were identified in Esukutan as shown in Figure 4.7. All 42 households were engaged in farming while 33 and 17 are involved in NTFP gathering and hunting respectively. 13 to 15 households were engaged in fishing, livestock rearing, and petty trade while 11 families included craft making in their livelihood strategy.

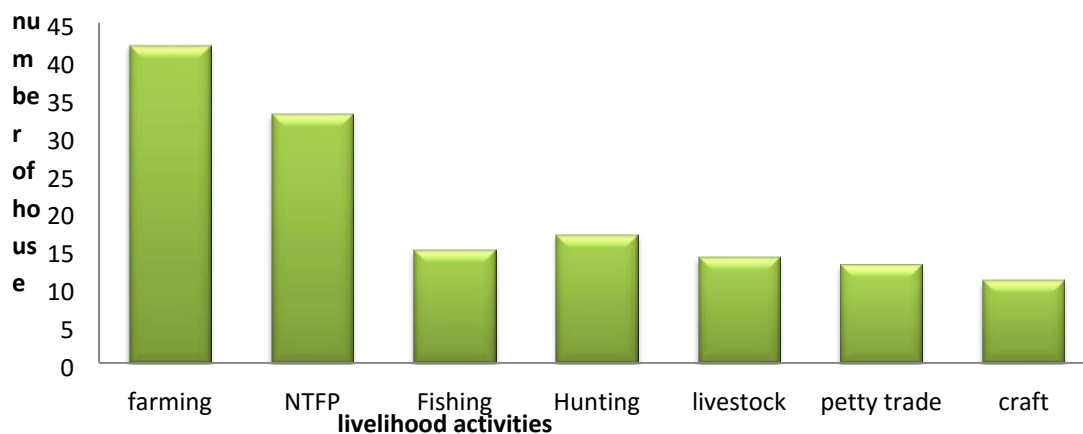


Figure 4.7: Number of HH involved in different Livelihood activities in Esukutan

The livelihood strategy for Bera included six activities namely farming, NTFP gathering, fishing, hunting, craft making and animal rearing. As shown in figure 4.8, all households are engaged in farming while eight and 7 HHs practices NTFP gathering and fishing respectively. Hunting is carried out by 4 of the household heads while craft making and animal rearing are carried out by one family each. Interestingly, petty trade is not part of the livelihood strategy in Bera.

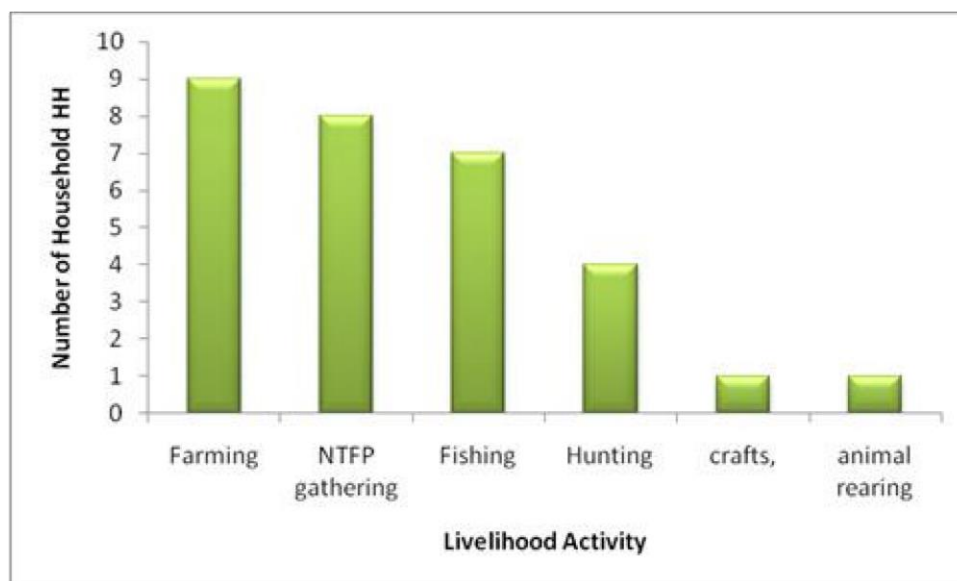


Figure 4.8: Number of HH involved in different Livelihood activities in Bera

4.4.2 Contribution of livelihood activities to Household incomes

An analytical examination of the present income generating activities in the three villages as shown in Table 4.8 indicates that farming, hunting and NTFP gathering make the highest contributions to HH incomes. In Erat, Esukutan and Bera these activities contribute 75.4%, 86% and 96.6% respectively to HHs. The involvement of households in the three activities varies depending on the degree of observed dependence on natural resources for survival exhibited. In Erat and Bera for example, 91% and 100% respectively of HHs are involved in NTFP gathering while this activity

engages 32% of HH in Esukutan. Farming, on the other hand, is practiced by all the households in Esukutan and Bera while 58% of HHs in Erat includes this activity in their livelihood strategy. The analysis also portrays hunting as a major activity in all three villages, involving more than 35% of all households. Fishing is also observed to be important due to its involvement in 55%, 35.7% and 77% of HHs in Erat, Esukutan and Bera in that order. The income contribution of fishing per household is less than 10%, but this activity provides a considerable portion of the protein needs in the communities. Crafts which include basket making and mats are carried out using forest materials, and it contributes less than 3% of HH incomes. Livestock production is also another activity which is practiced on a small scale in all three villages due to limited knowledge on livestock production. The relative importance of the different activities indicates the high dependence on natural resources for survival and based on this analysis the livelihood systems in all three communities can be described as forest-based with Bera which is the most remote exhibiting the highest dependence on natural resources such as NTFPs (35.8%), wildlife (45.8%) and fish (1.4%).

This analysis depicted in Table 4.8 is also important in the identification of opportunities and potentials for alternative income generation activities (IGAs) and enhancement of natural resource management in such communities. Evidently, strategies to enhance agricultural productivity, domestication of NTFPs, livestock production, sustainable fishing and craft making could contribute to modifying the livelihood system; improve life quality and sustainability of NRM. Conclusions derived from this analysis could likewise be utilized during subsequent proposition of management plan options.

Table 4.8: Contribution of livelihood activities to Household **incomes**

Livelihood activity	Erat			Esukutan			Bera		
	HHs involved	% of HH	% contribution to HH income	HHs involved	% of HH	% contribution to HH income	HHs involved	% of HH	% contribution to HH income
Farming	43	58	29	42	100	56	9	100	15.8
Hunting	28	36.8	23.4	17	40.5	16	5	55.5	45.8
NTFP gathering	69	91	23	32	76.2	14	9	100	35
Petty Trade	32	42	9	14	33.3	10	-		-
Fishing	42	55	9	15	35.7	0.3	7	77	1.4
Crafts	5	6	1.5	11	26.2	.08	1	11.1	0.2
Livestock production	28	36	1.1	14	33.3	2.1	1	11.1	1.8
Remittances	9	-	3	-	-	-	-		-

Assessment of the livelihood activities using the SWOT analysis framework (Annex 8) likewise showed the strengths and weaknesses of each activity as well as the potential opportunities that could contribute to improving the situation and the threats that have to be considered and mitigated against. The availability of arable land and some traditional restrictions on resource use in sacred sites were identified as strengths of the system while weaknesses included undefined boundaries, low crop yields, hunting of endangered species and excessive dependence on forest resources. Some opportunities identified include collaboration possibilities with development agencies like Rumpi and favorable ecology for domestication of NTFPs

4.4.3 Main items and patterns of Expenditure in the villages

Expenditure pattern of a system is also an indication of wellbeing. The study found that an average household in the area spent approximately one million, thirty thousand francs (1,030,000FCFA) on 13 main items annually. A ranking of the expenditure items as shown in fig 4.9 placed education related expenses the first position followed in descending order by clothing, feeding, and health. Very little was observed to be spent on farm inputs due to their unavailability and limited knowledge of their proper usage. The annual expenditure for health was high and constituted approximately 12.4% of the household expenditure while social exigencies such as leisure and death/birth celebrations constitute 18.75 of HH expenditure.

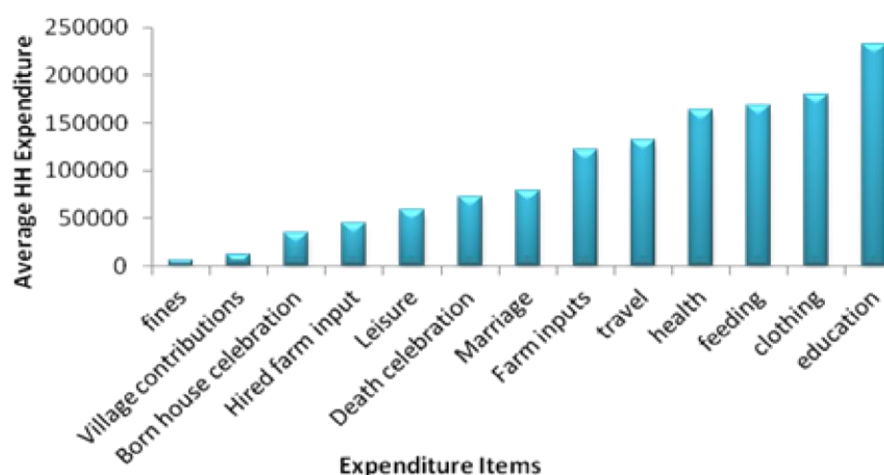


Figure 4.9: Average amounts spent on various items

4.4.4 Land Use and Livelihood projections

Analyses of the livelihood data indicated that of the 33 male headed households, 14(43%) cultivated cocoa while 19(57%) are uninvolved. For the nine female-headed households, 6(67%) are involved in the cultivation of cocoa. The primordial position cocoa occupies a potential for livelihood

enhancement can be likewise assessed by the overall percentage of 42 involved in this sector. Selection of cocoa as the focus for income generation would, therefore, contribute to increasing household incomes of more than half of the families.

Oil palm was identified as another key element for livelihood enhancement in Esukutan village. Oil palm currently contributed 0.06% of the total village with just 7% of households seriously involved in its production. This low scale of production contrasts significantly with the prevalent high demand for this commodity. Palm oil is a key ingredient in most traditional Bakoko meals and consequently 23% of expenditure for food was spent for the purchase and transportation of palm oil from Manyu division. The low level of production is attributed to animal destruction of farms and low productivity of few existing farms. Training on appropriate production techniques for oil palm production techniques and access to improved planting materials was ranked high as possible livelihood enhancement activity by women, men, and youth.

NTFP gathering also involved 71.4% of households and the domestication of some varieties such as *Irvingia wombulu* has already commenced. This income source is particularly vital and crosscutting as it provides income and empowers men, women and youth. Of the latter category of stakeholders, many students who are currently enrolled in secondary schools in Manyu Division contribute substantial parts of their educational requirements from commercialization of NTFPs.

The potential for income generation for this natural resource based economy is high but the actual incomes derived are extremely low due to several factors which could be addressed by appropriate corrective short and long term measures. The livelihood options including hunting as part of income source derive considerable revenue from the sales of duiker, porcupine, and red Columbus hunted from farmlands, primary and secondary forests. The high dependence on wildlife and gathering during the rainy season is due to the food and income shortages associated with high-income needs during this period. Management options should, therefore, consider elements that will contribute to the provision of income and food during this critical period.

Bush Mango (*Irvingia.sp*) of the bitter and sweet variety presents an interesting opportunity for income generation for almost eight months annually. Results obtained domestication of this plant in neighboring Nigeria provide results of 20.4tons/ha, and this commodity could be utilized to greatly improve income levels. Its domestication also has a higher labor productivity than gathering from the wild. The periods previously devoted to covering long distances to collection sites and sleep overs at such points would be used for other production activities. The process of bush mango

domestication is already being implemented on a very low scale and is quite acceptable to the indigenes.

Hunting is a very important income source in the present livelihood system. It contributes 23.8% of household incomes and 16(38%) of household are involved in it. Due to its high potential of conflict with conservation norms, in depth analysis of this system was carried out with the hunters association and some key informants. A high proportion of those with hunting based livelihood systems complained about the uncertainties and hardships associated with the activity. Most of the individuals expressed the desire to participate in training sessions and schemes aimed at the acquisition of improved techniques for cocoa and oil palm production. The trend observed in recent years has been the intensification of agricultural activities and reduction of time spent on hunting. It was observed that sustainable lifestyles and planned progress for family development could be assured by utilization of agriculture rather than hunting as main income source in the present environment.

Based on focus group discussions, community interviews and system analysis of the various income sources, a combination of cocoa, oil palm, cassava, and bush mango would certainly be suitable as main income generation commodities for the villages. Table 4.9 compares the present and potential yields of the selected income sources. The present yields of cocoa, oil palm, cassava and bush mango compared to the potential yields indicate that adequate management in these selected income sources would result in productivity increases ranging from 300% in the case of cocoa to 800% in the case of cassava.

Table 4.9: Comparison of Present and Potential Yields of Selected Income Sources

	Commodity	Present yields	Potential yields
1.	Cocoa	0.2tons/ha	0.6 tons/ha
2.	Oil palm	0.18 ton of palm oil	1 ton/ha
3.	Cassava	0.57 tons/ha	5tons/ha in association with other food crops
4.	Bush mango	Not yet producing	20 tons of kernel/ha

Source: Regional Statistics from Baseline survey South West Region (2008) by SOWEDA

In order to calculate future land use needs therefore, demographic elements, livelihood activities, current land uses, abundance of NTFPs, areas of high conservation value, and physical characteristics such as rivers and mountain ridges were utilized for determination exercises.

Considering the necessity of balancing conservation and development in the future PUZs and surroundings, the area and disposition of land resources dedicated for development, cultural, and conservation needs have to be carefully selected and appropriately managed. The projected demographic and land use elements for the PUZs are shown in Annex 5.

4.5. Implication of the Results

The findings indicate the following:

- a. Situational analysis in the villages indicated a high level of dependence on forest products in the three villages studied. Most households included hunting and gathering in livelihood strategies. Agricultural productivity was also generally very low for both cash and food crops and inaccessibility rendered commercialization of produce difficult. Evidently the low agricultural productivity contributed in the high dependence on forest products for livelihood. This situation adversely affected the conservation status of the protected area as communities hunt and gather unsustainably. This therefore implies that improvement of agricultural productivity and improvement of accessibility would contribute to the reduction of excessive dependence on wild products for survival.
- b. The identified problem of insufficient harmony between conservation and development initiatives in the protected area is further accentuated by the current difficult livelihood conditions revealed by the study. This implies that initiatives geared solely at the improvement in life quality could be detrimental to the natural environment. Initiatives geared towards the improvement of livelihood in the communities should, therefore, be balanced to incorporate land use planning, capacity building and development of participatory management plans in order to guarantee sustainability in resource use. The absence of holistic approaches could result in deterioration of wildlife resources such as enhanced commercialization of forest products due to improved accessibility.
- c. Lessons from the review of CBNRM and co-management in Southern Africa reveals that the management of wildlife can be enhanced through enabling policy provisions, appropriate revenue sharing mechanisms and devolution of authority for resource use to the lowest levels of society. This implies that the creation of enabling institutional framework is necessary for the attainment of success in natural resource management.

4.6. Limitations of the Study

A major shortcoming of the research is the difficulty faced with collecting livelihood data from the respondents. Due to absence of record keeping except for cocoa systems, the villagers usually furnish estimated data and the researchers have to resort to other methods of triangulation to corroborate such statistics. Another limitation linked to verity of data was the tendency to exaggerate production figures in anticipation of compensation during subsequent negotiation exercises with park authorities.

This whole process stretching from the creation of the reserves in 1937 till date has been characterized by protracted and changing circumstances depending on prevailing theories and experiences at a given time. Earlier activities at the beginning of the project which involved policing and resettlement have engendered negative feelings in the communities involved. Any further attempts to set up management systems for natural resources in this area is viewed with a lot of suspicions and regarded as an opportunity for external parties to commence another cycle of unfulfilled promises and deprive the locals of their rights to rural development and livelihood enhancement. Due to this atmosphere, there was initial reluctance as well as outright antagonism of some residents to collaborate with the research teams. There were, therefore, a few cases of households holding back demographic data as well as land area measurements. Secondary data from previous surveys and records of traditional authorities were used in cases where primary data was withheld.

Another limitation is the unreliability of some data due to the multiple roles played by government officials. The researchers were accompanied by some members of the department of forestry, and the villagers are habitually suspicious of the foresters who are responsible for law enforcement. It was, therefore, difficult to obtain factual data about hunting frequency and practices for fear of subsequent reprisals. The team had to demonstrate that the views of all stakeholders and livelihood options were important for realistic planning, for more openness to be achieved in such circumstances.

The absence of parallel studies on human wildlife conflicts and proposition of solutions also made the villagers believe that the researchers considered wildlife to be more important than humans and showed their resentment by constant interruption of the process. Human-wildlife conflicts especially crop damage is a serious problem in those communities and the absence of such studies render most other ventures very difficult. A considerable portion of the study period was therefore devoted to conflict management. To improve the quality of such studies, environmental education

as well as human-wild life studies should be incorporated in the exercise. At present, collaborative management which ensures ecosystem integrity and human well-being elements in protected areas is being viewed as the way forward.

The comprehension of the Southern African CBNRM initiatives could likewise have been enhanced if a study visit were executed during which observation; interviews and discussions would have been utilized in the collection of information. In spite of the above-noted limitations, the study is still very useful due to the use of techniques such as triangulation and participatory rural appraisal tools that culminated in ensuring community participation and eventual ownership of the process.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

Based on the information obtained, the following conclusion can be summarized for the different study objectives as follows:

5.1.1. To determine land use patterns of the three in-park communities.

Land use patterns of three in-park villages aspects are as follows:

- The land cover consists of natural and semi-natural vegetation which serves as habitat for diverse species and land use is characterized by settlement, farmland, non-timber forest products/hunting/fishing sites, cultural sites, reserve land, ancestral farms and old settlements.
- The current land use spatial distribution in the three villages consists of small central settlement areas surrounded by food crop farms and cash crop farms in that order. Most of the settlements are traversed by trails leading to neighboring settlements while crop farms of mostly cocoa, cassava and banana are under active and inactive management. Hunting, fishing, and NTFP gathering sites are located on farms, fallows and forest lands. Also land is a currently used in these areas for settlement, agriculture, and NTFP collection from forests while the main crops grown are cocoa, cassava, and banana.
- The different land use types have problems associated with difficult access, insufficient basic infrastructure, low productivity, poor resource management and uncertain land tenure situation.

5.1.2 To analyze the social profiles of the three communities

The social profile of the communities reveals that:

- The population is predominantly youthful with more males than females. More than 50% of the adult population has just primary level education and the mostly indigenous populations belong to the Korup and Bakoko clans.
- The administration in the villages is guaranteed through the institutions of chiefs, traditional councils, the council of elders, development committees, village forest management committees as well as cultural societies like Ekpe, Njomekpa and Diara cults. Structures

such as the VFMCs and development committees do not normally function due to several challenges.

- Basic social infrastructure for health, education, water provision, sanitation, communication and markets are grossly lacking and furthermore, the absence of government technical services in the villages contributes to low standards of living.

5.1.3 To obtain learning points from sustainable forestry and wildlife management in other African countries.

The main lessons culled from NRM initiatives in Namibia and Mozambique include

- The importance of appropriate policy provisions, participatory socio-ecological surveys, viable partnerships, active engagement of NGOs, enterprise diversification and benefit sharing in the attainment of success in CBNRM.
- The necessity of devolution of authority and rights to the lowest units of society in ensuring ownership of the process by rural communities.
- Community ownership and steering of conservation and development initiatives would improve considerably if forestry and wildlife management personnel shift from policing roles to serve rather as facilitators and promoters of partnerships.

5.1.4 To determine the livelihood activities and potential livelihood systems for the three in-park villages.

Aspects related to livelihood activities and potential livelihood systems are as follows:

- The main livelihood activities are hunting, gathering and farming with more than 50% engaged in hunting, gathering and fishing (indicating high dependence on forest products). Other minor activities such as petty trade and craft making are practiced by fewer families but are important for the provision of basic commodities.
- Farming, hunting, and NTFP gathering provide more than 75% of HH incomes. The lack of market possibilities and inaccessibility greatly reduces the commercialization possibilities and income generation avenues for HHs.
- The typical annual expenditure pattern in the communities shows that health, travel education and feeding costs are high while farm inputs and leisure are low.
- The current livelihood system could be modified to reduce high dependence on collection from the wild, improve the quality of life and sustainability through the use of appropriate agricultural practices for cocoa, cassava, oil palm and bush mango domestication.

Implications of the results include;

- Improvement of livelihood would reduce dependence on wild products for survival;
- Absence of holistic planning and management would be counterproductive for the environment;
- Creation of enabling institutional framework is necessary for CBNRM to succeed. The limitations of the study identified are;
- Approximate nature of data due to the absence of record keeping, tendency to exaggerate in anticipation of a negotiation process, and reluctance towards process owing to the presence of government officials and perception by rural communities that wildlife was accorded more importance than humans by conservationists.

5.2 Conclusion

The outputs of this study show the diverse land uses in the in-park communities to include agricultural, settlement and gathering from the wild purposes. The existence of the basic social infrastructure and technical services were also portrayed to be minimal. In addition, the main livelihood activities of hunting, gathering and farming resulted in low yields and income in all three villages. It can, therefore, be concluded that the land use practices in the in park villages of KNP do not adequately support a sustainable livelihood system, hence, there is an urgent need for the management plan and accompanying guidelines that will contribute in harmonizing conservation and development initiatives within KNP.

5.3 Recommendations

Based on the findings of this research it can be recommended that:

- Due to the ecological importance of the natural vegetation and the pressure exerted by the diverse land uses, it is necessary for the programme for the sustainable management of natural resources to organize a restitution workshop to acquaint all the stakeholders with the findings and chart the way forward for land use planning in the in-park villages.
- The baseline data obtained for current land use can be used by planners and policy makers involved in forest management and implementation of conservation schemes such as REDD+. Likewise, the livelihood, income levels and standard of living data can be used as base data for monitoring of trends due to co-management activities. This information could be useful in enhancing enthusiasm in the population for co-management if standards of living and income levels are observed to be improving.

- . To mitigate the identified problems of the different land use types, communities should be empowered and assisted to prepare land use management plans. Such plans should clearly stipulate guidelines and interventions required for all management sectors including aspects geared towards the improvement of productivity and basic social infrastructure for health, education, water provision, sanitation, communication, and markets. The strengths, weaknesses, opportunities and threats identified using SWOT analysis of the land use and socioeconomic findings should be utilized in the development of management plans for the communities.
- The land tenure system which was identified as a major problem for unsustainable land use should be modified by the villages and some control be ascribed to the traditional council in the allocation of land.
- To curb the observed tendency within the youthful generation to indulge in unsustainable activities, environmental education should be introduced in the school curricula as well as adapted packages for community-based organizations.
- The institutional analysis and stakeholder analysis outputs could be used in the development of management guidelines and selection of CBOs responsible for management plan implementation.
- Administrative/development and conservation organs mainly need capacity building and institutional strengthening to enhance their functioning and performance in the changing milieu. The members of the VFMC especially require a clear definition of role and recognition of the village community in order to enable them to play a coordination role in the implementation of the management plan. Training packages for the VFMC should include elements of conflict management, group dynamics, leadership, entrepreneurship, silviculture and basic GIS skills. Some lessons learned from the conservancy approach could be adapted to the functioning and terms of reference for VFMCs.
- CBNRM should be mainstreamed into the development agenda of Cameroon to benefit from its full potential in poverty alleviation and improvement of life quality in Country.
- NGOs active in conservation and development should initiate activities to culminate in the setting up of a platform to support such groups that can play the advocacy role, lobby for policy modifications and provide training for CBOs on themes such as environmental legislation, governance, business planning and democracy. Lobbying should be geared towards the enactment of laws that limit state control, ensure devolution of resource rights and equity in benefits sharing.

- NGOs engaged in CBNRM should facilitate the establishment of viable partnerships between international donors, the private sector, support groups, the government of Cameroon and community-based organizations.
- A consortium of NGOs, CBOs and MINFOF officials should be assisted to carry out study trips in Namibia, Tanzania, Zimbabwe and Mozambique to learn from their experiences, as well as enabling and disabling factors.
- The capacity of the communities should be enhanced in techniques of agricultural productivity for cocoa, cassava, banana, and bush mango domestication to reduce dependence on forest products.
- The land use projections and collected geo-referenced data should be used in participatory zoning and definition of permanent use zones by community representatives and other potential development partners such as the ministries for agriculture, planning, environment and territorial administration, Rumpi area participatory development project, PNDP and municipal authorities. The proposed permanent use zone elements in annex 5 should be consulted during such community planning workshops.

5.4 Suggested Areas for Further Research

Some areas for further research that could improve co-management initiatives in this protected area include:

- Soil suitability studies;
- In-depth study of factors responsible for success of CBNRM in Southern Africa;
- Fallow management practices;
- Sexual and vegetative propagation of NTFPs;
- Identification of market channels and certification possibilities;
- Development of touristic potential;
- Enhancement of benefit sharing mechanisms.

References

- Apte, T., and Pathak, N. (2004). *Learning from International Community Forestry Networks: India report*. Retrieved from CIFOR website 16/03/2014
http://www.cifor.org/publications/pdf_files/cf/india_cf.pdf
- Ashley, C. (2000). *Applying Livelihood Approaches to Natural Resource Management Initiatives: Experiences in Namibia and Kenya*. Retrieved from Overseas Development Institute website: <http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/2740.pdf>
- Borrini-Feyerabend, G., Farvar, T., Nguinguiri, J., Ndangang, V. (2007). *Co-Management of Natural Resources*. Retrieved from IUCN website on 13/10/2014
<https://portals.iucn.org/library/efiles/documents/2000-082.pdf>
- Brown, J., and Bird, N., (2011). *Sustainable natural resource management in Namibia: Successful community-based wildlife conservation*. Retrieved from Overseas Development Institute website: <http://www.odi.org/publications/5185-namibia-environmental-management-wildlifeconservation-development-progress>
- Brown, R. D. (2009). *A Brief History of Wildlife Conservation and Research in the United States*. Missoula MT. Crockett club.
- Diaw, M. C., Aseh, T., Prabhu, R. (2009). *In search of Common Ground; Adaptive Collaborative Management in Cameroon*. Retrieved from CIFOR website 28/3/2014
http://www.cifor.org/publications/pdf_files/books/bdiaw0901.pdf
- Dudley, N. (2008). *Guidelines for Applying Protected Area Management Categories*. Retrieved from IUCN website on 18/4/2015 http://cmsdata.iucn.org/downloads/guidelines_for_applying_protected_area_management_categories.pdf
- Dudley, N., and Phillips, A. (2006). *Forest and Protected Areas. Guidance on the use of IUCN protected area Management categories*. Retrieved 14/10.2014 from <https://portals.iucn.org/library/efiles/documents/PAG-012.pdf>
- Du Plessis, W & Faure, M. (2011). *The balancing of interests in environmental law in Africa*. Retrieved 18/3/2015 from http://www.pulp.up.ac.za/pdf/2012_04/2012_04.pdf
- FAO and UNEP Guidelines for Integrated Planning for Sustainable Management of Land Resources (1999). *The Future of our Land*. Retrieved from FAO website on 13/07/2014
<ftp://ftp.fao.org/docrep/fao/004/x3810E/x3810e00.pdf>

- Filimao, E. (n.d). TchumaTchato.*An evolving experience of community-based natural resource management in Mozambique*. Retrieved on the 6th of December 2014. https://www.google.cm/?gws_rd=cr,ssl&ei=otn8VJn6N4XsaKebgrgL#q=cbnrm+in+mozambique
- Gartlan, J. S. (1998). *Every man for himself and God against all: History, social science and the conservation of nature*. Yale School of Forestry and Environmental Studies Bulletin 102 (pp. 216–226). <http://environment.yale.edu/documents/downloads/0-9/102gartlan.pdf>.
- Inyang, E.(1998). *The Forest: An African Traditional Definition*
- Jepson, P., and Whittaker, R. J. (2002). *Histories of Protected Areas: Internationalisation of Conservationist values and their Adoption in the Netherlands Indies(Indonesia)*. Retrieved on 15/10/2014 <http://www.eci.ox.ac.uk/publications/downloads/jepson02-histories.pdf>
- Jimoh, O. S., Ikyagba, T. E., Alarape, A. A., Obioha, E. E., and Adeyemi, A .A. (2012). *The Role of Traditional Laws and Taboos in Wildlife Conservation in the Oban Hill Sector of Cross River National Park of Nigeria*. Retrieved from Journal of Human Ecology website on 4/5/2015 [http://www.krepublishers.com/02-Journals/JHE/JHE-39-0-000-12-Web/JHE-39-3-000-12-Abst-PDF/JHE-39-3-209-12-2303-Jimoh-S-O/JHE-39-3-209-12-2303-Jimoh-S-OAb\[5\].pdf](http://www.krepublishers.com/02-Journals/JHE/JHE-39-0-000-12-Web/JHE-39-3-000-12-Abst-PDF/JHE-39-3-209-12-2303-Jimoh-S-O/JHE-39-3-209-12-2303-Jimoh-S-OAb[5].pdf)
- Ministry of Forestry and Wildlife, MINFOF Cameroon (2008). *Management Plan for Korup National Park and its Peripheral Zones (2009-2013)*. KNP/PSMNR-SWR 138pp
- Nelson, J. G., Sportza, L. M. (2006). *Taking Stock: Changing Ideas for Parks. Evolving Protected Area Thought and Practice*. Retrieved 13/10/2014 <http://www.georgewright.org/172nelson.pdf>
- Painter, M., Alves, A. R., Bertsch, C., Bodmer, R., Castillo, O., Chicchon, A., Daza, F., Marques, F., Noss, A., Painter, L., Pereira de Deus, C., Puertas, P., Lima de Queiroz, H., Suarez, E., Varese, M., Venticinque, E. M., Wallace, R. (2008). *Landscape Conservation in The Amazon Region: Progress and Lessons*. Retrieved 16/03/2014 http://s3.amazonaws.com/WCSResources/file_20110901_112654_WCSworkingpaper341_UmicBC.pdf
- Pereira, C. C., Pinto, R., Mohan, C., Atkinson, S. (2013). *Guidelines for Establishing CoManagement of Natural Resources in Timor Leste*. Retrieved 14/10/2014 from http://www.coraltriangleinitiative.org/sites/default/files/resources/03_Guidelines%20for%20CoManagement.pdf

- Phillips, A. (2003). *Turning ideas on their heads: The new Paradigm for Protected Areas*. Retrieved on 18/4/2015 <http://www.uvm.edu/~snrsprng/vermont.pdf>
- Programme for the sustainable management of natural resources in the south west region of Cameroon (2014). *The PSMNR collaborative management approach for protected area management*. 10pp.
- Roe D., Nelson, F., Sandbrook, C. (2009). *Community management of natural resources in Africa: Impacts, experiences and future directions*, Retrieved from IIED website on 18/4/2015 <http://pubs.iied.org/pdfs/17503IIED.pdf>
- Salomao, A., (2006). *Towards people-centered woodland management in Mozambique: can this make a difference?: community- based natural resources management in miombo forest in Mozambique and the fight against poverty*. Retrieved from CIFOR website: <http://www.cifor.org/miombo/docs/CBNRM%20Mozambique.pdf>
- Saxena , N.C.(1997). *The Saga of Participatory Forest Management in India*. Retrieved from CIFOR website 18/03/2014 http://www.cifor.org/publications/pdf_files/books/sp-saga.pdf
- South West Development Authority, (2008). *A Baseline Diagnostic Survey Report of the South West Region*. Rumpi Area Development Project, Buea
- Schmidt-Soltau, K. and Brockington, D. (2007). Protected Areas and Resettlement: What Scope for Voluntary Relocation? *Elsevier*, 35, No. 12, doi:10.1016/j.worlddev.2007.02.008
- Tajoacha, A. (2011). *An Agicultural Assessment Report of Erat Village*. KORUP Ndian Division. Consultancy Report submitted to PSMNR-SWR
- Tajoacha, A. (2011). *An Agicultural Assessment Report of Bera Village*. KORUP Ndian Division. Consultancy Report submitted to PSMNR-SWR
- Tajoacha, A. (2011). *An Agicultural Assessment Report of Esukutan Village*. KORUP Ndian Division. Consultancy Report submitted to PSMNR-SWR
- Thomas, L., Middleton, J. (2003). *Guidelines for Management Planning in Protected Areas*. Retrieved from IUCN website 14/11/2014 <https://portals.iucn.org/library/efiles/documents/PAG-010.pdf>
- USAID Support to the Community-Based Natural Resource Management Program in Namibia: *LIFE Program Review* .(2008). Retrieved from USAID website: http://pdf.usaid.gov/pdf_docs/PDACL549.pdf

- Vabi, M.B. (1996). *Determining Economic Opportunities for Inhabitants of Some Villages in the Support Zone of the Korup National Park*. Consultancy Report, Korup National Park, Mundemba.
- Wilkie, D.S., G.A. Morelli, J. Demmer, M. Starkey, P. Telfer and M. Steil. 2006. *Parks and people: Assessing the human welfare effects of establishing protected areas for biodiversity conservation*. *Conservation Biology* 20:247-249.

Annexes

Annex 1: Questionnaire

April 2013

STRICTLY CONFIDENTIAL AND FOR NON TAXED GOAL

Information collected during this survey are strictly confidential under law number N° 91/023 of 16th

December 1991, on census and statistical survey which mention in its article 5 that: “individual information

Related to economic or financial situation recorded in any statistical survey form should never be used for Control or reprehensive purposes”.

S0Q01 QUESTIONNAIRE NUMBER: 1

Start Time:.....

Variable		Skip	Column not to be filled by enumerator
	Name of interviewer:_____		
S0Q02			☐
S0Q03	Name of supervisor:_____		☐
S0Q04	Date of interview:_____		☐ ☐ ☐ ☐ ☐ ☐
S0Q05	Name of data entry secretary:_____		☐ ☐ ☐ ☐ ☐ ☐
S0Q06	Name of data entry verifier:_____		☐ ☐ ☐ ☐ ☐ ☐
S0Q07	Date of data entry:-_____		

Variable		Skip	Column not to be filled by enumerator
	A. (Household identification:		
S1Q01	Village _____		_
S1Q02	Quarter _____		
S1Q03	House number: _____		
S1Q04	Name of household head _____		
S1Q05	Household head's years of residence in village: _____		
S1Q06	Household size: _____		
S1Q07	Number of families _____		
S1Q08	How many live outside _____		
	<u>No</u> <u>Age</u> <u>Occupation</u>		
	1		
	2.		
	3.		
	4.		
	5.		
S1Q09	Births to the family within the past 5 years _____		
S1Q010	Deaths in the family within the past 5 years _____		
S1Q011	Visitors to the family:		
	<u>Visitor</u> <u>Relationship to HH</u> <u>Duration</u>		
	<u>Purpose</u>		
	1.		
	2.		
	3.		

	4.		
	5.		
S1Q12	Who owns the house? _____		
S1Q013	How many rooms are in the house?		
S1Q014	House construction material: 1. Mud 2. Wood 3. Cement		
S1Q015	Roofing : 1. Iron sheets 2. Thatches		
S1Q016	Toilet: 1. pitlatrine 2. water closet 3. Absent 4.others (specify)		

Household data	1	2	3	4	5	6	7
S2Q011 Name of household member							
S2Q021 Relationship to household head							
S2Q031 Sex (male / female)							
S2Q041 Age							
S2Q051 Marital /Family status? 1=Single 2=Married 3=Separate/Divorced , 4=Widow/Widower 5. Family Head							
S2Q061 What is your highest level of education? 1= None 2=primary 3=Secondary 4= High School 5= First Degree 6= others (specify)							

S2Q071 Main occupation (not							
applicable to HH members below 15) What is your main occupation? 1=Farmer 2=Fisherman 3=Craftsman 4=Agrofisherman 5=Trade 6=Others(specify)							
S2Q081 What is your religion? 1=Catholic 2=Protestant 3=Muslem 5=Animist 6=Other (specify)							
S2Q091 Where did you live most of the time when you were a child? (name of town, province, country)							

S2Q0101 Are you a native of this Village? 1=yes, 2=No If no, which village are you from? (Name of village, Sub Division,							
Division, Region, Country)							
S2Q0111 What is your tribe/ethnic group?							
S2Q0121 Name of group (if you belong to any producer group)							
S2Q0131 Capacity/position of the interviewee in the group/council							
S2Q041 What is the main objective of the group							
S2Q051 Is your group registered? 1=yes 2=N ^o							
S2Q061 If yes, when was it registered							

S2Q071 How many members in your group/council Men____women_____							
--	--	--	--	--	--	--	--

Household data	8	9	10	11	12	14	15
S2Q012 Name of household member							
S2Q022 Relationship to household head							
S2Q032 Sex (male / female)							
S2Q042 Age							
S2Q052 Marital /family status? 1=Single 2=Married 3=Separate/Divorced , 4=Widow/Widower 5= family head							

S2Q062 What is your highest level of education? 1= None 2=primary 3=Secondary 4= High School 5=							
First Degree 6= others (specify)							
S2Q072 Main occupation (not applicable to HH members below 15) What is your main occupation? 1=Farmer 2= Fisherman 3=Craftsman 4=Agro-fisherman 5=Trade 6= service provider (specify) 7=Others(specify)							
S2Q082 What is your religion? 1=Catholic 2=Protestant 3=Muslem 5=Animist 6=Other (specify)							

S2Q092 Where did you live most of the time when you were a child? (name of town, province, country)							
S2Q0102 Are you a native of this Village? 1=yes, 2=No If no, which village are you from? (Name of							
village, Sub Division, Division, Region, Country)							
S2Q0112 What is your tribe/ethnic group?							
S2Q0122 Name of group							
S2Q0132 Capacity/position of the interviewee in the group/council							
S2Q0142 What is the main objective of the group							

S2Q0152 Is your group registered? 1=yes 2=N ^o							
S2Q0162 If yes, when was it registered							
S2Q0172 How many members in your group Men___women_____							

S3Q01	What is your source of Income? a) Farming ☐ if farming, What is your total number of farms? No of farms under cropping: _____		☐ ☐																																				
S3Q02	<table border="1"> <thead> <tr> <th>Farm</th> <th>size</th> <th>Mode of acquisition</th> <th>Crop</th> <th>Age</th> <th>Yield</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> No of farms under fallow: <table border="1"> <thead> <tr> <th>Farm</th> <th>Period under fallow</th> <th>Re cropping year</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	Farm	size	Mode of acquisition	Crop	Age	Yield																			Farm	Period under fallow	Re cropping year											☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
Farm	size	Mode of acquisition	Crop	Age	Yield																																		
Farm	Period under fallow	Re cropping year																																					
S3Q03	a.1) Cash Crops:																																						
S3Q04	For each cash crop indicate the following:																																						
S3Q05	Name of crop _____																																						
S3Q06	No of Plots _____																																						
S3Q07	Size _____																																						
S3Q08	Variety _____																																						
S3Q09	Age _____																																						
S3Q010	Cultural Practices : (describe the following including constraints) Clearing: Planting Maintenance: Weeding Fertilizer application Pruning Harvesting Post harvest activities: Processing Storage etc																																						
S3Q011	Yield _____ Commercialization channel _____																																						

S3Q012	Price for unit measurement		
S3Q013	Quantity sold		
S3Q014	Quantity consumed		
S3Q015	Income derived from the activity		
S3Q016	a.2) Food Crops: For each food crop indicate the following:		
S3Q017	Name of crop		
S3Q018	No of Plots		
S3Q019	Size		
S3Q020	Variety		
S3Q021	Age		
S3Q022	Cultural Practices : (describe the following including constraints) Clearing: Planting Maintenance: Weeding Fertilizer application Pruning Harvesting Post harvest activities: Processing Storage etc		
S3Q023	Yield		
S3Q024	Commercialization channel		
S3Q025	Price for unit measurement		
S3Q026	Quantity sold		
S3Q027	Quantity consumed		
S3Q028	Income derived from the activity		
S3Q029	b) NTFPs:		

S3Q030	For each NTFP indicate the following: Land use classes (backyards, farmlands, fallow land; secondary forest; forest; park etc)															
S3Q031	_____ Species collected and their periods <u>SpecieCollection Period</u> _____ _____ _____															
S3Q032	_____															
S3Q033	_____															
S3Q034	Quantities collected: _____															
S3Q035	Processing steps: _____															
S3Q036	_____															
S3Q037	Commercialization channel _____															
S3Q038	Price for unit measurement _____															
S3Q039	Quantity sold _____															
S3Q040	Quantity consumed _____															
	Income derived from the activity _____															
S3Q041	c) Hunting: No of hunting Huts: _____ <table border="1"> <thead> <tr> <th>Hut</th> <th>Distance</th> <th>When was it made?</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Hut	Distance	When was it made?											
Hut	Distance	When was it made?														
S3Q042																
S3Q043	Specie/category hunted from the different land use categories:															

	For how many years have you been hunting?		
--	--	--	--

S3Q064	Income derived from the activity _____													
S3Q065	f) Livestockrearing : Species and Breed rearedd: <table border="0"> <tr> <td><u>Item</u></td> <td><u>Price</u></td> </tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>		<u>Item</u>	<u>Price</u>	_____	_____	_____	_____	_____	_____				
<u>Item</u>	<u>Price</u>													
_____	_____													
_____	_____													
_____	_____													
S3Q066	Management and Housing Practices: <table border="0"> <tr> <td><u>Practice</u> <u>problems</u></td> <td><u>Associated</u></td> </tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>		<u>Practice</u> <u>problems</u>	<u>Associated</u>	_____	_____	_____	_____	_____	_____	_____	_____		
<u>Practice</u> <u>problems</u>	<u>Associated</u>													
_____	_____													
_____	_____													
_____	_____													
_____	_____													
S3Q067														
S3Q068	Commercialization channel _____ _____													
S3Q069	Quantity sold													
S3Q070	Quantity consumed													
S3Q071	Income derived from the activity													
S3Q072	g) Craft: Types produced: <table border="0"> <tr> <td><u>Item</u></td> <td><u>Price</u></td> </tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>		<u>Item</u>	<u>Price</u>	_____	_____	_____	_____	_____	_____				
<u>Item</u>	<u>Price</u>													
_____	_____													
_____	_____													
_____	_____													
S3Q073	Production Activities: <table border="0"> <tr> <td><u>Activity</u></td> <td><u>Associated</u></td> </tr> <tr><td>_____</td><td>_____</td></tr> <tr><td>_____</td><td>_____</td></tr> </table>		<u>Activity</u>	<u>Associated</u>	_____	_____	_____	_____						
<u>Activity</u>	<u>Associated</u>													
_____	_____													
_____	_____													

	<u>problems</u>		
	_____	_____	
	_____	_____	
	_____	_____	
S3Q074	_____	_____	
S3Q075	Commercialization channel _____		
S3Q076	_____		
S3Q077	Quantity sold _____		
S3Q078	Quantity for house use _____		
	Income derived from the activity		
S3Q079	h) Other Sources of income (specify):		
S3Q080	For each source of income identified above indicate the following:		
	Size _____		
S3Q081	Cultural Practices _____		
S3Q082	_____		
S3Q083	Yield _____		
	Post-harvest activities _____		
S3Q084	_____		
S3Q085	Commercialization channel _____		
S3Q086	_____		
	Price for unit measurement _____		
S3Q087	Quantity sold		
	Quantity consumed		
	Income derived from the activity		

Annex 2: Spatial data collection sheet

Sample No.						Date			Data collector	Data recorder
X		Y								
shape										
land cover type		type	%	type	%	type	%	type	%	
Shape										
land use class										
ownership										
slope										
soil fert status										
soil moisture										
hydrology										
species	dominant plant	others	animal species encountered	remarks and observations						

Annex 3: Checklist for group diagnosis

Group Name,

Year of formation,

Membership

Office/executive,

Objective

Activities

Savings

Problems encountered

Conflict management

Natural Resource Management issues

Record keeping Any external

assistance/funding?

Do you have a Group Farm?

Mutual assistance?

Plans

Annex 4: Current Food Crop Husbandry Technical Bulletin

Operation	who	how	when	With what(instrument)	Constraints	Suggestions by the farmer
Site selection	Household head and partner	Selection of plot from family land because new farms are usually opened on previously cultivated land(fallow and secondary forest)	Oct. – Nov.	Cutlass for boundary tracing	-	-
Land Preparation						
Clearing	Men and women	Removal of grass, shrubs and trees	January	Cutlass		
Burning	Women	Burning of dried debris	February	Fire	-some years the rains are early	-
Making of mounds	Women and female njangi groups	Softening of top layer and preparation of mounds	March	Hoe	-	-
Acquisition of seed	Women	From previous harvest or from friends. Recently some improved cassava planting material from the PSMNR plots are being distributed to the women	March	-	-Germination is sometimes low - insufficient planting materials	-availability of improved variety
Planting	Women and female njangi groups	Sowing of maize, groundnuts and egusi followed by cassava.	March	Hoe	-	-improved planting materials should be made available

Operation	who	how	when	With what(instrument)	Constraints	Suggestions by the farmer
Spacing(Plant population)	Women	Sowing is done at irregular distances		-Visual estimation	-	-training on appropriate planting distances
Maintenance	Women	Weeding and molding	April, June and November	Hoe	Resistant herbs	-provision of herbicides
Phytosanitary operations	Not done	Not done	-	-	-Rotting of colocassia - fungal and bacterial attack on Xanthosoma - weevil attack on stored maize -ACMV on cassava	-disponibility of pesticides and training on proper usage. -availability of improved and resistant varities.
Harvesting	Women	Maize, groundnuts and egusi are harvested after 3 months while cassava harvesting commences from the 12 th month to 18 th month for the local variety and 9 month for the improved.	June for grains and from December for cassava	-Hands, cutlasses, baskets and bags -lack of transportation equipment	-improved variety has to be harvested at once	-
Storage	Women	Maize and egusi are stored	June-March	Maize is stored in barns and egusi in bowls.	lack of storage facilities	-training on adequate postharvest techniques

Operation	who	how	when	With what(instrument)	Constraints	Suggestions by the farmer
Processing	Women	Only cassava is converted to garri and a limited quantity into waterfufu.	Variable	Cassava grater	plenty of post harvest losses due to lack of processing techniques and mechanical	-Two more cassava grinders should be provided to the Women C.I.G and the youth group. -some members
					processing equipment, -the lone cassava grinder provided by the Rumpi project to the Presbyterian C.I.G is in need of repairs	should be trained on maintenance of the equipment
Marketing	Women	Garri and egusi is sold in the village and to itinerant traders	Variable	-measuring glasses and basins	Lack of markets, and farm-to-market roads. -low prices that are determined by buyers	-motorable road should link Esukutan and Babi in order to ease marketing at fair prices

Annex 5: Projected Elements for PUZs of Esukutan, Erat and Bera

No.	Elements	Present situation(2013)			Projected situation(2038)		
		Esukutan	Erat	Bera	Esukutan	Erat	Bera
1.	Total internal population	195	452	27	246	823	36
2.	0 – 21 age bracket	106	249	13	125	448	14
3.	21 – 50 age bracket	71	154	12	99	280	19
4.	51+ age bracket	18	49	5	22	89	5
5.	Female headed households	9	20	2	13	36	3
6.	Number of buildings	43	83	10	74	162	16
7.	Area being used	296ha	664	89	1099ha	1709	471
8.	Settlement area	4	27	1	8	59	3
9.	Agricultural lands(food crop and cash crop)	206ha	158	16	576ha	695	162
10.	Agricultural lands (Agro forestry plots)	New land use type	New land use type	New land use type	46ha	36	7

11.	Communal forest	New land use type	New land use type	New land use type	490ha	919	299
12.	Total area being for	5ha	158		8ha	731	
	settlement						
13.	Number of HH	42	76	9	62	167	16
14.	Average area of agricultural land per household	5	2.07	7	9	4.5	10.5
15.	Average area of agricultural land per person	1.05	0.34	2.5	2.3	.9 ha	4.7

Annex 6: Description of Proposed PUZ management sectors

No.	Land use class	Land use	Location
1.	Settlement	-Social infrastructures -Residential and non-residential buildings -Livestock rearing infrastructure -Home gardens	Situated in the central part of the permanent use zone
2.	Agricultural lands	-Food crops such as cassava, maize, groundnut, egusi and cocoyam in association -Cash crops such as Cocoa, oil palm, rubber -Agroforestry plots; Bush mango, Njansang, <i>Pipernigrens</i>.	This area roughly surrounds the settlement area and is limited to the low lying area of the PUZ. These areas have lower altitudes and the site earmarked for agro forestry should be close to stream(s) to ease watering of tree nurseries.
4.	Communal forest	Trees	Zone to be maintained as primary forest to serve as source for timber for local construction and also NTFPs for income generation. It surrounds the agricultural land. It should also serve as buffer between agricultural and national park lands.

Annex 7: Typical seasonal calendar of activities

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
No serious activity	←→											
Dry season	←→	←→	←→								←→	←→
Rainy season				←→	←→	←→	←→	←→	←→			
Clearing												
Food crops												
-cocoa	←→	←→	←→									
-palm		←→	←→									
Food crop												
-hoeing			←→	←→								
-planting			←→	←→								
-weeding						←→	←→				←→	←→
-harvesting	←→	←→								←→	←→	←→
Cocoa nursery											←→	←→
Seedling planting						←→	←→					
Local seedlings						←→	←→					
Polythene bags				←→	←→	←→						
Fishing-no lobsters	←→	←→	←→									
Harvesting											←→	←→
Hunting	←→	←→	←→	←→								
Trapping					←→	←→	←→	←→	←→			
NTFP gathering												
-bush mangoes-s	}											
-bush mangoes-b												
-Bush onion												
-njangsang												
--sheanut												
-bush pepper						←→	←→	←→				
-monkey cola												
-njongho												
-archi												
-dunu												
-bekpoko kpoko												
Njabe						←→	←→	←→	←→			

Annex 8: SWOT Analysis of Livelihood Activities

Livelihood Activity	Strengths	Weakness/Constraints	Opportunities	Threats	Possible Mitigating Measures
Farming					
	Availability of free land	- opportunistic acquisition of land - Isolated and patchy croplands - Unregulated access - Undefined boundaries - Very long fallow periods - Absence of fallow management techniques	Government policy on land ownership	Expanding plantations owned by Multi nationals	-modification of land tenure system -training on improved fallow management techniques

Livelihood Activity	Strengths	Weakness/Constraints	Opportunities	Threats	Possible Mitigating Measures
		Very low crop yields and production due to: High incidence of black pod disease and capsids Insufficient knowledge of appropriate production practices Lack of inputs such as herbicides, fertilizers, fungicides and	MINADER Favorable policy on cooperatives and micro finance institutions RUMPI village banks network	-Animal destructions by porcupines and cane rats Limited facilities to loans and financing for activities -Infrequent visits by agricultural extension services	-introduction of farmer field schools in several key crops.

Livelihood Activity	Strengths	Weakness/Constraints	Opportunities	Threats	Possible Mitigating Measures
		insecticides Insufficient production equipment such as hoes, cutlasses, spades, and pickaxes equipment such as sprayers -Insufficient time devoted to farming activities due to high labor needs of NTFP gathering and hunting -High level of postharvest losses Non respect of financial obligations by some group members			

Livelihood Activity	Strengths	Weakness/Constraints	Opportunities	Threats	Possible Mitigating Measures
		Low quality and prices - poor management of cassava grinder - insufficient processing equipment Lack of postharvest equipment such as fermentation boxes and ovens.	RUMPI ACEFA	Fluctuating prices malpractices of middlemen -Difficult access to markets difficult evacuation of produce	-Formation and training of infrastructure management committees
Hunting					
		Hunting of endangered species		Timber companies	
		Timber exploitation by non-indigenes			
		Excessive dependence on hunting and NTFP collection to compensate for poor harvest			Introduction of sustainable IGAs that would be beneficial to majority of HHs

Livelihood Activity	Strengths	Weakness/Constraints	Opportunities	Threats	Possible Mitigating Measures
		Insufficient tourist infrastructure			
		Conflicts with KNP officials			
NTF P Gathering					
	Restriction of access in sacred sites.	Far distances to collection sites Low and fluctuating prices of produce Exploitation by itinerant traders Difficult evacuation	Favourable ecology for cultivation of NTFP		- Domestication of NTFPs -strengthening and legalization of NTFP focus group to function
		-lack of market value for several NTFPs.			effectively as cooperative
Fishing					

Livelihood Activity	Strengths	Weakness/Constraints	Opportunities	Threats	Possible Mitigating Measures
	Restriction of fishing in sacred sites Restriction of fishing using hook sizes and poisonous substances.	Reduction in quantity of fish and crayfish in streams Unsustainable fishing practices by neighboring villages			