

**ASSESSMENT OF THE IMPACT OF ALTERNATIVE LIVELIHOOD  
APPROACH ON HUMAN LIVES AND BIODIVERSITY IN KAINJI  
LAKE NATIONAL PARK OF NIGERIA**

**BY**

**MUSA, Abubakar Atiku**

**M.TECH/SSSE/2006/1507**

**.A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL,  
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GEOGRAPHY (ENVIRONMENTAL MANAGEMENT)**

**NOVEMBER, 2010**

## DECLARATION

I hereby declare that this thesis titled “Assessment of the Impact of Alternative Livelihood Approach on Human Lives and Biodiversity in Kainji Lake National Park of Nigeria” is an authentic study carried out by me and has not been presented elsewhere for any form of award academically.

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MUSA, Abubakar Atiku


14<sup>th</sup> July 2011  
.....  
DATE

M. Tech/SSSE/2006/1507

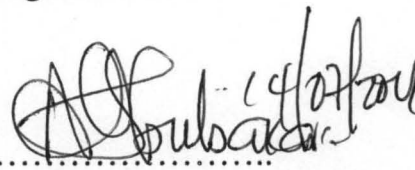
## CERTIFICATION

This thesis titled: Assessment of the Impact of Alternative Livelihood Approach on Human Lives and Biodiversity in Kainji Lake National Park of Nigeria: by: MUSA, Abubakar Atiku (M.Tech/SSSE/2006/1507) meets the regulations governing the award of the degree of Master of Technology (M. Tech) of the Federal University of Technology, Minna and is approved for its contribution to scientific knowledge and literary presentation.

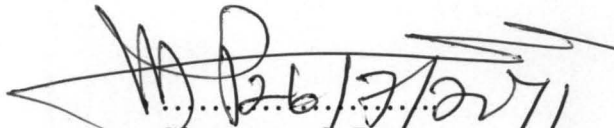
**Prof. G. N. Nsofor**  
Name of Supervisor

  
..... 14/7/11  
Signature & Date

**Dr. A. S. Abubakar**  
Name of Head of Department

  
..... 14/7/11  
Signature & Date

**Prof. M. Galadima**  
Name of Dean, School of Science &  
Science Education

  
..... 26/7/2011  
Signature & Date

**Prof. (Mrs.) S. N. Zubairu**  
Name of Dean, Postgraduate School

  
.....  
Signature & Date 29/7/11

## **DEDICATION**

This research is dedicated to the environmentally-challenged-impoverished rural dwellers, especially the poor communities living in/adjacent to Protected Areas in Nigeria.

## ACKNOWLEDGEMENTS

My highest gratitude is reserved for my Creator (Allahu Subhanahu Wa ta'ala) who Has bestowed on me this rare opportunities of good health, wisdom, courage, strong will, financial resource, all at once to embark and accomplish this task. I must sincerely express my appreciation to my supervisor in the person of Prof. G.N. Nsofor for his objective critique and review of this work. He has immensely impressed me by his interest in the work and the speed at which he reviewed and returned to me his comments and correction in the work. I want to use this medium to also appreciate all my lecturers Prof. Adefolalu, Dr. M. T Usman, Mansur Matazu and all the other lecturers in Geography Dept, Federal University of Technology, Minna. Especially Malam Salisu the coordinator of this programme. I want to appreciate and acknowledge my friends and classmates that have encouraged me and spurred me on to finish this work, especially Col. Auwal Fagge, Suleiman Mohammed, Askira, etc. I want to also appreciate some of my academic friends that have made some inputs or advised on which approach to use to best accomplish this work in the persons of Dr. Ibrahim Musa Jaro (Geography Dept, ABU. Zaria), Dr. Bashir Fagge (Fac. of Agric. BUK, Kano) and Bello Uthman (FRIN, Ibadan). This work wouldn't have been possible without the encouragement and approval of my boss the Conservator General of National Park Service, Alhaji Haruna

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## ABSTRACT

Biological diversity, or biodiversity, is the variety of life either in a particular place or on the entire earth, including its ecosystems, species, populations, and genes. Conservation thus seeks to protect life's variety at all levels of biological organization. Conservation of biodiversity world over, is facing a lot of challenges and problems as a result of the severity of the hardship/poverty and unemployment being faced by the Support Zone Communities (SZCs) of such Protected Areas (PA) due to the restriction of access to the resources there in being suffered by the SZCs, in the name of conservation. The last resort for subsistence of the rural communities are their natural resources. This study was aimed at assessing the impact of alternative livelihood to the aggrieved Support Zone Communities of Kainji Lake National Park in order to enlist their support for conservation efforts. The data analysis was achieved by using descriptive statistics, counterfactual estimation and Quick Biodiversity Survey (QBS) to analyse all the objectives of the study. Focus group guides were developed and administered in 24 supported communities. The research found out that the income of the average beneficiaries of this support has increased by 200% and there is improvement in participation of the community members in conservation efforts through their willingness to participate in joint patrols and establishment of Orchards and Woodlots. The results showed that newer environmentally sustainable employment opportunities have been created which are being co-financed and maintained by the communities themselves. This has pacified the communities into collaborating with the Protected Area management to protect the PA. Provision of alternative livelihoods to the teeming unemployed youths in the Support Zone Communities has engaged them and are earning income throughout the year even during off farming seasons. In order for this strategy to achieve more in conservation this support should be scaled up to all the Protected Areas in Nigeria including the marine ecosystems.

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## ABBREVIATIONS

- ACS - Adaptive Cluster Sampling
- ADB - African Development Bank
- CAMPFIRE - Communal Areas Management Program for Indigenous Resources
- CD - Cattle Disturbed
- DBH - Diameter Breast Height
- DFID - Department For International Development (UK)
- DRB - Development Research Bureau
- FGD - Focus Group Discussion
- FGN - Federal Government of Nigeria
- FORMECU - Forestry Management, Evaluation, and Coordinating Unit
- FRIN - Forestry Research Institute of Nigeria
- GBH - Girth at Breast Height
- GEF - Global Environment Facility
- GIS - Geographic Information System
- GPS - Global Positioning System

- GTZ - German Technical Company
- HHD - Heavily Human Disturbed
- HIPPO - Habitat destruction, Invasive species, Pollution, Human over Population, and
- HIV/AIDS - Human Immune Virus / Acquire Immune Deficiency Syndrome
- HSQ - Household Survey Questionnaires
- IDA - International Development Association
- IDI - In-depth Interview
- IFTs - Indigenous Fruit Trees
- IUCN - International Union for Conservation of Nature and Natural Resources
- KLNP - Kainji Lake National Park
- LEEP - Local Empowerment and Environment Management
- MITs - Multi-Disciplinary Implementation Teams
- NGO - Non-Governmental Organization
- NLWRA - Australian Land and Water Resources Audit's
- NPS - National Park Service
- NTFP - Non Timber Forest Product
- ONADEF - Office National de Development des Forets

Overharvesting.

- PA - Protected Areas
- PCQ - Point-Centered Quadrant
- PES - Payment for Environmental services
- PIG - Preliminary Information Gathering
- QBS - Quick Biodiversity Survey
- RABA - Rapid Agro-Biodiversity Appraisal
- SPSS - Statistical Package for the Social Sciences
- SRS - Stratified Random Sampling
- SZCs - Support Zone Communities
- TSS - Tropical Shelter wood System
- WCS - World Conservation Society



## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Concept of Conservation

The modern concept of conservation, which is the wise maintenance and utilization of the earth's resources, is no more than the combination of these two ancient principles: the need to plan resource management on the basis of accurate inventory and the need to take protective measures to ensure that resources do not become exhausted. Conservation has often been thought of as a protective 'locking away' of resources by a power elites who have the time to enjoy the beauty of nature, as especially selfish and anti-development activity. On the contrary, Protected Areas, when designed and managed appropriately, are now recognized as offering major sustainable benefits to the entire society. For instance, Protected Areas like National Parks play a central role in the social and economic development of rural environments and contribute to the economic well being of urban centres and the quality of life of their inhabitants.

According to World Commission on Protected Areas (2003), there were about 30, 000 Protected Areas around the world and this was touted as

one of the greatest achievements of the 20<sup>th</sup> Century and a great inheritance for the 21<sup>st</sup> Century. Together they cover about 12.8 million sq. km, which amounts to 9.5% of the planet's land area, an astonishingly large extent, larger than China and India combined. The International Union for Conservation of Nature and Natural Resources (IUCN) has eight categories for nature protection as follows: Strict Nature Reserve, Biosphere Reserve, Forest Reserve, Wilderness area, National Park, Natural Monument, Habitat/Species Management area, Protected Landscape/ Seascape, and Managed Resource Protection Area.

The IUCN has defined National Parks as “relatively large areas of land or sea where one or several ecosystems are not materially altered by human exploitation and occupation, where plant and animal species, geo-morphologic sites and habitats are of special scientific, educational and recreational interest and may contain a natural landscape of great beauty; in which;

- a) The highest competent legal authority of the country (Federal Government) has taken steps to eliminate as soon as possible exploitation or occupation in the whole area and to enforce effectively the respect of ecological, geomorphologic or scientific features which have led to its establishment; and

- b) Visitors are allowed to enter under special conditions, for inspirational, educational, cultural, and recreational purposes”.

For the management of these Parks to accomplish their mandate of protecting, managing and regulating the use of this unique ecosystem all stakeholders in these endeavour (biodiversity conservation) must all be brought on board. The Management of all these PAs realise that, the most important stakeholders in the management of the Protected Areas (PAs) are the Support Zone Communities (SZCs) - the communities living adjacent to the Protected Areas.

## **1.2 Alternative Livelihood Approach Strategy for Biodiversity Conservation**

This can be defined as a conservation management strategy, that fund/offers nature-conservation-friendly-livelihoods to pacifies and enlists the support of the communities living adjacent to Protected Areas to conserve biodiversity instead of making a livelihood out of it by degrading it.

In an effort to employ this strategy to conserve our biodiversity, the Federal Government of Nigeria sought and obtained the assistance of the International Development Association (IDA) and Global Environment

Facility (GEF) in order to enable her implement a special programme designated as Local Empowerment and Environmental Management Project (LEEMP). This is because one of the priority areas of focus of most administrations is poverty alleviation, especially amongst the rural communities. A large proportion of Nigerians are directly or indirectly dependent on the non-oil sector of the economy while the rural people have natural resources as the basis of their livelihoods. In consideration of the need to address the pervasive poverty situation, the Federal Government has obtained assistance from these two donor agencies in order to realize these objectives. The IDA and GEF had contributed US\$70.00m and US\$8.00m respectively to carry out the Project in nine states of the federation. These States are; Adamawa, Bauchi, Bayelsa, Benue, Enugu, Imo, Katsina, Niger, and Oyo. The project became effective in June 2004 and lasted for five and a half years because it came to a close on 31<sup>st</sup> December 2009.

The major objectives of Local Empowerment and Environmental Management Project are:

- a) To strengthen the institutional framework at all levels of government Federal, State and Local Government.
- b) To support beneficiaries' communities in the participating states to plan, co-finance, implement, operate and maintain

environmentally sustainable and socially inclusive multi-sectoral micro-projects in their areas.

The LEEMP is aimed to achieve these objectives through:

- a) the poverty reduction strategy process,
- b) decentralization of governance,
- c) transparency in government business
- d) sustainable environmental management.
- e) developing principles of participatory development
- f) improved management capacity of the communities
- g) HIV/AIDS reduction through awareness/enlightenment campaign.

LEEMP has five components:

- a) Multi-sectoral Community-Driven Investment
- b) Local Government Assessment and Capacity Building
- c) **Protected Areas and Biodiversity Management**
- d) Strengthening the Environmental Institutional Framework
- e) Project Management

The Global Environment Facility (GEF) financed the incremental cost of activities that have global benefits in four Protected Areas vis: Kainji Lake National Parks, Yankari Game Reserve, Lama Burra Game Reserve and Maladumba Lake/Forest Reserve. The aim of the GEF financed component (c above) is to conserve depleting plant and animal

species in the above selected Protected Areas. Resources are provided to help strengthen the capacity of relevant institutions for better management of biodiversity of these areas. Most importantly, GEF fund is provided to communities in the support zones (SZs) of these Protected Areas to engage in alternative income generation schemes that would help remove pressure exerted on the resources in the Protected Areas, especially plant and animals. An effective awareness campaign to enhance better appreciation of the importance of biodiversity is also a key activity in this component.

The activities under this component are aimed specifically to:-

- a) strengthen management capacity of the National Park Service (NPS), States, Local Governments and Communities where Protected Area projects are sited;
- b) promote partnerships and collaborative management of the Protected Areas and biodiversity management with communities and other stakeholders;
- c) identify and promote incentives for biodiversity conservation; and
- d) promote best practices in sustainable use of biodiversity.

These activities will strengthen institutional and organizational capacity of a number of agencies for effective participatory Protected Area

management in the selected Protected Areas and their Support Zones Communities. It will also support development initiatives of communities living within the support zones of the selected Protected Areas and promote the involvement of local stakeholders more closely in the Protected Areas management. These initiatives have promoted sustainable livelihood while emphasizing the linkages between biodiversity conservation and benefits for communities neighbouring the Protected Areas. Key stakeholder groups have been assisted to establish collaborative mechanisms to support conservation-linked development and reduce unsustainable use of shared resources. Under this component, community-based incentives and management options have been identified and promoted.

The intervention under the Project is addressing critical issues such as:

- a) the protection of ecosystems with high global biodiversity value;
- b) maintenance of conditions vital to the sustenance of critical areas and protected habitats;
- c) enhancing the efficiency of biodiversity resource use;
- d) unsustainable natural resource utilization within Protected Areas and in support zones;

- e) lack of awareness, ownership and incentives within the larger community of the importance of conservation of the nation's indigenous wild flora and fauna and their habitats;
- f) lack of capacity for monitoring biological diversity within Protected Areas;
- g) lack of capacity, participatory processes and community involvement in Protected Area management;
- h) lack of baseline data on biodiversity resources of Protected Areas;  
and
- i) inadequate incentives for promoting eco-tourism facilities and services.

The major sub-components of the Protected Areas and biodiversity management component of LEEMP are:

a) *Improving Protected Areas Management:*

Technical assistance was provided for comprehensive inventories of the selected Protected Areas to assess ecological, bio-physical, geological and socio-economic characteristics of both Protected Areas and their support zones. This has assisted in establishing baseline data that guided in participatory development and implementation of Protected Areas Management Plan.



b) *Institutional Strengthening:*

Technical assistance, training and study tours were supported to assess the current policy and regulatory framework relating Protected Area management, and identify options for a strategic maintenance of improvements, particularly focusing on collaboration with the private sector and local communities living in adjacent support zones. The policy and legislative review is now consistent with current Local, National and Global initiatives. Equipment and vehicles have also been provided to strengthen monitoring and tracking of species, their movement and their health as well as viability of ecosystems; Protected Area infrastructure (roads, culverts, bridges and watering points for wildlife, etc) within the selected protected areas.

c) *Sustainable Livelihoods for Communities within Support Zones:*

Appropriate sustainable livelihoods activities were identified and implemented by the beneficiaries with facilitation from NGOs, or Multi-Disciplinary Implementation Teams (MITs) and other stakeholders. Sustainable livelihood plans have been developed to serve as long term development strategy for Support Zone Communities. The sustainable livelihood plans have been

developed into specific micro-projects and are being implemented by individuals or user groups. There is a systematic monitoring of these micro-projects in line with monitoring indicators. Best practices and lessons learned from the experience will be identified and shared with other communities.

d) *Conservation Outreach:*

Outreach or Eco-centers have been constructed and are equipped with facilities for training, information dissemination and market outlet for arts/crafts etc products from the support zone communities of the Protected Areas. The Centres are located at:

- i) Wawa in Niger State;
- ii) Ibbi in Niger State;
- iii) Yuga in Bauchi State;
- iv) Misau in Bauchi State; and
- v) Mainamaji in Bauchi State.

e) **Project Management**

In order to ensure effectiveness in management of this project component, operating units were provided with technical assistance, training, equipment and vehicles as appropriate to

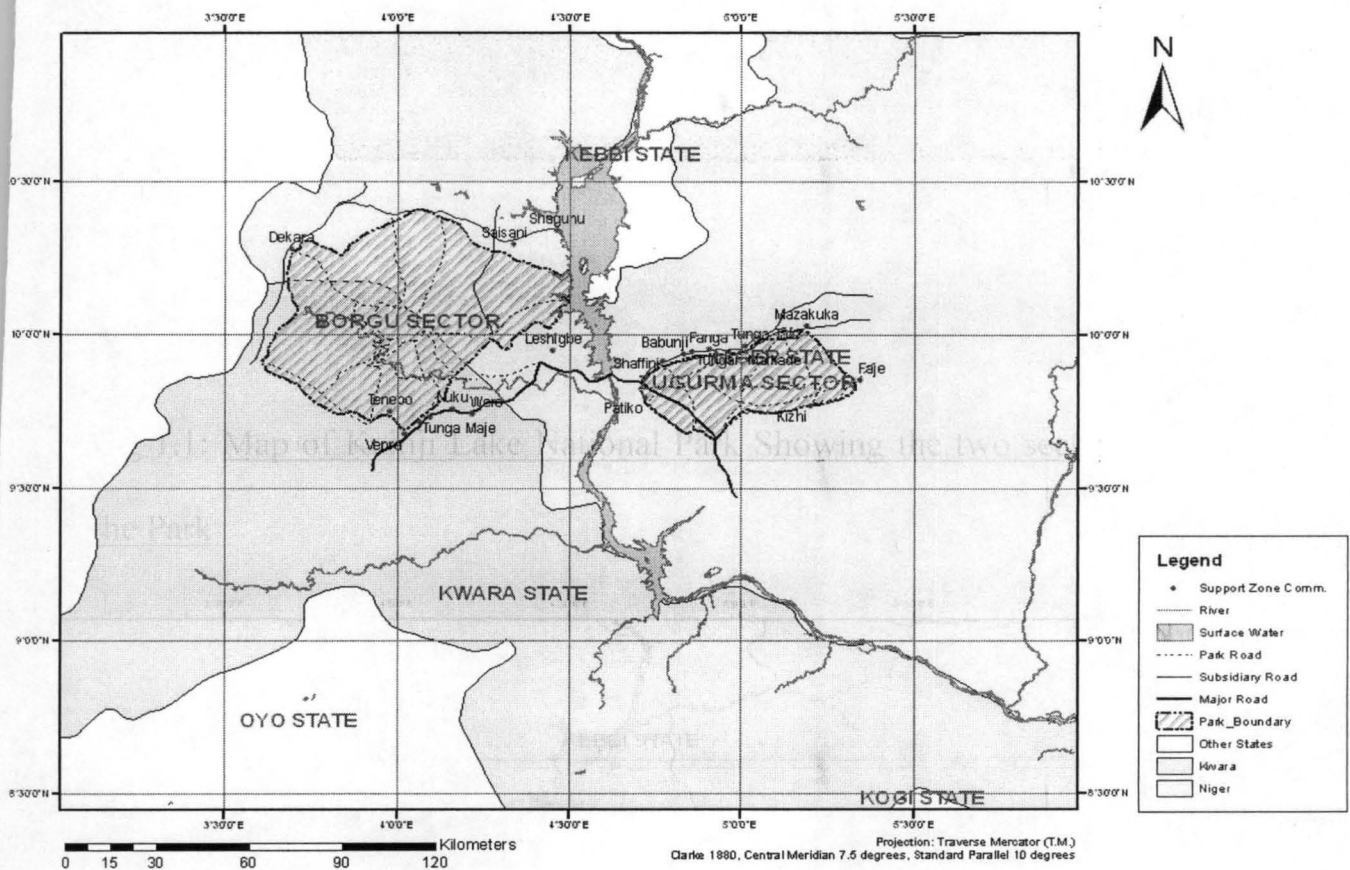
facilitate implementation and monitoring of project activities. Activities under the different sub-components are aimed at promoting partnerships and collaborative arrangements for Protected Area and Biodiversity management. The Project's financial and operational implementation arrangements are decentralized and community driven.

### **1.3 Study area**

The research study was carried out at Kainji Lake National Park (KLNP) in Niger and Kwara States. KLNP is one of the four PAs supported by the LEEMP-GEF intervention. The Park is located between Latitudes  $09^{\circ}40'N$  and  $10^{\circ}25'N$ , and Longitudes  $03^{\circ}35'E$  and  $05^{\circ}25'E$ . It was established in 1979 by the merger of Borgu and Zugurma Game Reserves. Thus, the Park is made up of two sectors separated by Kainji Lake and the hydroelectric dam complex. The western sector is the Borgu sector which extends from Kwara State to Niger State while the eastern sector is the Zugurma sector which falls entirely within Niger State. The Park covers a total land area of  $5,340.82 \text{ km}^2$ , out of which Borgu sector accounts for  $3,970 \text{ km}^2$ . A map of Niger and Kwara States showing the two sectors of the KLNP is shown as Fig 1.

KLNP has many Support Zone Communities within and outside the Park. Most of the communities have been in existence before designating the Park as a Protected Area. As a result of the damming of River Niger which gave rise to the Kainji Lake, several other communities (mainly fishing communities) have sprung up in the vicinity of the Park. The forty SZCs that benefited from the LEEMP-GEF support are; Zugurma Sector (Babugi, Fanga, Faje, Gwaji, Gwuiwan-kurmi, Ibbi, Kizhi, Kpellegi, Kulho, Mazakuka, Mulea, Patiko, Poto, Shafini, Tsohon-mashigin-kada, Tungan-bala, Tungan-garba, Tungan-maikade, Tungan-talle and Tungan-zabarmawa. On Borgu Sector are; (Dekara, Duruma, Gada-oli, Gbeji, Gulubi, kemenji, Kuble, Kwasare, Leshigbe, Luma, Malale, Nanu-shugaba, New-kali, Sansani, Shagunu, Tenebo, Tungan-maje, Wawa, Woro and Woromakoto. The inhabitants of most of these communities are mostly farmers, fishermen, Poachers, etc.

Fig 1.1: Map of Kainji Lake National Park Showing the two sectors of the Park



Source: Geomatic Nigeria Limited (2007)

#### 1.4 Climate of Area of Study

The climate of KLNP is generally described as tropical with warm and humid conditions. There are two distinct seasons, namely rainy season which lasts for about eight months (March to October), and dry season which lasts only for four months (November to February). Like most parts of Nigeria, KLNP enjoys the characteristic West African monsoonal climate, marked by distinct seasonal shift in the wind pattern.

There is the prevalence of moisture-laden south-westerly wind during the wet months while the dust-laden north-easterly wind is associated with the dry months. In the study area, temperature is generally high most of the year; averaging 30<sup>0</sup>C except during the cold and dry months of December and January (Geomatics, 2007).

### **1.5 Soil, Flora and Fauna:**

KLNP is underlain by pre-Cambrian Basement Complex rocks of undifferentiated meta-sediments. Most of the area is composed of gneiss and younger meta-sediments which are mainly schists and phyllites. The rocks have been deeply weathered with few outcrops of hard granitic rocks in few places especially within the Borgu sector. The soil type in KLNP is ferruginous tropical soil. The soil depth varies from upper slope to lower slope and valley bottom. Over the years, valleys in KLNP experienced colluvial and alluvial accumulation of materials which resulted in deeper soils. In many areas within the Park, soils vary in texture from sandy loam to clayey loam. Soils on the quartzite ridges are dark brown to grey brown in colour. They are usually shallow and sandy or stony in texture. On the middle slopes, soils are fairly deep and of sandy loam texture; while on the lower slopes grey to pale brown soils of clay loam texture are common (Geomatics, 2007).

KLNP falls within the northern Guinea savanna vegetation zone of Nigeria (Keay, 1959). The vegetation is described by FORMECU (1998) as dominantly trees/woodlands/shrubs. Over the years, the vegetation of KLNP has been maintained because the area is reserved as a Protected Area. Elsewhere outside the Park, the vegetation has been degraded due to incessant cultivation and grazing, thus resulting in large areas dominated by shrubs and grasses. Common tree species within the Park include *Isoberlinia doka*, *Isoberlinia tomentosa*, *Burkea africana*, *Detarium microcarpum*, *Diospyros mespiliformis*, and *Terminalia macroptera*. Along the river courses, the vegetation is riparian forest with such tree species as *Anogeissus leiocarpus*, *Daniella oliveri*, *Khaya senegalensis*, *Nauclea latifolia* and *Prosopis africana* (Geomatics, 2007).

In terms of faunal characteristics, the wildlife composition in KLNP include *Alcelaphus buselaphus* (Hartebeest), *Ourebia ourebia* (Oribi) and *Erythrocebus patas* (Patas monkey) which are all associated with wooded savanna. The Park is also known to serve as habitat to *Syncerus caffer* (Buffalo), *Phacochoerus aethiopicus* (Warthog), *Panthera leo* (Lion), *Panthera pardus* (Leopard), *Crocuta crocuta* (Spotted hyena) and *Papio anubis* (Olive baboon). In addition, wildlife species associated with good perennial water supplies within savanna such as *Kobus kob*

(Kob), *Kobus defassa* (Water buck), *Redunca redunca* (Reedbuck), *Cercopithecus aethiops* (Green monkey) and several bird species are also found in the Park. The Oli River harbours *Hippopotamus amphibious* (Hippopotamus), *Crocodylus niloticus* (Nile crocodile) and several other reptiles, amphibians and fishes.

### 1.6 Topography and Drainage

The topography of KLNP consists of hills, extensive plains and river valleys. On the whole, the entire area is gently undulating with quartzite ridges in few places. Elevation in most parts of the Park ranges between 250 m and 300 m. The highest point in the park is at the northwestern corner with an elevation of 350 m, while the lowest elevation is along the River Niger where the maximum water mark is about 140 m.

The drainage system in the Borgu sector of the KLNP is maintained by Rivers Oli, Menari, Timo and Doro. Of these, River Olli is the largest. Together with its tributaries, the river valley of River Olli is incised with little or no floodplain, and empties into the River Niger. The Zugurma sector is well drained with a network of small streams which are minor tributaries of larger rivers outside the Park. They flow away to the north and to the south of the sector from the long narrow ridge within the sector. Unlike in the Borgu sector, there is no big river within the



Zugurma sector. Many of the small streams flow mainly during the rainy season and break into pools during the dry season.

#### 1.7 **Problem Statement**

The objective of National Park is to protect, manage and regulate the use of these unique ecosystems designated as National Parks by such means and measures to preserve and conserve Nigeria's heritage, both natural and cultural, tangible and intangible, particularly the Fauna and Flora, the habitats they live in, and the unique scenery they afford and to provide human benefits and enjoyment in such manner and by such means, so that these are left unimpaired for generations to come. Achieving these objectives is a mirage if the SZCs are living in abject poverty and their only option of survival is the Protected Areas and they are restricted from exploiting it. In recent years, poverty alleviation strategies have always been on the front burner of various administrations in the country at all levels. However, this is hampered by apparent ineffective institutional capacities, accountability and transparency to ensure that all the strategies meet their set objectives. As a result of this, there is a pronounced degradation of the environment upon which a majority of the rural dwellers rely on for their sustenance.

## .8 Support Zone Communities (SZCs)

These are communities living within or adjacent to PAs and are most likely depending on the natural resources there in for their livelihood and other domestic needs and in doing so degrading it.

According to **Fuller et al (2004)**, conservation biology has proven the need to work at an ecosystem scale with “bio-regional” strategic plans. Protected Areas cannot be treated as islands. He further stressed that healthy Protected Areas (Landscapes) are often shaped by human forces as well as natural forces and that rich biological diversity often coincides with rich cultural diversity. Therefore, conservation can only be successful through the involvement of the people closest to the resources.

It is in view of the need for the SZCs to be provided with alternative option of livelihood that, this study became necessary to assess the developmental impact of the World Bank financed GEF Projects on the KLNP and its SZCs. To measure the impact of the intervention some question become pertinent which are;

- What are the socio-economic statuses of the Support Zone Communities in the study area as a result of the support of GEF?

- Are the beneficiary community members gainfully employed and earning income through an environmentally sustainable means of livelihood as a result of the support provided by GEF intervention?
- Is there any improvement in flora and fauna species in the study area as a result of the support provided by GEF intervention?
- What is the relationship of the Park management and the Support Zone Communities after the intervention?
- What are the problems encountered in improving biodiversity in Kainji Lake National Park?

### **1.9 Aim and Objectives of the Study**

The aim of the study is to assess the impact of GEF intervention and the efficacy of provision of alternative livelihood to SZCs as a veritable strategy for conservation management of the natural endowment of KLNP. The specific objectives are to:

- i. examine the socio-economic status of the Support Zone Communities in the study area
- ii. determine the number of community members that are now gainfully employed and earning income through an environmentally sustainable means of livelihood as a result of the intervention.

- iii. determine the changes in Flora and Fauna species improvement as a result of the support provided by the GEF to the Park and its adjacent communities
- iv. determine the level of collaboration between the Park management and the Support Zone Communities in Park management subsequent to the alternative livelihood approach of the GEF Project in the Park.
- v. Identify constraints towards improving biodiversity conservation in the Kainji Lake National Park.

#### **1.10 Justification of the Study**

Provision of alternative livelihood to SZCs as a means of 'Biodiversity Conservation Management' instead of arrest and prosecution we are used to, is a new strategy in Nigeria that all and sundry is anxious to know its efficacy. The justification for this study is based on the desire to determine if the support that is provided by the GEF to the SZCs and the Park has positively impacted on the ecosystem of the Park and has also pacified the SZCs into collaborating with the PAs' management in managing the Park together which will be evident in the increase and regeneration of Fauna and Flora species. It is against this background that the study of *'ASSESSMENT OF THE IMPACT OF ALTERNATIVE LIVELIHOOD APPROACH ON HUMAN LIVES AND BIODIVERSITY*

*IN KAINJI LAKE NATIONAL PARK OF NIGERIA'* was undertaken.

With reliable information from this study, the National Park Service Headquarters can justify the scaling up of GEF and other donor support to the other six National Parks around the country and other Protected Areas to more donor agencies.

### **1.11 Hypothesis**

Null Hypothesis: the alternative livelihood intervention of the GEF Project will not enhance the cooperation and the collaboration of the beneficiary communities and KLNP management towards improving the Biodiversity of the Park.

Alternate Hypothesis: the alternative livelihood approach will enhance the cooperation and the collaboration of the SZCs and the PA management towards improving the Biodiversity of the Park.

### **1.12 Scope and Limitation of Study**

The research was restricted to Kainji Lake National Park and its surrounding Support Zone Communities. The research study covered twenty four communities out of the forty communities that have enjoyed the LEEMP-GEF support. The major parameters considered in the study were the socio-economic statuses of the communities, employment and the subsequent income created in the communities as a result of the

intervention, changes in the biodiversity as a result of the intervention, the renewed cooperation enlisted from the communities towards the Park protection and management and the constraints towards improving biodiversity in the Kainji Lake National Park

In view of the time available for this project and the resources at our disposal;

- Comprehensive ecological survey could not be carried out due to limited funds and logistics
- The duration for this research work is too short for the entire positive impacts as a result of this intervention to be observed, e g, regeneration of the flora and Fauna resources, etc.
- Perceived collaboration between PA stakeholders as a result of the Project's intervention is an issue of attitudinal change which is slow and gradual that could be realized years after the Project's life but despite the period available for this research some attitudinal changes were measured on both the PA management and the SZCs.
- Better collaboration would have been recorded if the recommendations in the 'Participatory Management Plan' consultancy report by Dr. Ayeni funded by GEF were fully implemented (Participation of stakeholders in PA management).

- The proposed 'Sustainable Livelihood, Biological and Conservation Outreach Fund' for which GEF has already deposited five hundred and fifty thousand US dollars as seed money (\$550, 000.00) and had already sponsored the development of the strategy of how to establish and manage the fund by Dr M. T. Usman of FUT Minna (2007) is not operational yet. The fund is supposed to sustain the GEF investments in the PA and SZCs after the life of the Project. This would have gradually been funding more prioritized livelihoods for more User groups in the communities; this would have increased the number of beneficiaries and hence enlisted the support of more members of the communities.
- Better inferences would have been drawn on the floral resources if satellite imagery of the PA was acquired before the intervention and ten years later, then analyzed but limitation of fund would not allow that to be achieved.

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 Introduction**

It is necessary at this point to review some pertinent literatures that specifically dealt with Forest Inventory Techniques, Technical support to Protected Areas, Techniques for Animal Census, socio-economic survey, Participatory Management of PAs, Monitoring and Evaluations, etc, in order to ensure that this Research is built on previous sound and acceptable methods used by reliable authorities. This will obviously eliminate the possibility of adopting unscientific methods, which may render the results grossly inadequate and unacceptable. Therefore, a comprehensive literature review is undertaken in this chapter to facilitate the evaluation of past works that are relevant to this research in order to enable me to adopt best practices of data collection, analyses and the drawing of inferences.

#### **2.2 National Park Service of Nigeria**

In 252 B.C. Emperor Asoka of India passed an edict for the protection of animals, fish and forests. This may perhaps be the earliest documented instance of the deliberate establishment of what is today referred to as Protected Areas. But the practice of setting aside sacred sites as religious



sanctuaries or exclusive hunting preserves is much older and the tradition has been continued in many widely different cultures to the present day. In 1804 for instance, King William I of England ordered the preparation of the "Domesday Book". This is an inventory of all the lands, forests, fishing areas, agricultural areas, hunting preserves and productive resources of his kingdom – as the basis for making rational plans for the country's management and development (International Union for Conservation of Nature (IUCN, 1986).

Conventionally, Nigeria's experience with the establishment of National Park is a very recent development. It began in the 1979 when the Obasanjo administration during that time promulgated Decree 46 of 1979 (later Act 46 of 1979) and proclaimed Kainji Lake as a National Park. The 1979 National Park Act had singularly placed Nigeria among comity of nations, which have demonstrated the political will to check the senseless plundering of natural resources so that future generations can appreciate and enjoy their natural heritage, as did their grandfathers and great grandfathers before them. As a concept, National Park management is about the conservation of unique ecosystems for sustainable development, recreation and public enjoyment. Although Nigeria began this noble idea rather very lately compared to even other

countries on the African continent such as those of the east and south, nonetheless Nigeria is able to achieve so much within the short time of its existence. What is more, unlike other countries that received so much foreign assistance to develop their National Parks, Nigeria relied totally on its own resources to create and develop these National Parks, until recently when trickle of supports are being received from some international conservation donor organizations like, World Conservation Society (WCS), Global Environment Facility (GEF), etc.

It will be recalled that today Kenya, South Africa and Tanzania are very important tourist destinations because of the success of their National Parks and Protected Areas. However, what most people do not appreciate is the fact that these countries started developing their National Parks much earlier and have consistently given top priority attention to their protection and development. Histories of National Park development revealed that Kenya started its Park protection and development over 64 years ago, while South Africa began 111 years ago with Kruger National Park. Nigeria's effort so far may not be groundbreaking but it is borne out of the desire to embrace environmental conservation, recreation and nature tourism for sustainable development (Marguba, 2002).

It is significant to note that twelve years after the establishment of Kainji Lake National Park as the premier National Park, the 1979 law was repealed and replaced by Decree 36 of 1991, effectively establishing five National Parks including Kainji Lake National Park. The other Parks are Chad Basin National Park, Cross River National Park, Gashaka gumti National Park and Old Oyo National Park. By a special request of the Bauchi State government, the Federal Executive Council approved the upgrading of Yankari Game Reserve to a National Park in August 1991. The Yankari National Park Order of 1993 eventually upgraded Yankari to a National Park. Again Decree 46 of 1999 (now Act 46, 1999) repealed Decree 36 of 1991 and established two additional National Parks – Kamuku and Okomu in Kaduna and Edo States respectively, bringing the number of National Parks in Nigeria to eight representing all the ecosystems of the country except the Marine ecosystem. In June 2006 the Federal Government reverted the status of Yankari to a Game Reserve (Yankari Resort and Safari) sequel to the request by the Bauchi State Government to that effect so that now Yankari is under the purview of the State. Presently there are seven National Parks.

### **2.3 Biodiversity**

Biodiversity is the variation of life forms within a given ecosystem, biome, or on the entire Earth. Biodiversity is often used as a measure of the health of biological system. The biodiversity found on Earth today consists of many millions of distinct biological species. Biodiversity is not distributed evenly on Earth, but is consistently rich in the tropics and in specific localized regions such as the Cape Floristic Province; it is less rich in Polar Regions where fewer species are found.

### **2.4 Threat to Biodiversity**

Rapid environmental modifications typically cause extinction of all species that have existed on Earth. 99.9 percent are now extinct since life began on Earth, and five major mass extinctions have led to large and sudden drops in the biodiversity of species.

During the last century, decreases in biodiversity have been increasingly observed. Studies show that 30% of all natural species will be extinct by 2050 (Wikipedia, 2010). Of these, about one eighth of the known plant species are threatened with extinction. Some estimates put the loss at up to 140,000 species per year (based on species area theory) and subject to discussion. This figure indicates unsustainable ecological practices,

because only a small number of species come into being each year. Almost all scientists acknowledge that the rate of species loss is greater now than at any time in human history, with extinctions occurring at rates hundreds of times higher than background extinction rates (Wikipedia, 2010).

The factors that threaten biodiversity have been variously categorized. Jared Diamond describes an "Evil Quartet" of habitat destruction, overkill, introduced species, and secondary extinctions. Edward O. Wilson prefers the acronym **HIPPO**, standing for **H**abitat destruction, **I**nvasive species, **P**ollution, **H**uman over **P**opulation, and **O**verharvesting. The most authoritative classification in use today is that of IUCN's Classification of Direct Threats adopted by most major international conservation organizations such as the US Nature Conservancy, the World Wildlife Fund, Conservation International, and Birdlife International.

Most of the species extinctions from 1000 AD to 2000 AD are due to human activities, in particular destruction of plant and animal habitat. Raised rates of extinction are being driven by human consumption of organic resources, especially related to tropical forest destruction. While most of the species that are becoming extinct are not food species, their

biomass is converted into human food when their habitat is transformed into pasture, cropland, and orchards. It is estimated that more than a third of the Earth's biomass is tied up in only the few species that represent humans, livestock and crops. Because an ecosystem decreases in stability as its species are made extinct, these studies warn that the global ecosystem is destined for collapse if it is further reduced in complexity. Factors contributing to loss of biodiversity are: overpopulation, deforestation, pollution (air pollution, water pollution, soil contamination) and global warming or climate change, driven by human activity. These factors while all stemming from overpopulation; produce a cumulative impact upon biodiversity.

There are systematic relationships between the area of a habitat and the number of species it can support, with greater sensitivity to reduction in habitat area for species of larger body size and for those living at lower latitudes or in forests or oceans. Some characterize loss of biodiversity not as ecosystem degradation but by conversion to trivial standardized ecosystems (e.g., monoculture following deforestation). In some countries lack of property rights or access regulation to biotic resources necessarily leads to biodiversity loss (degradation costs having to be supported by the community).

A September 14, 2007 study conducted by the National Science Foundation found that biodiversity and genetic diversity are dependent upon each other—that diversity within a species is necessary to maintain diversity among species, and vice versa. According to the lead researcher in the study, Dr. Richard Lankau, "If any one type is removed from the system, the cycle can break down, and the community becomes dominated by a single species".

At present, the most threatened ecosystems are those found in fresh water. The marking of fresh water ecosystems as the ecosystems most under threat was done by the Millennium Ecosystem Assessment (2005), and was confirmed again by the project "**Freshwater Animal Diversity Assessment**", organised by the biodiversity platform and the French *Institut de recherche pour le developement* (MNHNP).

## **2.5 Alternative Livelihood Intervention In Protected Areas**

Wildlife conservation and Protected Areas in many countries will only be sustainable if local communities become an integral part of conservation efforts and benefit economically from those efforts (MacKinnon, 2001). Linking conservation and development is particularly pertinent for the developing countries, where population

pressures and economic forces can and do conflict with conservation and PA programs.

Protected Areas are often among a country's most remote and agriculturally marginal land. Their remoteness had the effect of contributing to their protection, since they were inaccessible and viewed as economically unproductive. Human use of these once-remote areas is increasing, however, as a result of increased population growth in traditional communities, migration, and settlement. These factors are frequently the result of problems and policies in other locations (Brandon, 1996). Both PAs and the lands around them face increasing degradation as a result of large-scale development projects, expanding agricultural frontiers, illegal hunting, logging, firewood collection and uncontrolled burning.

Conservation and development are linked. Protected Areas can provide development opportunities for communities (Furze et al. 1996). In many cases, some forms of commercial resource use are entirely compatible with the goals of PAs. Protected Area status can increase national and international profiles, which can lead to greater development assistance for alternative energy, agro-forestry, sustainable agriculture and fisheries. Protected Areas are a powerful magnet for international development aid efforts and government programs (Stevens, 1997).



Employment can be created by preferential PA hiring policies. Opportunities for tourism development often increase with PA designation (Stevens, 1997).

More and more, PA managers are required to support the development of communities in and surrounding their reserves. Local solutions — that take into account the needs and desires of local people and conservation goals — are being developed. PAs will succeed in realising their conservation objectives only to the extent that the management of the land surrounding them is compatible with the objectives of the PA. This typically involves Protected Areas becoming parts of larger regional schemes.

The Annapurna Conservation Area in Nepal is one of the most geographically and culturally diverse conservation areas in the world. About 118,000 rural farmers live in the region, most of them poor. Although tourism has become important to the local economy, it has led to serious environmental problems. Forests have been cleared to provide fuel for cooking and heat for visitors. Expanding agriculture, water pollution, poor sanitation and litter on trekking routes have accelerated, compounded by a rapid growth in the resident population. Improving tourist development while, safeguarding the environment, was the focus of a royal directive in 1985. In response, the Annapurna Conservation

Area was gazetted in 1992. The area allows multiple uses, including hunting and collection of forest products. Visitor fees are used for local development and management authority has been delegated to the village area (Stevens, 1997). With the establishment of the project, high priority was given to reducing the environmental impact of trekkers and increasing local economic benefits from tourism. The initiative has made significant progress in motivating a sceptical local population to participate in resource decision-making. A kerosene regulation has substantially reduced deforestation; training programs have reduced the adverse impacts of tourism and improved the livelihoods of lodge owners (Brandon, 1996). An entry fee has been collected from tourists since 1989. Revenue passes directly to the PA and is used in community development projects. The community benefits from increased control over tourism and from revenue generation for community development projects, such as bridge and trail repair, agricultural extension, and women's programs. Community health and sanitation benefits include health clinics; mobile vaccinations and health education, latrines and rubbish pit construction and improved water supply. Area committees monitor and help manage environmental resources as well as environmental education and tourism education programs (Brandon, 1996).

Following Zimbabwe's independence in 1980, the country's Department of National Parks and Wildlife Management followed up on the new government's attempts to redress discriminatory legislation. It introduced the Communal Areas Management Program for Indigenous Resources (CAMPFIRE), which was aimed at involving local communities in wildlife management. CAMPFIRE is based on the premise that, if communities receive economic benefits from wildlife, they will change their attitudes and want to conserve and manage it.

CAMPFIRE focuses on establishing the conditions in which resources can be legitimately managed and sustainably exploited by resident communities (Murindagomo, 1990). Although it includes all natural resources, its emphasis is wildlife management in communal areas, particularly those lands adjacent to Protected Areas, where people and animals compete for scarce resources. Since 1989 CAMPFIRE has engaged more than a quarter of a million people in the practice of managing wildlife and reaping the benefits of using wild lands (CAMPFIRE website).

CAMPFIRE allocates wildlife property rights to community district councils. Allocation is subject to certain responsibilities, including endorsement by community members and implementation of a wildlife management plan. This has allowed councils to manage and profit from

hunting and viewing tourism; this results in a dividend to households as well as fund wildlife management and community development activities (Furze et al. 1996).

Masoka Ward in northeast Zimbabwe, near the border with Mozambique, was one of the country's poorest regions. It was one of the first wards to join CAMPFIRE, and by 1994 was earning over Z\$600,000 from a safari hunting concession. The money was used to build a health clinic, pay game guards and even fund a football team. Each of the roughly 140 households received more than four times their annual income for drought relief, either in cash or maize (CAMPFIRE website).

Most CAMPFIRE profits are generated through leasing trophy-hunting concessions to foreign hunters. A considerable proportion of its revenue comes from elephant hunts. The elephant population in Zimbabwe has doubled during the last 20 years but decreased in the rest of Africa. The benefits to community from wildlife use undertaken in a managed and locally regulated manner may ensure its long-term conservation.

## **2.6 Ecological Survey**

In a study of biodiversity conservation, ANZECC (1996) observed that in order to appreciate biodiversity loss, and set conservation priorities efficiently, it is necessary to assess biodiversity accurately. Information

on "extent of forests" is necessary for assessment of state and change in forest resources. It helps to develop trends of expansion or deforestation of forests and review the sustainability of forests on global, regional or local scale. Two main methods of biodiversity assessment, each with advantages and disadvantages are full biodiversity assessment and spot-check analysis.

A full assessment of the biodiversity of a given area requires identifying every individual species, from the smallest worm to the largest tree. Besides the compilation of a species list, it is also necessary to note the sizes and abundances of each organism in order to build up accurate pictures of the population. In most cases, some ecological notes are also made, particularly with regard to sessile organisms, so that further inferences can be made. This is a very comprehensive study, although time consuming, it is best saved for those ecosystems of particular ecological interest or sites that are considered pristine enough to be used for comparative purposes.

A spot check analysis on the other hand will identify most of the species in an area, particularly those that dominate or are particularly common. This allows us to create an accurate assessment of an area's biodiversity, without the time required to search out the less common and more elusive species. Using standard survey techniques most of the coastal

zones can be assessed and conservation and development recommendations made.

Unfortunately, biodiversity assessment is only a snapshot of an ever-changing ecosystem. Survey techniques of biodiversity assessment involve using point, line, belt transects, quadrants and timed swims to conduct the sampling. Transect and quadrant surveying is standard, whilst timed swims are a novel technique used in surveys for fish. Other surveys, such as Reef check, or Aqua naught are highly regulated. It is noteworthy that repeated assessment gives a much better idea of conservation status, as well as monitoring any management or conservation techniques under implementation.

The Landscape Health Assessment in Australia in 2001 developed and collated the sub regions information for Australia and was the first Australia-wide assessment to use sub regions as a reporting unit. The assessment was on terrestrial biodiversity, with some elements of freshwater aquatic systems included and was not intended to downplay the importance of biodiversity and its conservation in freshwater and marine systems, but reflects the resources and time available and complements the Australian Land and Water Resources Audit's assessment of rivers and estuaries (NLWRA, 2001). This assessment

involved a mix of quantitative analysis and the collation of expert opinion drawing upon scientists and field staff within conservation agencies and research institutions across Australia. Natural values were recorded in each sub region at a range of scales. For example, rare landscape features such as lava tubes, rare ecosystems and rare species were recorded along with centers of endemism, refuge and areas with high levels of species or ecosystem richness.

The "ecosystem approach" which was used in the study is the primary framework for the implementation of the Convention on Biodiversity and requires that in the assessment of biodiversity, all the components of biodiversity be located. This approach is a strategy for management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential processes, functions and interactions among organisms and their environment, and among ecosystems. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems. The report of the study has also indicated that "In order to accelerate environmental research without having to wait for results from traditional taxonomy, which is perceived

to be slow to deliver because it is based on monographic treatments, new methodologies have been developed for assessing biodiversity". These include inventories, surveys, rapid biodiversity assessment, monitoring, and the use of 'Indicator species'.

According to the report, rapid-assessment methods and sampling for indicator species are for monitoring selected biotopes of critical value, whilst baseline studies of pristine or near pristine biotopes are for monitoring "trouble spots". However, medium-levels identification skills are necessary in all situations. Therefore, collaboration between staff with Para taxonomic skills is also necessary. It was further noted that: "Monitoring changes in biological diversity at the species level essentially entails monitoring changes in the distribution and abundance of species, and for many species, this is likely to need detailed monitoring and population modeling over decades".

The study found that the major problem with species is that there are very large numbers of them, a high proportion of which, particularly invertebrates, are yet un-described. Moreover, the identification of described species often requires a high level of expertise. Identifying all species in even a limited area is thus a very onerous task and generally impracticable. However, several studies have shown that higher taxonomic richness (using genera or families) is a useful surrogate for



species richness, and ultimately a more remote surrogate than species for gene or character richness. Another common solution to the impossibility of performing complete counts of organisms is to select certain taxa as "indicator group" to act as surrogates for the complete biological diversity. The use of indicator species, which is species whose status provides information on the overall condition of the ecosystem and of other species in the ecosystem, is encouraged.

In identifying and monitoring ecosystems and habitats, the classification of the natural environment is far more problematic than the classification of organisms: In fact, the natural environment is a highly variable continuum and difficult to divide into a series of discrete, discontinuous units. Oliver (1992) opined that the use of Geographic Information Systems (GIS) is one of the most productive avenues for the development of biodiversity assessment. It may obviate the need to develop the complex habitat and ecosystem classifications. This is because representations of different, measurable attributes of the environment can be stored in separate layers within a GIS. Examples of such attributes are: soil characteristics; altitude; rainfall; percent canopy cover; mean height of dominant vegetation; and distributions of individual species. The baseline maps used may be generated from satellite data, aerial survey, and existing maps or created by field survey

and expert advice. Different combinations of these disaggregated data sets can be chosen to generate maps according to need, without having to choose a predetermined classification system. Such systems also lend themselves to extrapolation in that, for example, species distributions can be predicted in un-surveyed areas based on congruence in environmental characteristics with areas known to contain the species.

Oliver (1992) believes that ecosystem structure variables are most promising indicators of biodiversity because they can offer a lot of information on the state of ecosystems over large areas for relatively low effort. Many aspects of quality can be captured by identifying key-ecosystem structure variables, which can indicate if the ecosystem is functioning correctly or not. For example, a crude measure of quality might be the total number of well-specified habitat types observed within a sample area(s) relative to the postulated baseline number. Depending on the area and the available capacity, they might be both short term and long measures. It is obvious that remote sensing techniques will play a major role in this category. He is also of the view that: "If biodiversity and its monitoring are to be considered, it should be in relation to sustainable forest management in terms of the populations making up forests". It is necessary that the essential features and key elements to be observed at regular intervals, especially in terms of forest

populations include landscape units or management units (plots ranging from several hectares to several tens of hectares), trees diameter, height and features of the cover of all trees above a specified diameter. This is to ensure that precise picture of the structure of the population emerges.

As far as the inventory itself and its approaches are concerned, the wide variety of observable elements means that a proposed methodology for assessing and monitoring biodiversity would, ideally depend on sampling, inasmuch as it is important to provide information on spatial variability and the internal heterogeneity of the population. It would be helpful to stratify the sample units in order to ensure that areas with high biodiversity are correctly represented in the sample.

Oliver (1992) further suggested that: in more practical terms, observation should concentrate primarily on the following points, if necessary, adapted to the particular conditions of the population in question such as: the main function of the population (production, Protected Area or Biological, Forestry and Genetic Conservation Area). The history of the population (silvicultural systems or previous situation, human impact); exceptional habitats (old wild forest, natural forest, special geomorphology, rare plant forms, etc.); landscape (open, closed, distant); and health conditions (atmospheric pollution, damage from

various sources, etc.) are vital. Other conditions of the population to be closely observed are grasses, leafy plants, fruits and fungi; forest margins (structure, composition, length and breadth); and other special features (special woods, unusual trees).

In a study of non-timber variables in forest inventory, PeIz (1995) found that in a traditional forest inventory, variables relating to the environment tend to be assembled in terms of their influence on forest productivity but this does not, as a priority, preclude their being put to other uses. Indicators of the structural diversity of forests can often be derived from information already easily available, such as distribution of diameters, distribution of tree species, height of trees, characterization of the levels of the population, social position of trees, numbers of living and dead trees.

He was of the opinion that the different variables relating to trees and the structure of populations are also directly connected with other elements in the forest ecosystem, soil, vegetation and animal life, which means that a large number of the variables already assembled in inventories focusing on timber resources, can be turned to a wider range of uses. In terms of the individual (tree), other variables can also be introduced, apart from species, diameter and social position. These may concern

origin, bark thickness, height of the green crown, increases in diameter and height, state of health and age.

In their study on forest inventory Poso *et al* (1995) agree that observations and measurements in the field are still the best ways of ensuring a good inventory in terms of precision on the variables to be collected. However, the use of remote sensing from space will be an increasingly useful tool and, in the near future, airborne captors will radically improve the quality of remote sensing and provide completely new sources of information. Such a technique should find a very wide field of application in the precise delineation of habitats and forest populations. For example, it could be used as basis for a stratification, which would make the organization of field samplings much more efficient and precise, ensuring a better view of the levels involved in biodiversity.

A research on biodiversity was conducted by Jean *et al* (2003), in the 60,150 hectares Marojejy Strict Nature Reserve, Madagascar, in which five sites along an elevation transect from 400 -1900 meters were surveyed for 10 days each. Camps were established in the middle of an elevation zone 150m in breadth. All camps were near streams in closed-canopy forest with the exception of the 1875m camp. Bird species lists

were compiled by direct observation while walking along forest trails, call playback of bird calls using a tape-recorder, static observation from broken-canopy watch points and by mist-netting. Point-counts were made at 150 m intervals along marked and measured forest trails. At each elevation zone, a minimum of 15 point-count sites were established on varied terrain including ridge, slope, and valley-bottom. Each point-count site was sampled twice, once between 04:30 am and 06:30 am and once between 06:30 am and 09:00 am. During each sample count, which lasted for ten minutes, the following data on each bird contact were noted: species, estimated distance from observer to nearest individual, nature of contact (song, call, wing noise or visual) and time of contact.

Results related to the bird species inventory and point-counts show that on the overall, 86 species of birds were recorded during the survey. Based on the point-count data, the overall number of species was highest at the low-altitude and mid-altitude sites (400, 775, and 1225m). These sites were also the most diverse. According to the technical report, they represent the highest number of restricted-forest bird species. At elevation zone 1875m, the high montane forest, bird species were represented by savanna-type species, such as *Saxicola torquata* and *Mirafra hova*. The report indicated that forty percent of the endangered avifauna of Madagascar is found in Marojejy, whereas 38.8% of the

vulnerable species and 50% of the threatened species occur within the reserve.

During the ten days in each elevation zone, two survey methods were used to collect data on primates - the line transect method, and an experimental technique that used both transect and non-transect observations. Surveys were conducted during both the day and night. The line transect method was used along four to six different trails at each camp. When groups were detected along the transect trail, the perpendicular distance from the animal to the transect was estimated for the first individual in each sighted group. When animals were sighted, pelage color, body size, height in tree, type of habitat, location along the Transect and behavioral and feeding information were noted for each individual as often as possible. For lemurs detected in groups (mainly diurnal species), the demographic composition of the group was recorded. The second census method incorporated both transect and non-transect sightings of animals to arrive at a density estimate. All sightings of lemurs by primatologists and other reliable researchers on the expedition were recorded, noting information similar to that collected on the Transects. Groups were identified by composition and location as well as by individuals with distinctive pelage characters. Groups or

individuals seen more than three times were plotted on a map of the reserve. The outermost of these points were plotted using a Global Positioning System (GPS) and corrected via topographical, hydrological and altimeter data.

Results showed that ten primate species were recorded within the reserve across all elevations nine of those species were directly observed, whereas one (*Phaner furcifer*) was only heard. None of the five elevation zones contained all ten species. The report further showed that: since the number of sightings at all elevation zones was insufficient to calculate transect width, no estimates of lemur densities were made, for the line transects data. The methodology of this research seems to be sound because the sample size is adequately representative of the population. It is obvious that for any good survey of biodiversity, more time, personnel and resources must be available for data collection and subsequent analysis.

In another study on Biometrics and NTFP Inventory, Wong (2000) agrees that: "Sampling designs are intended to reduce the possibility of bias in the results. In principle, a census is the ideal as it measures the entire population but it is only practical over relatively small areas or for very high value products. Random and systematic designs with or



without stratification are the norm for forest surveys. Experimental designs are used mainly for harvesting impact studies and usually used paired sites". The following case study presents a summary of the outcome of a trial of ACS for *Prunus africana* on Mount Cameroon.

In 1999, the Office National de Développement des Forêts (ONADEF) of the Cameroon Government with support from DFID through the Mount Cameroon Project and GTZ undertook a trial of ACS for *Prunus* on Mount Cameroon ACS was applied in an area, which had previously been sampled using conventional systematic strip sampling, which permitted a comparison of the two methods.

The conventional sampling comprised a series of 20m transects spaced 2km apart running up the mountain. Each transect was divided into 250m segments. In total 687 segments were enumerated which yielded 394 trees.

The ACS was initiated from a systematic sample of circular (0.2ha) plots laid 100m apart on transects. When more than a set number of *Prunus* was found in one of these plots (e.g.  $>$  or  $=$  2 stems over 10cm diameter), identical plots were added on a 100m rectangular grid until a predetermined stopping rule was encountered (normally the same rule, i.e.  $<$  2 trees over 10cm). This exercise yielded a sample of 989 sample units, and 1,906 trees. The key finding as reported by Wong (1999) is

the relative efficiency of the ACS method vide the cost of its usage. It was reported that: “Using the initial systematic strips as the basis of comparison, the ACS sample cost 54% more than the strip sample but had a relative efficiency of 2.64 (for trees greater than 10cm in diameter)”. Therefore, the choice of an appropriate sampling design for any inventory must be guided by not only its efficiency but also the availability of adequate financial resources necessary for the efficient conduct of the inventory.

Peter et al (2003) examined changes in tree population structure and composition over an 18-year period (1981–1999) in three plots located at the center of the Isecheno study site in the Kakamega Forest, Kenya, a forest with a history of logging and other anthropogenic disturbance. This study was through the monitoring of three vegetation plots located at the center of Isecheno. These plots of 0.77ha (Plot 1), 0.49ha (Plot 2), and 0.49ha (Plot 3) were established in 1981 by Cords (1984). Plots were chosen so as not to be intersected by trails through the forest and to be representative of the least disturbed areas of forest at Isecheno. Plots were broken down into 10m × 10m subplots and the perimeters of these subplots were demarcated with flagging.

The species identity and girth at breast height (GBH) of all trees 30cm GBH (10cm DBH) were recorded. GBH measurements were then converted to DBH values to be comparable to most other studies of tropical rainforest tree populations Cords'. Three plots were relocated and re-censused by Forrestel in 1999. Relocation of these plots was made possible by the detailed descriptions of the plots' locations provided by Cords' maps and field notes from 1981. The area surveyed in Plots 2 and 3 remained unchanged while the area surveyed in Plot 1 increased slightly to 0.81ha in 1999. Data on species identity, GBH, and DBH in 1999 were gathered via the same methods as in 1981. In the studies by both Fashing and Scully in 2001, tree species identity and GBH were recorded for all trees 30 cm GBH whose trunks were located within 5 m on either side of the transect. GBH measurements were then converted to DBH values. Transects consisted of a series of adjacent 25m × 10m segments that followed existing trails through the forest. At Fashing's LHD site, a total of nine transects were censused through a relatively homogeneous area for 4.15ha surveyed.

In Scully's (2001) study, two peripheral areas at Isecheno were evaluated. First, Scully censused 0.85ha of transects at a site (heavily human disturbed or HHD) which was located near a tea field and human settlement on the western edge of Isecheno. Local people are regularly

spotted in this area and signs of ongoing forest disturbance (e.g. pole cutting and firewood collection) have been present throughout the past two decades. Second, Scully censused 0.70ha of transects at another site located deeper within the forest on the eastern periphery of Isecheno. Though it is located further from human settlement and is therefore less accessible than the HHD site, local people en route to a distant glade have used this second site (cattle disturbed or CD) regularly over at least the last two decades as a cattle path. The HHD and CD sites are within 0.5km of the central Isecheno site censused by Cords, Forrestel and Fashing, and were also subjected to the selective logging of the 1940s.

This long-term research suggests that conservation activities carried out in central Isecheno over the past few decades have been effective. Because of its proximity to the forest station and perhaps its location in the heart of an area where scientists have conducted biological research over the past three decades (Cords 1987 and Fashing 2001), central Isecheno has not suffered from the disturbance that has clearly affected the HHD and CD sites on its periphery. While it is encouraging that central Isecheno appears to have fared well in recent years, it is alarming to contemplate the level of disturbance that might be occurring further in the field if areas like the HHD and CD sites less than 1km away are in such poor condition.

Indeed, the heterogeneity in forest condition over small spatial scales revealed by the study underscores the challenges of making representative surveys in forests like this one, where human influence is not uniformly distributed in space. The study has revealed that further long-term research on tree population dynamics in both undisturbed and disturbed regions of the forest is critical to improving the understanding of the levels and types of disturbance the forest can withstand before adverse effects begin to emerge. It is obvious that with the high human population in the region, it will be difficult to terminate illegal activities in the forest, but protection efforts will need to increase if much forest is to remain outside of the few areas, which are currently effectively protected. One of the greatest lessons learnt in these studies is that there is need for consistency in the sampling design in any continuous research aimed at monitoring vegetation, for effective and sound comparison of periodic studies, which are the basis for monitoring the dynamics of tree population, over a long period.

In March 1993, the African Development Bank (ADB), Abidjan, approved a grant of USS 1.72 million for the implementation of a study tagged "The Forest Resources Study of Nigeria". The overall objective of the study was to enhance industrial forestry development in the country and to facilitate management of its remaining forest resources in

all efficient and environmentally adequate way. Essentially, the study consisted of inventory of the high forest areas in the southern one quarter of the country i.e. about 20,000 km<sup>2</sup> and inventory of forest plantations throughout the country, except those in the arid north. Some sub-studies, which included private sector involvement and socio-economic assessment, wood-based industrial sector review, market and pricing policy assessment, review of forest legislation, survey of indigenous fruit trees (IFTs), and silvicultural investigation of selected IFTs, were also done. Only the following states in the arid north were not covered by the study: Sokoto/Zamfara, Katsina, Jigawa, Yobe, Bauchi/Gombe and Borno). Beak Consultants of Canada implemented the FRS as a consultancy assignment with the support of the Federal Government of Nigeria (FGN).

Prior to the inventory of the high forests and plantations, a Preliminary Information Gathering (PIG) exercise was conducted to facilitate stratification of forest types, densities and site characteristics. Geographic Information System (GIS) technology was also used to isolate specific forest strata. Stratified Random Sampling (SRS) was used for the high forest inventory. The only limitation imposed for this inventory approach was the requirement to distribute inventory plots

across the 14 High Forest States. In order to perform the exercise efficiently, sampling units were taken as point clusters. Each cluster of size 1km by 200m in area, was composed of two tracts (each of 200m by 200m) located 600m apart at either end of the 1km line. Within each tract, four plots of 50m x 50m were established at the corners to serve as recording unit for the enumeration. Each cluster therefore consisted of eight plots or enumeration units. Because of the difficult terrain in the Mangrove, Forested Fresh Water swamp and Riparian Forests the size of the cluster was reduced by half i.e. the size of the cluster reduced to 500m x 100m while those of the tract and plot were 100m x 100m and 25m x 25m respectively. The sampling intensity used for inventory of the high Forest was estimated at 0.01% (Beak Consultants, 1998).

Beak Consultants (1998) also used stratified random sampling to undertake the inventory of forest plantations in the study area. The PIG exercise also facilitated the stratification of plantations according to ecological zones, species, density, soil type and age. In order to satisfy the objectives of this inventory, more plots were established within a plantation to capture variability within than to establish fewer but larger plots. Plots of 0.01 ha were therefore randomly established in selected plantations proportional to the plantations sizes. According to Beak

Consultants (1998), 958 plots were enumerated each measuring 0.01ha in size. A total area of 9.58ha was enumerated thus giving a sampling intensity of approximately 0.01%. A major limitation of the inventory exercise is its coverage of only twenty-eight (28) states of the Federal Republic of Nigeria. The inventory did not include eight (8) arid states of Northern Nigeria.

Geomatics (2007) conducted a biodiversity assessment of the Kainji Lake National Park in a baseline study of the Protected Area, which is made up of two sectors (Borgu and Zugurma). In the methodology, each sector was stratified according to existing vegetation types. From each vegetation type, sample areas were selected for assessment of plant and animal species diversity. Each sample area was geo-referenced by obtaining its coordinates, using GPS. A modified Point-Centered Quadrant (PCQ) method as described by Pollard (1973) was used in obtaining information on species composition, frequency of occurrence and basal area. The method entails the laying of transects perpendicular to a selected baseline, and locating sampling points at regular intervals along each transect. At each sampling point, the vegetation structure was described and the enumeration of surrounding plant species was carried out.



According to the report of the study, a sample plot of 25m x 25m in size was laid and enumerated in areas where it was difficult to use the PCQ method. Enumeration involved identification of all plant species, where possible; and measuring the girth at breast height (1.3m tree height) of all woody species. Specimens of all plant species that could not be identified on the field were collected and taken to the herbarium at the Forestry Research Institute of Nigeria (FRIN) for identification. The type of vegetation of each plot was noted and the structure described. As part of the biodiversity assessment, observations were also recorded on the type of wild animals present in the habitat. The presence of wildlife species were confirmed either through direct observation or indirectly by using animal indices such as footprints and droppings. Questionnaires were administered to the Park Officials whilst in-depth interviews were conducted in the support zone communities on the current conservation status of major wildlife species in the Park.

The study identified four major vegetation types in the park. These are *Detarium* woodland savanna, *Diospyros* dry forest, *Burkea* woodland and *Danielia/Burkea* woodland. The species composition and abundance recorded for each vegetation type as presented in the findings of the study shows that: the two most prominent species in the *Detarium*

woodland savanna are *Terminalia glaucescence* and *Combretum* species, while those in the *Diospyros* dry forest are *Polsphaeria arbuscule* and *Diospyros mespiliformis*. In the *Burkea* woodland, *Grewia molis* and *Combretum* species are the most prominent, while in the *Danielia/Burkea* woodland, *Terminalia glaucescence*, *Vitelaria paradoxa* and *Detarium microcarpum* are the most prominent. The report also recommended biological indicator for each of the four vegetation types, which include *Terminalia glaucescence*, *Diospyros mespiliformis*, *vitelaria paradoxa* and *Terminalia glaucescence* respectively.

The study also did some qualitative analysis of wildlife species abundance in the four specific habitats of mixed woodland, *Isoberlinia* woodland, *diospyros mespiliformis* dry forest and Oli complex riparian forest. The analysis generally shows that the commonest species include *Tragelaprus scriptus* (Bushbuck), *Kobus kobus* (Kob), *Ourebia ourebia* (Oribi), *Sylvicapra grimms* (Grimm's duiker), *Papio anubis* (Baboon); whilst the uncommon ones are: *Aleelaphus buselaphus* (Hartebeast), *Hippotragus scriptus* (Roan antelope), *Cercopithecus patas* (Patas monkey), *Phacocoherus aethiopicus* (Warthog), *Panthera leo* (Lion) and *Cephalophus rufilatus* (Red flanked duiker). One wildlife species,

the *Black and white Celorus monkey* was classified as rare and endangered. On the status of wildlife conservation, Geomatics (2007) concluded that: "There has been considerable degradation of the Kainji Lake National Park habitat due to encroachment and grazing by cattle and illegal hunting by poachers; and these have negatively impacted on wildlife conservation".

Oguntala (1981) has studied the dynamics of tree population in Permanent Sample Plot 81 (PSP 81) in Gambari Forest Reserve, which has an area of approximately 1.875 hectares. This plot is one of the many inviolate plots demarcated within Forest Reserves in various parts of the country by the Federal Department of Forestry Research (now Forestry Research Institute of Nigeria (FRIN)) in the early 1950's for the purpose of scientific studies. The study focused on the pattern of tree growth in PSP 81 between 1956 and 1978. The fundamental problem responsible for the study was the silvicultural system called Tropical Shelter wood System (TSS) administered on most Nigerian forests between 1956 and 1960 coupled with massive deforestation during the period, which had major effects on the structure of the Nigerian forests.

In the methodology of the study, a stratified multistage block system was used and a hundred percent assessment of all trees 15cm and above at

1.35 meters height was carried out in each and all the sub blocks. Each tree was identified, numbered and painted red at the point of girthing. In this manner, it was possible to trace each tree in each sub block. The aim of this was to reduce the possibility of errors arising when trees are re-measured. The major findings of the study included: changes in total number of trees in girth classes, girth increment and total number of individual tree; and mortality and recruitment.

These findings show that there was steady decrease in the total number of trees in the plot resulting from a great mortality of trees 60cm girth and below. 705 trees were reported to have died within the 1.879ha in a period of 22 years. Many of the dead trees observed were young, and of low girth classes. Mortality, it was observed was due to their inability to receive adequate light. The findings also indicate that by analyzing the demographic characteristics of tree population in a forest in addition to other parameters of growth over a long period time, it is possible to determine the characteristics of many species, a necessity in the understanding of the functioning of the forest ecosystem.

Development Research Bureau (2004) conducted an Ecological Survey on KLNP sponsored by GEF. Socio-economic survey of some SZCs of KLNP was carried out. Some of the survey tools employed were the

Household survey Questionnaires, Focus Group Discussions and In-depth Interviews. The HSQs translated to Hausa Language were administered in selected settlements in the PAs and SZCs. Complete enumeration of inhabitants in the study sites is impracticable due to resource constraints. Consequently, samples were selected from each of the study sites. A multi-stage sampling procedure was used for the purpose of selecting respondents. The first stage involved the construction of concentric circles on the administrative/land use map around the PA to cover all the land area and settlements in the SZCs. The distance from each circle ranged between 0.5 and 2 kilometres. The underlying principle is to assess any distance-decay effect and implications for the sustainable management of the PAs and SZCs. Following this stratification, settlements were selected randomly from each sector of the different concentric zones.

In order to bring order and some level of precision, about 20 percent of the settlements in the SZC were sampled. Despite the homogeneity of most of the settlements, each settlement selected was clustered into sampling wards, and listed alphabetically by name. From this list, every odd numbered ward was further selected. In each of the selected ward, the households sampled were randomly selected. The respondent in each household was the head and where he/she was not available, the

next most senior person was interviewed. In a situation where a household was uncooperative, the enumerators moved to the next household within the compound or the next compound/house for replacement. This procedure was followed until the desired sample size per settlement was achieved.

The unit of analysis in the report is the randomly selected household heads (male or female) who then provided information about the activities to the members of the household. This is important because it is the collective activities of members of the household that will have impact on the PA and in the SZC. Since individual members cannot be interviewed due to large family size, additional information were elicited through

(i) Focus Group Discussion (FGD) involving the following groups

Youth (male and female separately)

Adults (male and female separately);

(ii) In-depth Interview (IDI) of key informants (i.e. opinion leader, occupation groups, religious leaders, etc.).

(a) Focus Group Discussions (FGDs)

The objectives of the FGDs are to: (a) generate information to complement the quantitative data and; (b) focus the study in order to elicit more information on beliefs, attitudes and practices related to basic

needs, community development, livelihoods, natural resources conservation, poaching and resource evaluation etc. In the study site, FGDs were conducted with 6-10 persons per FGD. The participants in each FGD were selected as follows:

Male Youth Group

Female Youth Group

Male Adult Group

Female Adult Group

(b) In-Depth Interviews (IDIs)

In-Depth Interviews (IDIs) were also conducted in selected settlements in the study sites. The interviewees were made up of key informants (e.g. opinion leaders, and heads of farmers' groups etc.) in the PA and SZC. The issues addressed during these interviews centered on how to manage the PA while at the same time providing economic opportunities for the SZC.

To facilitate proper execution of the study, field workers were recruited in the study site. Preference was given to indigenes with post-secondary qualification. This was done to avoid communication and mobilization problems. Furthermore, all prospective field workers were trained prior to HSQ administration and FGDs.

In order to control the quality of the data, DRB Consultants designated the more experienced field workers as Field Supervisors, whose main responsibility was to ensure that all procedures adopted during training were adhered to. Also, the consultants were involved in direct verification of completed HSQs by randomly selecting some for spot checks. Poorly completed HSQs were replaced immediately they were discovered.

The quantitative data were cleaned while the open-ended questions in the HSQs were coded. Codes were assigned to the various responses using a derived codebook. Thereafter, the data were entered into the Statistical Package for the Social Sciences (SPSS) for the purpose of generating frequencies, percentages, means and cross-tabulations etc. Qualitative data gathered especially FGDs were transcribed and entered into a thematic matrix which allows the configuration of common patterns and differences. Important informations are reported in the report to support findings from qualitative data. The reports emanating from the IDIs were also carefully content analyzed for the purposes of preparing the report.

## **2.7 Measuring Intervention Impacts**

Evaluations are periodic, objective assessments of a planned, ongoing or completed project, programme, or policy. Evaluations are used to



answer specific questions often related to design, implementation and/or results. In contrast to monitoring, they are carried out at discreet points in time. They aim to determine the relevance and fulfillment of certain objectives and often take an in-depth look into why certain results are being observed. In other cases, they can be used to assess extant whether certain results could be achieved by using simulations.

In the 1970s, Indonesia's innovative family planning efforts gained international recognitions for their success. Such acclaim arose from the observation of two parallel phenomena: (i) fertility rates declined by 22% between 1970 and 1980, by 25% between 1981 and 1990, and a bit more moderately between 1991 and 1994; (ii) during the same period, the Indonesian Government substantially increased resources allocated to family planning (particularly contraceptive subsidies). From these contemporaneous events, many concluded that increased investment in family planning policies lead to lower facility rate.

A team of researchers tested whether family planning programmes indeed lowered fertility rate by using micro data and rigorous impact evaluation methods (Gertler and Molyneaux 1994, 2000). They found that family planning programs only had a moderate impact on fertility decline. However, they also found that a large-scale education program for girls was undertaken during the same period. Before the program,

very few fertile women had finished primary education. After the program, women entering fertile age had benefited from additional education. When the oil boom led to economic expansion and increased demand for labour in Indonesia, educated women's labour-force participation increased significantly. As the value of women's time at work rose, so did the use of contraceptives. In the end, higher wages and empowerment explained 70% of the observed decline in fertility, more than investment in family planning programmes.

These evaluation results informed policymakers' resource allocation decisions. Loans were re-programmed away from contraception subsidies and towards programmes that increased women's school enrollment. While the ultimate goal of both types of programmes was similar, evaluation studies had shown that lower fertility rates could be obtained more efficiently in the Indonesia context by investing in education relatively to family planning.

The example shows how information from impact evaluations constitutes a powerful instrument to guide resources allocation. In Indonesia, impact evaluation lead to rechanneling resources towards the most cost effective programmes. In this sense, investment in development policy can gain efficiency when well-designed impact evaluations are used to inform policymakers' decisions (Gertler and

Molyneaux 1994, 2000).

In the early 1970s, an evaluation was designed to test a pilot programme addressing childhood malnutrition in Cali, Colombia. The aim was to determine what levels of education, nutrition and health services were needed to reduce malnutrition among preschool children from low-income families. The key questions were how long such programmes should last and if these efforts could also lead to improvements in cognitive development.

The programme was implemented by the Human Ecology Research Station with the support of the Colombian Ministry of Education. Even though the program was made available to all eligible participants, the evaluators were able to use randomized assignment in combination with a phase-in approach to look at the impact of different treatment durations on similar groups of children.

The evaluators first used a screening process to identify the target group of malnourished children. Then the eligible 333 children were classified into 20 sectors by neighborhood, and each sector was randomly assigned to one of four treatment groups. The groups differed only in the amount of time that they spent in the programme and the sequence in which they started the treatment. Group 4 started the earliest and was exposed to the treatment for the longest period, followed by groups 3, 2,

and then 1.

The children in the treatment groups participated in six hours of health care and educational activities a day and were provided with food and nutritional supplements. Their progress was tracked over the course of the programme through cognitive tests at regular intervals.

Because of the randomized design, any differences between the groups could be attributed to differences in the duration of the treatment. The children who were in the programme for the longest period of time demonstrated the greatest gains in cognitive improvement. Results on the Stanford-Binet intelligence tests, reported as mental age minus chronological age, were at -5 months for the longest treatment group compared to -15 months for the shortest treatment group. This example illustrates how programme implementers and policy makers are able to use evaluations with multiple treatment arms to determine the most effective programme alternative (McKay, Mckay, Gomez, Sinisterra and Lloreda, 1978).

## CHAPTER THREE

### 3.0 MATERIALS AND METHODS

#### 3.1 Definition of Impact Evaluation

Impact evaluation is a particular type of evaluation that seeks to answer *cause* and *effect* questions. Unlike general evaluation which can answer many different types of questions, impact evaluations are structured around one particular type of question: *is a programme responsible for a particular outcome of interest?*

#### 3.2 Impact Evaluation question of this study

The study wants to find out if the alternative livelihood support of the GEF Project has pacified the SZCs of Kainji Lake National Park into cooperating to support the protection of the Park which resulted in improving the Biodiversity of the Park.

Imas and Rist (2009) grouped evaluations into three types of categories, depending on the type of question addressed by the evaluation:

- **Descriptive questions** seek to determine what is taking place. They often describe aspects of a process, condition, set of views or organizational relationship.
- **Normative questions** compare what is taking place and often assess activities and the accomplishment of targets. Normative questions are often applied to inputs, activities and outputs.

- Cause and effect questions assess what difference the intervention makes and look at outcomes. They look at attribution and imply a comparison of performance on one or more outcome measures both before and after an intervention and with and without the intervention.

The focus on causality and attribution is the hallmark of impact evaluations. In a nutshell, impact evaluations assess whether outcomes are attributable specifically to the project, programme or policy intervention of interest. To do so they estimate the so-called “Counterfactual,” this is, what the state of the programme beneficiaries would have been if they had not benefited from the program. In practice, this estimation uses a so-called “Comparison” group to estimate what would have happened to the programme beneficiary in absence of the programme.

Programmes and policies are designed to change outcomes such as raising incomes, improving learning, or reducing illness. Whether or not these outcomes are being achieved constitute a crucial public policy question, yet one that is not often examined. More commonly, programme managers and policymakers are focused on controlling and measuring the inputs and immediate outputs of a programme – how much money is spent, how many people are reached – not on assessing

whether programmes have achieved their intended goals of improving performance or well-being.

An impact evaluation assesses the changes in well being of individuals that can be attributed to a particular project, programme or policy. This focus on attribution is the hallmark of impact evaluations. Correspondingly, identifying the *causal relationship* between the project, programme or policy and the outcome of interest is the central challenge in carrying out effective impact evaluations.

In this study the third category of Imas and Rist's question is the likely type of question addressed. We are trying to establish causality of the outcome. To answer our above impact evaluation question for this study, the equation below was very useful:

$$\alpha = (Y/P=1) - (Y/P=0)$$

The above formula suggest that the Causal Impact  $\alpha$  of a Programme **P** on an outcome **Y** is the difference between an outcome **Y** with the programme (in other words, when **P=1**) and the same outcome **Y** without the programme (i.e. when **P=0**).

The challenge here for the above equation to work is to ensure that any other reason that will affect the outcome is eliminated leaving out only our programme (causal) of interest, that is to get the same individual (community) that at the same time has received and not received the

GEF support. To overcome this, we will try to establish the causality of our outcome by developing a perfect clone of our individual (community) of interest that has not received the programme. Since we have to observe our individual (community) of interest in his two different states (with and without the programme) simultaneously. This is the so-called *counterfactual problem*. Counterfactual is an estimate of what the outcome **Y** would have been in the absence of the programme **P**.

### **3.3 Sampling Technique**

All the Support Zone Communities of Kainji Lake National Park are eligible for this intervention because they suffer the same problem of restrictions from exploiting the natural endowment of the Park and the excruciating poverty exclusive to SZCs of Protected Areas. The resources available for this intervention cannot go round all the communities adjacent to the Park, this informed the need for a strategy to equally give the same opportunity to all the communities to benefit from the scarce support. To reconcile the universal eligibility to benefit of all the SZCs and available resources, randomized assignment was adopted so as to extend to all the SZCs equal opportunity to participate/enjoy the support. When a programme's benefits are assigned at random over a large eligible population, we generate a robust estimate



of the counterfactual, considered the gold standard of impact evaluation (Gertler, Martinez, Premand, Rawlings and Vermeersch, 2010). Since the benefit available can only go to only forty communities, the administrators of the Project randomized the benefit so that, all the over one hundred communities had equal opportunity to be selected through raffle draw. When the forty communities were selected, due to personnel constraints to oversee the Project in all the communities, the project was phased-out, So that, twenty communities from the forty successful communities received the support in the first year and the other twenty received theirs the following year.

#### **3.4 Sources and Methods of Data Collection**

The sources of data for this study were primary and secondary sources, where Focus Group Discussion Guide was developed to collect information on the socio-economic background of the average community members. This questionnaire targeted and collected information from the groups on GEF intervention in their communities and on the impact such intervention had on them. Since the target population for this evaluation is rural dwellers that are likely to have limited formal education, as to fill out the questionnaires by themselves the respondents were directly interviewed by the researcher and recorded.

In this study, FGDs are segregated by age group and gender, that is, there were separate FGDs for females (youths), female (elderly women) and for males (youths and old) groups. Items listed in the guide include composition, types of animals that were frequently encroaching into their farms, as well as impact of the LEEMP-GEF activities on their health, income/livelihood, education and general welfare of community members, etc. Sample of questionnaire is at the appendix 1.

Out of the forty communities, twenty four were randomly selected for this survey and ten households sampled in each community were selected using the systematic sampling technique. The technique involved selection of the first house and every fifth house until ten houses have been selected. Two types of houses were encountered, namely, houses with single household and houses with multiple households. If a house with multiple households falls within the sample, only one household is considered within the house. The study was undertaken in six days; four communities per day, giving a total of forty (40) households per day and a total of two hundred and forty (240) households for the entire study.

### **3.5 Methods Of Data Analysis**

The data analysis was carried out by using descriptive statistics to analyse the first and last objectives (socio-economy and constraints) of

the study, while the counterfactual estimation was used to analyse the impact of the intervention on income/employment of the community and collaboration of the community with Park management in Park Protection and Conservation. A Quick Biodiversity Survey (QBS) was used, using the Indicator Species to analyse the Impact of the Intervention on the Fauna and Flora of the Study area.

### **3.5.1 Descriptive statistics**

Descriptive statistics such as frequency distribution, percentages and means were used to describe the socio-economic statuses of the SZCs and also the major constraints militating against the KLNP achieving its mandate of conserving the natural resources of the Park.

### **3.5.2 Counterfactual Estimation**

This strategy was used to describe the livelihood/employment status and the collaboration of SZCs with the Park management in managing the Park. The key challenge is to identify a valid comparison (non-participant) individual or group that is statistically identical to the treatment group (participant) with their only difference in characteristic is the exposure to the intervention or not. To estimate a good counterfactual we would have to make these important assumptions that, the two groups must be similar in two ways, i.e.

(i) first, the treatment and comparison groups need to be identical in the absence of the intervention. While it is not necessary that every unit in the treatment be identical to every unit in the comparison group, on average the characteristics of the treatment and comparison groups should be the same. E.g. the average age in the treatment and comparison group should be the same

(ii) the treatment and comparison groups would need to react in the same way to the programme or intervention (Gertler et al, 2010).

Fortunately, in this LEEMP-GEF intervention a good counterfactual community can be estimated by picking on any of the community in the second set of twenty phased out communities that were supported because they have satisfied the above conditions of a good counterfactual estimation.

The data were mainly descriptive statistics, which involved percentage calculation, averages and use of tables to summarise data for discussion.

A template was developed to summarize the FGD data from the communities and ensuring triangulation of the data from different sources, to explain and further support findings. The averages of the parameters in the treatment communities that were considered in this study and the equivalent average parameters in the counterfactual

community were run in the equation below to ascertain the impact of the intervention.

$$\alpha = (Y/P=1) - (Y/P=0)$$

**Where;**

$\alpha$  = Causal Impact of the Programme

Y= Outcome of the Programme

P= 0 without the intervention

P= 1 with the intervention.

### **3.5.3 Quick Biodiversity Survey (QBS)**

As diversity of fauna and flora in the landscape is disappearing with natural forests around the world, efforts to save biodiversity have increased over the years. Many man-managed systems (e.g. jungle rubber) are becoming increasingly important as biodiversity reservoirs. Different mechanisms of 'payment for environmental services' or PES are being developed that aim to 'reward' local people for their contribution to conservation practice. The Rapid Agro-Biodiversity Appraisal or RABA (Kuncoro et al. 2006) approach was developed as an analytical framework to identify the information necessary for providers and beneficiaries of biodiversity protection in order to engage in environmental service agreements. While the approach deals well with the perspectives of both the sellers and the potential buyers of

conservation services, the approach does not include a 'rapid' assessment of existing biodiversity in the target area. The assumption that biodiversity data for potential sites are available is not always correct and even when data is available, these tend to be outdated. As time, resources and expertise required for comprehensive inventory of flora and fauna are often limited; one often has to resort to short-cut checks, using selected indicators of biodiversity, for reasonably good indication of existing biodiversity. The Quick Biodiversity Survey (QBS), under development, is a combination of quick inventories of plants, birds, beetles, bats, primates and mammals adapted for rapid checking of these 'visible' biodiversity. The QBS method is currently under test in a range of agro-ecosystems in Indonesia. Further refinement and fine-tuning should be possible based on context and need using the Indicator Species to analyse the Impact of the Intervention on the Fauna and Flora of the Study area.

For the purpose of this study, the indicator species selected for the fauna and flora Quick Biodiversity Survey (QBS) are *Kobus kobus* (Kob) and *Azelia africana* (African mahogany) respectively.

The reason for the choice of *Azelia africana* to represent the flora species of KLNP is informed by the high distribution of this plant in both the two sectors of this Park, the plant is highly utilized as forage for

the Fulani cattle (believed by the Fulanis, when eaten by their cattle it influences multiple offspring bearing), used as timber, used as raw material for commercial charcoal making, used for firewood, used for medicinal purposes, etc. When the Park is well this plant flourishes, so serves as a good Indicator Species. Descriptive statistics is used to analyse the data from the field.

In KLNP, the most favoured ungulate by the big predators as well as the poachers as prey, is the Kob because it is a foolish animal. It is stupidly curious to the extent that it does not instinctively flees at the sign of danger, the Kob is endemic where there is water (around rivers, so it is easily located by poachers), the Kob move around in herds of 20 – 30 individuals (which makes it easier target for the poachers), the Kob is the commonest and easily sighted animal in KLNP, etc. When this animal is in good condition in the Park, it then means all is well in the Park. Descriptive statistic was used to determine the abundance of the animals in the buffer zone of the Park and the numbers seen encroaching into some of the communities farms.

## CHAPTER FOUR

### 4.0

### RESULTS

#### 4.1 Summaries of Results

In the 240 households interviewed the responses were 191 (79.6%) males and 49 (20.4%) as females. It should be noted that conscious efforts were made to get more female voices into the survey, but the patri-lineal nature of the communities as well as the low level of female-headed households did not make for much success in this direction. Much more fundamentally however, is the fact that the survey was done at the household level, which was, in most of the cases headed by males.

**Table 4.1 Consolidated Age Distribution For KLNP SZCs**

<i>Communities in</i>	<i>&lt;20 Years</i>	<i>21 – 45 Years</i>	<i>&gt;60 Years</i>	<i>Total</i>
Borgu Sector	61	80	9	150
Zugurma Sector	18	68	4	90
Total	79	148	13	240
	(32.9)	(61.7)	(5.4)	(100)

Source: Field Survey 2009

( )= Percentage



Table 4.2, explains the marital status of the residents of the SZCs of KLNP

**Table 4.2 The Overall Marital Status For The KLNP SZCs**

<i>Communities in</i>	<i>Never Married</i>	<i>Married Monogamy</i>	<i>Married Polygamy</i>	<i>Widow /Widower</i>	<i>Divorced</i>	<i>Total</i>
Borgu	2	92	44	8	4	150
Zugurma	15	39	34	2	-	90
Total	17	131	78	10	4	240
	(7.1)	(54.6)	(32.5)	(4.1)	(1.7)	(100)

Source: Field Survey, 2009.

( )= Percentage

From the Table 4.2, 87.1% of respondents are married (either monogamy or polygamy). This, in effect, means that over 87% of the households sampled are active reproductively.

Noting that 32.5% of these men have more than one wife, it therefore means that the household size will be large. This will in turn swell the population size and subsequently put more pressure on the PA's resources.

Table 4.3 captures the types of educational backgrounds of the SZC members of KLNP.

**Table 4.3: Educational Background of SZCs in KLNP.**

<i>Sector</i>	<i>1<sup>o</sup></i>	<i>2<sup>o</sup></i>	<i>Tech- nical</i>	<i>Voca- tional</i>	<i>Adult- Edu.</i>	<i>Kora- nic</i>	<i>Col. of Agric</i>	<i>Poly Technic</i>	<i>Univer sity</i>	<i>Non</i>	<i>Total</i>
Borgu	16	24	-	-	18	48	18	8	16	-	148
Zugurma	12	4	2	-	10	18	10	4	2	30	92
Total	28	28	2	-	28	66	28	12	18	30	240
	(11.7)	(117)	(0.8)		(11.7)	(27.5)	(11.7)	(5)	(7.5)	(12.5)	(100)

Source: Field Survey, 2009.

Table 4.3, clearly shows that the sample is spread across all the educational levels. In other words, all manner and shades of opinions are reflected in the data collected. The result here also shows that there is a relatively low level of western education with only 20% having tertiary education. This will no doubt be a push factor into farming as a major occupation for the rest of the population. This will add to the pressure for acquisition of land for farming and other economic activities in the SZC.

Table 4.4, shows the conditions of some of the social amenities in the SZCs of KLNP.

**Table 4.4: Presence and Condition of Infrastructure Facilities**

<i>Facility</i>	<i>Excellent (%)</i>	<i>Good (%)</i>	<i>Fair (%)</i>	<i>Poor (%)</i>	<i>None (%)</i>
Market	0.0	30.8	23.1	15.4	30.8
Road	0.0	7.7	46.2	30.8	15.4
School	0.0	15.4	53.8	7.7	23.1
Medical facilities	0.0	0.0	53.8	0.0	46.2
Electricity	0.0	23.1	0.0	0.0	76.9
Bank	0.0	7.7	0.0	0.0	92.3
Postal	0.0	0.0	0.0	0.0	100.0
Police	0.0	15.4	15.4	0.0	69.2
Telephone	0.0	0.0	7.7	0.0	92.3

**Source: Field Survey 2009**

From the responses in Table 4.4, you will see that nothing was recorded under any of the facility as 'Excellent' and none of the facility is 50% good. This goes to show that the SZCs suffer neglect from authorities that are suppose to provide these social amenities to them. This can increase their anger towards authorities may make them unleash this anger on the PA.

Table 4.5, describe the different types of livelihoods the SZCs are engaged in.

**Table 4.5:Occupational Structure of SZCs of KLNP**

<i>Occupation</i>	<i>No. of Responses</i>	<i>% of Total</i>
Crop farming	160	66.7
Livestock farming	2	0.83
Mixed Crop/Livestock	8	3.33
Fishing/Fish Farming	10	4.17
Fish Processing	4	1.67
Other (including trading)	66	27.5
<b>Total</b>	<b>240</b>	<b>100.0</b>

Source: Field Survey 2009

Analysis of the data in table 4.1.5 revealed that the SZCs members engage in more than one occupation as enterprise. We can conclude that given the occupational preference of the communities studied, demand for land to achieve economic livelihood is very high. Therefore, approaches that restrict local communities access to biological services without the provision of adequate alternatives are bound to generate suffering and hostility, and therefore will never be socially sustainable.

Table 4.6, is showing the alternative livelihoods that was supported by the LEEMP-GEF in the SZCs of KLNP

**Table 4.6: Newly Supported Livelihoods in The SZCs of KLNP**

<i>Enterprise</i>	<i>No. of Responses</i>	<i>% of Total</i>
Post harvest Processing	55	22.9
Animal Fattening	22	9.19
Commodity trading	28	11.7
Bee keeping	10	4.17
Agro-forestry	4	1.67
Motorcycle Transport business	63	26.3
Semi mechanized Farming	33	13.8
Business centre	2	0.83
Tailoring	5	2.08
Others	18	7.5
Total	240	100

Source: Field Survey 2009

Table 4.6 shows introduction of more environmentally sustainable employment opportunities which will subsequently create/increase the income of SZCs. If this is sustained there will be reduction in the devastation being inflicted by the SZCs on the resources of the PA as a means of sustenance.

## CHAPTER FIVE

### 5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Discussion

##### 5.1.1 Why Is Biodiversity Valuable?

Biological diversity, or biodiversity, is the variety and variability of living organisms broadly including a wide diversity of plant and animal species, communities, and ecosystems. The Earth's biodiversity consists of genes, species, and ecological processes making up terrestrial, marine, and freshwater ecosystems that both support and result from this diversity. All of these elements and living systems interact with each other to produce the web of life on Earth—the biosphere—a whole much greater than the sum of its parts on which every human being is dependant. Biodiversity is currently in a human induced state of precipitous decline globally. Due to this decline and the interconnected nature of biodiversity and human well-being, the conservation of biodiversity is an international development priority.

Biodiversity has many values, both material and nonmaterial. Material values include both direct uses and ecosystem services. Direct uses of biotic resources meet human needs for food, fuel, fiber, shelter, and medicine. The importance and value of ecosystem services in providing our life support system are increasingly recognized. Biodiversity can

help buffer variations in weather and climate. For example, forests can soak up, store, and slowly release water, and protect watersheds and soil from erosion following the extreme winds and torrential rains of hurricanes.

This study has shown that, Monitoring and Evaluation is a very important tool in biodiversity management where interventions like these are tracked and eventually appraised for effectiveness, efficiency and relevance. The study has also proved to us that, any biodiversity conservation effort that excludes the SZCs will fail woefully. Biodiversity conservation effort must and should always incorporate the aspirations and yearnings of the SZCs. The findings in this study have shown improvements in the SZCs' income/employment, collaboration of the SZCs with Park management in ways of achieving better development in the Park and fauna and flora species, these are indicators of a better conservation management strategy.

Deliberately a not too popular method for biodiversity survey, i.e, Quick Biodiversity Survey (QBS) was used, so as to encourage my colleagues in the conservation endeavour of the need for constant taking of inventories of the natural resources of our PAs through easier, faster and cheaper methods of estimation.

### **5.1.2 Socio-economic Status of the Support Zone Communities:**

The average age bracket of the sampled communities composed of 32.9% youth, 61% middle aged and 5.4% elderly. This shows that the physically active members of the communities are in the majority and when they are unemployed that poses a serious threat to the PA. The major ethnic groups in the communities are the Fulanis, Bisan, Nupe, Hausa, Dukkawa and Kambari. The average population in most of the communities is made up of 98% Muslims. The types of social groups the community members belong to are cooperatives societies, local savings and credit groups, Fadama users group, religious group and informal work exchange groups. It was found that 50% of the males and 10% of the females had primary school education while 25% of males and less than 10 % female went through secondary school. This implies that about 50% males and more than 75% of females had no formal education. The literacy level appears to be fair may be because of the presence of primary school in most of the communities. The presence of at least a health centre shared by two adjacent communities makes over 60% of the community have access to health care while it has also given over 70% children access to immunization as the health center coordinates immunization programmes for the children. There are no waste management or improved toilets facilities in the communities. The



communities are predisposed to environmental related infections due to the level of sanitation available. Crop farming was ranked by males and females as the most important livelihood activity in most of the communities, while other activities as ranked by males are rearing of livestock, hunting, processing of farm produce, trading and artisan work. Average of the females responses, ranked processing of farm produce, and trading as next to crop farming.

### **5.1.3 Acquisition of Environmentally Sustainable Livelihood:**

As can be seen in the table in Appendix III, 191 micro-projects were so far completely disbursed for and out of that number, 15 were community water projects and 21 Environmental and Natural Resources Management micro-projects. These two micro-projects above are believed not to generate income for the community members directly. The remaining 155 micro-projects are the communities' prioritized income generating endeavours which the communities are sustainably operating and maintaining. Each of the communities have small organised *User Groups*. These are groups that have identified a common income generating activity and have agreed within themselves of the *modus operandi* of the group's operational funds. Interestingly, most of the groups have been introduced to revolving loans schemes. Some part of each group's money are set aside to be loaned out to group members

to engage in their individual businesses aside the group's business. After six months, the loan is revolved to other members that were phased out. This strategy multiplies the number of beneficiaries (generates employment/income), for each group after every six month, depending on membership of the group and the amount of money allotted to the group. Details of the different income generating activities engaged in by the community members have been captured in the table of Appendix IV. The study revealed that, an average of ten persons receives the revolving loan every six month for each of the 155 completely disbursed micro-projects. This gives us a modest estimate of one thousand five hundred and fifty (1550) employment generated or investment assets acquired in the communities by the beneficiaries as at June 2008. The baseline average income per month of a household head in these communities is three thousand five hundred naira but now the average has risen to ten thousand five hundred naira. The impact of the support on income can be estimated using this formula

$$\alpha = (Y/P=1) - (Y/P=0)$$

$\alpha$  = Causal Impact of the Programme

$Y/P = 1$  is outcome on average income of a beneficiary household head

$Y/P = 0$  is outcome on average income of household head at baseline

$$\alpha = 3500 - 10500 = 7000$$

There is an estimated 200% increase from the baseline income

#### **5.1.4 Biodiversity (Flora and Fauna) Improvement in the Park**

Buffer Zone of any Protected Area is an area of land maintained between the PAs and the SZCs. Administratively, that area of land is supposed to be co-managed by the PA management and the SZCs. Conventionally, this land is supposed to be up to five kilometer separating the PA and SZCs, but most of Nigeria's PA's buffer zones are less than a kilometer. This area earmarked as buffer zone although, supposedly being co-managed with the SZCs, certain activities such as farming and other environmental detrimental human activities are not condoned within. The wild animals have very good instincts for danger, and when there are no much human activities in the buffer zone they maraud even to the farms of the SZCs. The field survey carried out was to use this characteristic and ask the community members the frequency of sighting and the number in a herd of our Indicator species (Kob) in the Buffer zones and their farms. This type of survey was also used in the Baseline Study of the Park in 2006. Comparison of the averages was made with the Baseline figures and a 23% improvement on the figure was recorded now. The Indicator species for the flora (*Afzelia africana*) was also

compared with the figures recorded during the Baseline survey and the figure from my survey. What was looked at was the severity of looping(barbing) of this plant species by the Fulani herdsmen. The questionnaire asked if the SZCs still host these herdsmen in the boundaries of their farms before proceeding into the Park. Usually, the SZCs collect some token amount from the Fulani's to connive and host them before concluding their necessary surveillance for presence of Park Rangers within their route. This Park is endowed with this species of plant and it is one of the only forage and most favoured for the Fulani cattle during dry seasons. When they are sure of their intelligence report, the herdsmen send in the vanguard group, usually very strong, young able men, who now continuously loop the old foliage of the Afzelia plant, they can do that for one to two weeks. The cattle only eat the newly sprouted tender leaves of the plant. When they are ready to drive the cattle into the Park the new leaves of the plant would have started sprouting by then, the same young men now climb these trees and cut the tender leaves for their cattle to forage. If not detected by the Park authorities, the Fulani herdsmen can stay and continuously degrade the Park by looping these trees till the end of the dry season. In one of my write ups (Detrimental Effects of Fulani Herdsmen Activities in Yankari National Park, *unpublished*) as a Research Officer in Yankari National

Park (2004), I realized that, the ecosystem of the Park suffers more devastations in the hands of the Fulani herdsmen than in the hands of Poachers. This is because the Fulani activities have multiple negative impacts than that of a Poacher. The constant stampede of their cattle on the grasses along their route and where they spend their nights threatens the existence of some important grasses that serve as food for some animals and this can result to loss of habitat for some animals, some of the plants after being looped they do not recover, they eventually die off, Fulani cattle usually bring some diseases into the Park i.e. the rinderpest epidemic in Yankari, 1984, where thousands of wild animals were lost, the Fulani herdsmen also Poach or kill any animal that prey on their cattle, etc. If the SZCs turn down the overtures of the Fulani and decline to accept what they are ready to offer to gain access to the Park, then we would have gone a long way in conserving the natural resources of the Park. From the survey, there is an increase of 33% in the number of SZCs reporting the Fulani incursions into the Park compared with the reported cases of this nature five years back.

#### **5.1.5 Collaboration of the Park Management and the SZCs in Park Management**

There is an average 33% increase in the reported cases of the incursions into the Park by the SZCs, the communities' vigilante groups have

volunteered to participate in joint patrols of the Park with the Rangers, the Park Management is now contracting the boundary and patrol track clearing to the SZCs, the eco-centres constructed and equipped by GEF are now jointly managed and run by the SZCs and the Park management, the Park jointly maintains the Park – community rural roads constructed by GEF, during farming season, the Park extends the lease of its Tractors to the SZCs, etc. These and so many other things enlist the support and collaboration of the SZCs in Park management. The SZCs are now more conscious of the enormous benefits accruable in partaking in protecting and conserving their naturally endowed environment.

#### **5.1.6 Constraints Towards Improving Biodiversity Conservation in KLNP**

Out of the 240 questionnaire administered for this study, 191 responses (79.58%) attributed poverty as the reason why people poach in the Park and also 222 responses (92.5%) are of the opinion that, if the poachers are given option of alternative livelihood that is more lucrative than the risky business of poaching they will immediately abandon poaching. The level of education of the average community member is also a limiting factor to conservation efforts as opined by the respondents. Lack of grazing reserve for Fulani cattle was also identified as a limiting factor. Lack of well motivated staff in the Park's system is also a limiting

factor. Among the major limiting factors for conservation efforts in KLNP is the lack of well equipped biodiversity surveillance vehicles, lack of field equipment for Rangers, Seasonal incursion of thousands of Fulani cattle to the Park from within and outside Nigeria was also identified as a limiting factor for conservation efforts in KLNP.

## **5.2 Conclusions**

It is believed that the findings of this study would have shown to all that the impact of the LEEMP-GEF support on the biodiversity and the socio-economy status of the SZCs of KLNP is a positive one. This also has confirmed the 'Alternative Hypothesis' which tested that, 'the alternative livelihood approach will enhance the cooperation and the collaboration of the SZCs and the PA management towards improving the Biodiversity of the Park.'

It is in view of that, that we wish to use this Impact Evaluation result to recommend and call on all the authorities concerned that, this support should be sustained in KLNP and scaled up to the other six Nigerian National Parks.

### 5.3 Recommendations

- Extend the support to all SZCs of KLNP, if not the communities that did not benefit from the support will feel aggrieved and could use that to do more havoc in the Park
- Incorporate a special intervention for the Fulani herdsmen where a lot of grazing range will be established for their cattle far away from the PAs where all their favourite native trees will be planted and watering point for their cattle will be establish. The grazing range should be so established that it can accommodate the pressure of the Fulani cattle during the dry season.
- A more integrated approach for PA development should be adopted where the issue of the PA staff welfare be give serious attention, livelihood of the SZCs be addressed, equipment and technical assistance be given to the PA
- The SZCs be supported and encouraged to establish local conservancies, like the one in CAMPFIRE of Zimbabwe.
- Extensive woodlot establishment should be encouraged in the communities so as to address the wood and firewood need of the communities



- An extensive, comprehensive native tree (*Azelia africana*) planting should be funded in all the communities to reduce the temptation of the Fulani incursions into the Park
- Aggressive conservation awareness campaigns should be carried out and sustained at all levels of the society
- Capacities of the Parks and their staff should be developed and updated in tune with recent findings and technologies in biodiversity management
- More donors local and international, governments at all level should increase the funding for biodiversity conservation.

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**APPENDIX I**  
**An Impact Evaluation of LEEMP-GEF Activities in Support Zone**  
**Communities of**

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**Focus Group Discussion Topic Guide**

State: \_\_\_\_\_ Senatorial District: \_\_\_\_\_

LGA \_\_\_\_\_; Name \_\_\_\_\_ of \_\_\_\_\_ Community

Date of Discussion: \_\_\_\_\_ Name of Moderator \_\_\_\_\_

\_\_\_ males youth only; \_\_\_ females youths only; \_\_\_ males elderly only; \_\_\_ females elderly only

1. **Religion:** What are the proportions of Christians, Muslims and Traditional worshippers?

2. **Migrant Status:**

a. Are most of the people here natives or are there many migrants? If there are migrants, where do they mostly come from?

c. Has there been any change in the incidence of out-migration of local people as a result of the LEEMP Project? \_\_\_ yes, it has decreased; \_\_\_ no change;

\_\_\_ yes, it has increased.

3. **Socio-economic status:** About what proportion of the population are poor? \_\_\_\_\_

a. Are there any particular groups likely to be poorer than others? \_\_\_yes \_\_\_no If yes, describe those that are likely to be poorer.

4. **Ethnic groups:** Major (largest) ethnic group: (specify) \_\_\_\_\_

Minor ethnic groups: \_\_\_\_\_: \_\_\_\_\_: \_\_\_\_\_

5. a.) How would you rate the *level of infrastructural development* in this community?

very high \_\_\_; high \_\_\_: average \_\_\_; low \_\_\_: very low \_\_\_.

b) Has there been any change in the level of infrastructural development as a result of the LEEMP-GEF Project? \_\_\_ yes, it has improved; \_\_\_ no change; \_\_\_ yes, it has declined

Explain your answer.

6. a) What types of *social organisations and associations* do you have in this community in addition to the Community Project Management Committee (CPMC)? What benefits do members gain from such groups? [Probe for groups like cooperatives, religious groups, WIA/ADP, *esusu* age grades, informal work exchanges, etc.]  
b) Can anyone participate in these associations, or is membership limited by gender, age, ethnic background, or other characteristics?
7. What is the *relationship - between members of the community and the local government?* Between members of the community and the *Project* management, between the community and Park Management?

## B. Livelihood Activities and General Welfare

8. What are the *major productive and income-generating activities* engaged in by the men and women in this community? Which are the most important activities to men? To women?
9. Have there been any *changes in the livelihood activities* of the people in the last five years? If so, what changes have occurred? Are these positive or negative changes?
10. Has the LEEMP-GEF *Project affected livelihood/employment activities and general welfare* of the people?  
\_\_\_yes, there is general improvement; \_\_\_no change; \_\_\_ yes, there is a decline due to project. Explain your answer if there is a change.

11. How is the *general health* of the people? \_\_\_ good; \_\_\_ fair; \_\_\_ poor  
What are the common diseases affecting people here?  
b) Do people generally have a better or poorer health status in recent years?  
\_\_\_ better now; \_\_\_ about the same; \_\_\_ poorer now.
- c) Has the LEEMP-GEF Project had any impact on the health status of the people?  
\_\_\_ yes; \_\_\_ no  
*If yes*, what has been the impact and why?
12. Can you identify any environmental problems in this locality?(Probe for desertification, deforestation, erosion, flooding, pollution, degraded soils.) If so, how severe are the problems and how have they affected your livelihoods and welfare?
13. Has the LEEMP-GEF Project had any negative or positive effect upon the environment? Explain.

### C. Local Biodiversity Information

14. Have you sighted any wild animal in your farms lately? Is the encroachment of these wild animals worse or better than before? Which of the animal do you see more frequently in the Antelope family?
15. Which tree is the preferred forage for the Fulani cows in this Park during the dry season? Would you say that the number and extent of Fulani encroachment into Park have increased lately? Why?
16. Would you say your relationship with Park management is more cordial now? Why?

17. Would you say that your earnings through this support have improved recently? Is the revolving loan scheme introduced to you in your User group working well? What is the average of the beneficiaries of this revolving loan in all the User groups?
18. Do your community willingly participate in the joint patrols organized by the Park?
19. Do you host visiting Poachers in your community?
20. What do you think is the reason for which people poach in the Park?
21. Do you think if these Poachers are given alternative ways to earn a better living than the poach, will they welcome that?



## APPENDIX II

### STATUS OF AGRO-FORESTRY/ORCHARD IN KLNP-SZCS AS AT JUNE 2010

#### ZUGURMA SECTOR (Agro forestry)

SN	COMMUNITY	SIZE	Mangos	Cashew	Orange	Palm tree	Guava
1	Fanga	3 hectares	60	30	50		20
2	Gwaji	3 hectares	100	100	30		20
3	Gwuiwan Kurmi	2 hectares	100	50	70		30
4	Tsohon Mashigin Kada	2 hectares	100	80	90		20
5	Poto	1 hectares	100	90			40
6	Tungan Bala	2 hectares	100	25	100	20	50
7	Tungan Maikade	2 hectares	100	80	50		30
8	Tungan Talle	2 hectares	90	5	80		20
9	Tungan Garba	1 hectares	70	2	60		20
10	Tungan Zabarmawa	2 hectares	80	50	70		40
	<b>Subtotal</b>	<b>20 hectares</b>	<b>900</b>	<b>512</b>	<b>600</b>	<b>20</b>	<b>290</b>
	<b>BORGUSECTOR (Orchard)</b>	<b>SIZE</b>	<b>Mangos</b>	<b>Cashew</b>	<b>Orange</b>	<b>Palm tree</b>	<b>Guava</b>
11	Gada-Oli	1/2 hectares	70	100		15	
12	Kuble	2 hectares	100	100			50
13	Leshigbe	1 hectares	100	70			
14	Tenebo	1 hectares	50	50			
15	Nanu Shugaba	1 hectares	100	100			100
16	Shagunu	1/2 hectares	20	30			
17	Gulubi	2hectares	not accessible				
18	Kwasare	2 hecters	not accessible				
19	Gbenji	1hectares	not accessible				
20	Dekara	1 hectares	not accessible				
	<b>Subtotal</b>	<b>12 hecters</b>	<b>440</b>	<b>550</b>		<b>15</b>	<b>150</b>
	<b>Grandtotal</b>	<b>32 hecters</b>	<b>1340</b>	<b>1062</b>	<b>600</b>	<b>35</b>	<b>440</b>
	<b>Total NO of Plants</b>						<b>3477</b>

Source: Nigerian National Parks Service – Global Environment Facility Report

### APPENDIX III

NIGER STATE KLNP SUMMARY OF DISBURSMENTS AS AT DECEMBER 2009									
	GEF	Total	Completed	Ongoing	MPS	Stopped	Expected GEF	GEF Funding	Outstanding
SN	CATEGORY	MPs	MPs/Disb	MPs/Disb	Not Started	MPs	Funds in SLPs (N)	To Date (N)	GEF Funds(N)
1	Water projects	15	15	-	-	-	18,988,598.70	16,679,085.30	2,309,513.40
2	Envmt. & Nat. Res,	23	21	-	-	2	6,179,920.00	4,156,292.00	2,023,628.00
3	Women Income Generating Activities	48	41	-	4	3	25,134,672.50	21,545,408.50	3,589,264.00
4	Youth Income Generating Activities	39	32	-	2	5	17,617,428.80	12,857,830.50	4,759,598.30
5	Hunters Income Generating Activities	32	28	-	1	3	19,457,352.50	12,360,964.00	7,096,388.50
6	Artisans Income Generating Activities	6	5	-	-	1	1,336,000.00	732,800.00	603,200.00
7	Farmers Micro projects	55	49	-	4	2	31,617,706.40	19,539,037.00	12,078,669.40
	<b>GEF TOTAL</b>	<b>218</b>	<b>191</b>	<b>-</b>	<b>11</b>	<b>16</b>	<b>120,331,679</b>	<b>87,871,417</b>	<b>32,460,262</b>
	IDA	Total	Completed	Ongoing	MPS	Stopped	Expected IDA	IDA Funding	Outstanding
	CATEGORY	MPs	MPs/Disb	MPs/Disb	Not Started	MPs	Funds in SLPs (N)	To Date (N)	IDA Funds(N)
1	Education	7	7	-	-	-	9,251,249.50	8,457,229.50	794,020
2	Heath	10	10	-	-	-	10,869,736.88	9,361,288.60	1,508,448.28
3	Transport	1	1	-	-	-	6,048,000.00	3,348,000.00	2,700,000.00
	<b>IDA TOTAL</b>	<b>18</b>	<b>18</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>26,168,986.38</b>	<b>21,166,518.10</b>	<b>5,002,468.28</b>
	<b>GRAND TOTAL</b>	<b>236</b>	<b>209</b>	<b>-</b>	<b>11</b>	<b>16</b>	<b>146,500,665</b>	<b>109,037,935</b>	<b>37,462,730</b>

*Source: Nigerian National Parks Service – Global Environment Facility Report*



	Tappers Assoc.	project	370,000.00	296,000.00	74,000.00	148,000.00	-	-	148,000.00	148,000.00	Completed
Rearing of cows and sheep	Cattle Rearers Assoc.	Hunters Income Activity	610,000.00	488,000.00	122,000.00	-	-	-	-	488,000.00	Stopped
<b>Sub Total</b>			<b>5,893,000.00</b>	<b>4,913,600.00</b>	<b>979,400.00</b>	<b>1,803,400.00</b>	<b>500,600.00</b>	-	<b>2,304,000.00</b>	<b>3,110,200.00</b>	
<b>3 Ibbi</b>											
Rehabilitation of water system	CPMC/CDA	Water Project	2,950,317.00	2,655,285.30	295,031.70	796,585.59	1,858,699.71	-	2,655,285.30	-	Disb Completed
Animal fattening	Hunters Assoc.	Hunters Income Activity	662,500.00	530,000.00	132,500.00	-	-	-	-	530,000.00	Stopped
Tree crop Nursery & Orchard development	Youth Assoc.	Envt&Nat. Res. micro-project	500,000.00	400,000.00	100,000.00	-	-	-	-	400,000.00	Stopped
Semi mechanised farming	Farmers Assoc.	Farmers Micro-project	690,000.00	552,000.00	138,000.00	-	-	-	-	552,000.00	Stopped
Agro processing - Groundnut	Matanzumunta Women Assoc.	Women Income Generating Activity	669,000.00	535,200.00	133,800.00	-	-	-	-	535,200.00	Stopped
Agro processing - Melon	Sokomajin Women Assoc.	Women Income Generating Activity	795,000.00	636,000.00	159,000.00	-	-	-	-	636,000.00	Stopped
Agro processing - Corn & Melon	Women Co-op Assoc.	Women Income Generating Activity	710,000.00	568,000.00	142,000.00	568,000.00	-	-	568,000.00	-	Disb Completed
Medicinal Trees Nursery and woodlot	Traditional medicine men Assoc.	Envt&Nat. Res. micro-project	500,000.00	400,000.00	100,000.00	-	-	-	-	400,000.00	Stopped
Motorcycles for commercial trans.& s/parts	Kabu-kabu Assoc.	Youth Income Generating Activity	530,000.00	424,000.00	106,000.00	127,200.00	296,800.00	-	424,000.00	-	Disb Completed
<b>Sub Total</b>			<b>8,006,817.00</b>	<b>6,700,485.30</b>	<b>1,306,331.70</b>	<b>1,491,785.59</b>	<b>2,155,499.71</b>	-	<b>3,647,285.30</b>	<b>3,053,200.00</b>	
<b>4 Shafini</b>											
Semi mechanised farming	Farmers Assoc.	Farmers Micro-project	675,000.00	540,000.00	135,000.00	270,000.00	-	-	270,000.00	270,000.00	Disb Completed
Agro processing	Daddawa Processors Assoc.	Women Income Generating Activity	605,000.00	484,000.00	121,000.00	182,000.00	-	-	182,000.00	302,000.00	Disb Completed
Agro processing	Kulikuli Processors Assoc.	Women Income Generating Activity	710,000.00	568,000.00	142,000.00	568,000.00	-	-	568,000.00	-	Disb Completed
Semi mechanised farming	Hunters Assoc.	Hunters Income Activity	675,000.00	540,000.00	135,000.00	200,000.00	-	-	200,000.00	340,000.00	Disb Completed
Animal fattening	Cattle Rearers Assoc.	Hunters Income Activity	610,000.00	488,000.00	122,000.00	180,000.00	-	-	180,000.00	308,000.00	Disb Completed
Const. of slaughter slab & A/fattening	Butchers Assoc.	Youth Income Generating Activity	690,000.00	552,000.00	138,000.00	190,000.00	-	-	190,000.00	362,000.00	Disb Completed

	Bee keeping	Bee keepers Assoc.	Youth Income Generating Activity	312,000.00	249,600.00	62,400.00	249,600.00	-	-	249,600.00	-	Disb Completed
	Poultry keeping	Poultry Farmers Assoc.	Youth Income Generating Activity	581,461.00	465,168.80	116,292.20	465,168.80	-	-	465,168.80	-	Disb Completed
	<b>Sub Total</b>			<b>4,858,461.00</b>	<b>3,886,768.80</b>	<b>971,692.20</b>	<b>2,304,768.80</b>	-	-	<b>2,304,768.80</b>	<b>1,582,000.00</b>	
5	<b>Mulea</b>											
	Rehabilitation of Borehole	CPMC/CDA	Water Project	323,500.00	291,150.00	32,350.00	291,150.00	-	-	291,150.00	-	Disb Completed
	Fattening of Goats and Sheep	Youth Assoc.	Youth Income Generating Activity	610,000.00	488,000.00	122,000.00	350,000.00	-	-	350,000.00	138,000.00	Disb Completed
	Vet. Services	Cattle Rearers Assoc.	Hunters Income Activity	340,000.00	272,000.00	68,000.00	272,000.00	-	-	272,000.00	-	Disb Completed
	Farm inputs and work Bulls	Farmers Assoc.	Farmers Micro-project	610,000.00	488,000.00	122,000.00	224,000.00	110,850.00	-	334,850.00	153,150.00	Disb Completed
	Agro processing - G/nut & Beans	Women Assoc.	Women Income Generating Activity	710,000.00	568,000.00	142,000.00	568,000.00	-	-	568,000.00	-	Disb Completed
	Construction of grains storage facility	Traders Assoc.	Youth Income Generating Activity	360,000.00	288,000.00	72,000.00	280,000.00	-	-	280,000.00	8,000.00	Disb Completed
	Construction of B/smith w/shop & Tools	Blacksmiths Assoc.	Artisans	260,000.00	208,000.00	52,000.00	208,000.00	-	-	208,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>3,213,500.00</b>	<b>2,603,150.00</b>	<b>610,350.00</b>	<b>2,193,150.00</b>	<b>110,850.00</b>	-	<b>2,304,000.00</b>	<b>410,000.00</b>	
6	<b>Faje</b>											
	Semi mechanised farming	Farmers Assoc.	Farmers Micro-project	675,000.00	540,000.00	135,000.00	540,000.00	-	-	540,000.00	-	Disb Completed
	Poultry keeping	Hunters Assoc.	Hunters Income Activity	382,000.00	305,600.00	76,400.00	305,600.00	-	-	305,600.00	-	Disb Completed
	Agro processing	Women Co-op Assoc.	Women Income Generating Activity	560,000.00	448,000.00	112,000.00	448,000.00	-	-	448,000.00	-	Disb Completed
	Construction of grains storage facility	Traders Assoc.	Youth Income Generating Activity	310,000.00	248,000.00	62,000.00	224,000.00	24,000.00	-	248,000.00	-	Disb Completed
	Dry season farming	Youth Assoc.	Youth Income Generating Activity	200,000.00	160,000.00	40,000.00	160,000.00	-	-	160,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>2,127,000.00</b>	<b>1,701,600.00</b>	<b>425,400.00</b>	<b>1,677,600.00</b>	<b>24,000.00</b>	-	<b>1,701,600.00</b>	<b>24,000.00</b>	
7	<b>Babugi</b>											
	Construction of grains storage facility	Traders Assoc.	Youth Income Generating Activity	360,000.00	288,000.00	72,000.00	150,000.00	-	-	150,000.00	138,000.00	Disb Completed



		Activity	610,000.00	488,000.00	122,000.00	448,000.00	-	-	448,000.00	40,000.00	Completed	
	Animals fattening	Youth Assoc.	Youth Income Generating Activity	610,000.00	488,000.00	122,000.00	488,000.00	-	-	488,000.00	-	Disb Completed
	Construction of Tailors W/shop & Tools	Women Co-op Assoc.	Women Income Generating Activity	300,000.00	240,000.00	60,000.00	-	204,590.00	-	204,590.00	35,410.00	Disb Completed
	<b>Sub Total</b>			<b>3,174,900.00</b>	<b>2,644,210.00</b>	<b>530,690.00</b>	<b>1,630,105.00</b>	<b>673,895.00</b>	<b>-</b>	<b>2,304,000.00</b>	<b>1,014,105.00</b>	
<b>10</b>	<b>Mazakuka</b>											
	Semi mechanised farming	Farmers Assoc.	Farmers Micro-project	765,000.00	612,000.00	153,000.00	306,000.00	-	-	306,000.00	306,000.00	Disb Completed
	Bread Bakery	Youth Assoc.	Youth Income Generating Activity	495,000.00	396,000.00	99,000.00	396,000.00	-	-	396,000.00	-	Disb Completed
	Agro processing - G/nut & Melon	Women Assoc.	Women Income Generating Activity	710,000.00	568,000.00	142,000.00	568,000.00	-	-	568,000.00	-	Disb Completed
	Semi mechanised farming	Hunters Assoc.	Hunters Income Activity	675,000.00	540,000.00	135,000.00	270,000.00	-	-	270,000.00	270,000.00	Disb Completed
	Vet services & feedlots	Cattle Rearers Assoc.	Hunters Income Activity	690,000.00	552,000.00	138,000.00	-	400,000.00	-	400,000.00	152,000.00	Disb Completed
	Construction of B/smith w/shop & Tools	Blacksmiths Assoc.	Artisans	260,000.00	208,000.00	52,000.00	-	100,800.00	-	100,800.00	107,200.00	Disb Completed
	Construction of Barbing saloon & Tools	Barbers Assoc.	Youth Income Generating Activity	329,000.00	263,200.00	65,800.00	263,200.00	-	-	263,200.00	-	Disb Completed
	<b>Sub Total</b>			<b>3,924,000.00</b>	<b>3,139,200.00</b>	<b>784,800.00</b>	<b>1,803,200.00</b>	<b>500,800.00</b>	<b>-</b>	<b>2,304,000.00</b>	<b>1,336,000.00</b>	
<b>11</b>	<b>Fanga</b>											
i	Agro forestry	CPMC/CDA	Envnt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
ii	Cattle fattening	Hunters Assoc.	Hunters Income Activity	1,125,000.00	900,000.00	225,000.00	580,000.00	-	-	580,000.00	320,000.00	Not Completed
iii	Dry season farming	Farmers Assoc.	Farmers Micro-project	525,000.00	420,000.00	105,000.00	420,000.00	-	-	420,000.00	-	Disb Completed
iv	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	912,500.00	730,000.00	182,500.00	365,000.00	365,000.00	-	730,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>2,812,500.00</b>	<b>2,300,000.00</b>	<b>512,500.00</b>	<b>1,477,500.00</b>	<b>477,500.00</b>	<b>-</b>	<b>1,955,000.00</b>	<b>345,000.00</b>	
<b>12</b>	<b>Gwaji</b>											
i	Implements & workbulls for farming	Farmers Assoc.	Farmers Micro-project	743,750.00	595,000.00	148,750.00	297,500.00	297,500.00	-	595,000.00	-	Disb Completed
ii	Cattle fattening	Hunters Assoc.	Hunters Income Activity	1,180,625.00	944,500.00	236,125.00	392,250.00	392,250.00	-	784,500.00	160,000.00	Disb Completed

iii	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	642,500.00	514,000.00	128,500.00	514,000.00	-	-	514,000.00	-	Disb Completed
iv	Agro forestry	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,816,875.00</b>	<b>2,303,500.00</b>	<b>513,375.00</b>	<b>1,316,250.00</b>	<b>802,250.00</b>	<b>-</b>	<b>2,118,500.00</b>	<b>185,000.00</b>	
<b>13</b>	<b>Gwuiwan Kurmi</b>											
i	Implements & workbulls for farming	Farmers Assoc.	Farmers Micro-project	1,662,500.00	1,330,000.00	332,500.00	305,000.00	305,000.00	-	610,000.00	720,000.00	Disb Completed
ii	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	900,000.00	720,000.00	180,000.00	360,000.00	360,000.00	-	720,000.00	-	Disb Completed
iii	Agro forestry	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,812,500.00</b>	<b>2,300,000.00</b>	<b>512,500.00</b>	<b>777,500.00</b>	<b>777,500.00</b>	<b>-</b>	<b>1,555,000.00</b>	<b>745,000.00</b>	
<b>14</b>	<b>Tsohon Mashigin Kada</b>											
i	Implements & workbulls for farming	Farmers Assoc.	Farmers Micro-project	525,000.00	420,000.00	105,000.00	210,000.00	210,000.00	-	420,000.00	-	Disb Completed
ii	Cattle fattening	Hunters Assoc.	Hunters Income Activity	750,000.00	600,000.00	150,000.00	300,000.00	300,000.00	-	600,000.00	-	Disb Completed
iii	Constrn. Of grains storage facility & biz outfit	Traders Assoc.	Youth Income Generating Activity	500,000.00	400,000.00	100,000.00	400,000.00	-	-	400,000.00	-	Disb Completed
iv	Agro forestry	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
v	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	787,500.00	630,000.00	157,500.00	630,000.00	-	-	630,000.00	-	Disb Completed
		<b>Sub Total</b>		<b>2,562,500.00</b>	<b>2,300,000.00</b>	<b>512,500.00</b>	<b>1,652,500.00</b>	<b>622,500.00</b>	<b>-</b>	<b>2,275,000.00</b>	<b>25,000.00</b>	
<b>15</b>	<b>Poto</b>											
i	Implements & workbulls for farming	Farmers Assoc.	Farmers Micro-project	743,750.00	595,000.00	148,750.00	297,500.00	297,500.00	-	595,000.00	-	Disb Completed
ii	Cattle fattening	Hunters Assoc.	Hunters Income Activity	1,180,625.00	944,500.00	236,125.00	312,250.00	312,250.00	-	624,500.00	320,000.00	Disb Completed
iii	Agro forestry	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
iv	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	642,500.00	514,500.00	128,500.00	514,500.00	-	-	514,500.00	-	Disb Completed
		<b>Sub Total</b>		<b>2,566,875.00</b>	<b>2,304,000.00</b>	<b>513,375.00</b>	<b>1,236,750.00</b>	<b>722,250.00</b>	<b>-</b>	<b>1,959,000.00</b>	<b>345,000.00</b>	





	workbulls for farming		project	650,000.00	520,000.00	130,000.00	260,000.00	260,000.00	-	520,000.00	-	Completed
ii	Cattle fattening	Cattle Reares Assoc.	Youth Income Generating Activity	1,000,000.00	800,000.00	200,000.00	320,000.00	320,000.00	-	640,000.00	160,000.00	Disb Completed
iii	Agro forestry	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
V	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	912,500.00	730,000.00	182,500.00	285,000.00	285,000.00	-	570,000.00	160,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,812,500.00</b>	<b>2,300,000.00</b>	<b>512,500.00</b>	<b>977,500.00</b>	<b>977,500.00</b>	-	<b>1,955,000.00</b>	<b>345,000.00</b>	
20	<b>TUNGAN ZABARMAWA</b>											
i	Implements & workbulls for farming	Farmers Assoc.	Farmers Micro-project	787,500.00	630,000.00	157,500.00	315,000.00	315,000.00	-	630,000.00	-	Disb Completed
ii	Cattle fattening	Cattle Reares Assoc.	Youth Income Generating Activity	1,000,000.00	800,000.00	200,000.00	280,000.00	280,000.00	-	560,000.00	240,000.00	Disb Completed
iii	Agro forestry	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
iv	Post Harvest Processing	Women Assoc.	Women Income Generating Activity	775,000.00	620,000.00	155,000.00	310,000.00	310,000.00	-	620,000.00	-	Disb Completed
		<b>Sub Total</b>		<b>2,812,500.00</b>	<b>2,300,000.00</b>	<b>512,500.00</b>	<b>1,017,500.00</b>	<b>1,017,500.00</b>	-	<b>2,035,000.00</b>	<b>265,000.00</b>	
	<b>SECTOR TOTAL</b>			<b>71,966,289.00</b>	<b>59,231,842.90</b>	<b>13,234,946.10</b>	<b>30,782,189.39</b>	<b>13,304,024.71</b>	-	<b>44,086,214.10</b>	<b>18,299,653.80</b>	

Source: Nigerian National Parks Service – Global Environment Facility Report

BORGU SECTOR												
SN	Approved micro-projects	Name of User Gourp/CDA	Micro-project Category	Est. cost (N)	GEF Contr. (N)	Com. Contr. (N)	1st Tranche (N)	2nd Tranche (N)	3rd Tranche (N)	Total Disb. To Date (N)	Balance (N)	
1	<b>Kemenji</b>											
	Drilling of Boreholes	CPMC/CDA	Water Project	1,100,000.00	990,000.00	110,000.00	297,000.00	503,000.00	-	800,000.00	190,000.00	Disb Completed
	Agro processing and Motor cycles	Hunters/Fisher men Assoc.	Hunters Income Activity	1,960,000.00	1,372,000.00	588,000.00	411,600.00	-	-	411,600.00	960,400.00	Disb Completed
	Shea butter processing	Temako Women Assoc.	Women Income Generating Activity	595,980.00	417,186.00	178,794.00	417,186.00	-	-	417,186.00	-	Disb Completed
	Multi crop farming	IkonAllah Farmers Assoc.	Farmers Micro-project	2,917,000.00	2,041,900.00	875,100.00	190,000.00	-	-	190,000.00	1,851,900.00	Disb Completed
	Poultry farming	Livestock & Poultry Farmers Assoc.	Hunters Income Activity	702,075.00	491,452.50	210,622.50	485,214.00	-	-	485,214.00	6,238.50	Disb Completed
	<b>Sub Total</b>			<b>7,275,055.00</b>	<b>5,312,538.50</b>	<b>1,962,516.50</b>	<b>1,801,000.00</b>	<b>503,000.00</b>	-	<b>2,304,000.00</b>	<b>3,511,538.50</b>	
2	<b>Worumakoto</b>											
	Drilling of Boreholes	CPMC/CDA	Water Project	1,500,000.00	1,350,000.00	150,000.00	675,000.00	826,000.00	-	1,501,000.00	(151,000.00)	Disb Completed
	Shea butter processing	Temako Women Assoc.	Women Income Generating Activity	550,000.00	385,000.00	165,000.00	385,000.00	-	-	385,000.00	-	Disb Completed
	Multi crop farming	Farmers Assoc.	Farmers Micro-project	890,000.00	623,000.00	267,000.00	311,500.00	-	-	311,500.00	311,500.00	Disb Completed
	Poultry farming	Hunters/Fisher men Assoc.	Hunters Income Activity	150,000.00	105,000.00	45,000.00	105,000.00	-	-	105,000.00	-	Disb Completed
	Cattle rearing	Hunters/Fisher men Assoc.	Hunters Income Activity	500,000.00	350,000.00	150,000.00	-	-	-	-	350,000.00	Stopped
	<b>Sub Total</b>			<b>3,590,000.00</b>	<b>2,813,000.00</b>	<b>777,000.00</b>	<b>1,476,500.00</b>	<b>826,000.00</b>	-	<b>2,302,500.00</b>	<b>510,500.00</b>	
3	<b>Woro</b>											
	Motorised Borehole	CPMC/CDA	Water Project	1,716,000.00	1,544,400.00	171,600.00	772,200.00	943,800.00	-	1,716,000.00	(171,600.00)	Disb Completed
	Drainage to control erosion	CPMC/CDA	Envnt&Nat. Res. micro-project	815,600.00	734,040.00	81,560.00	-	-	-	-	734,040.00	Disb Completed
	Planting of Maize and G/Nut	Farmers Assoc.	Farmers Micro-project	1,050,000.00	735,000.00	315,000.00	367,509.00	-	-	367,509.00	367,491.00	Disb Completed
	Shea butter processing	Women Assoc.	Women Income Generating Activity	550,000.00	385,000.00	165,000.00	385,000.00	-	-	385,000.00	-	Disb Completed
	Poultry farming	Youth Assoc.	Youth Income Generating Activity	700,000.00	490,000.00	210,000.00	-	-	-	-	490,000.00	Stopped

	Groundnut processing	Groundnut processors Assoc.	Youth Income Generating Activity	1,250,000.00	875,000.00	375,000.00	-	-	-	875,000.00	Stopped	
	Garri processing	Garri processors Assoc.	Youth Income Generating Activity	600,000.00	420,000.00	180,000.00	420,000.00	-	-	420,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>6,681,600.00</b>	<b>5,183,440.00</b>	<b>1,498,160.00</b>	<b>1,944,709.00</b>	<b>943,800.00</b>	-	<b>2,888,509.00</b>	<b>3,238,731.00</b>	
<b>4</b>	<b>Tungan-Maje</b>											
	Drilling of Boreholes	CPMC/CDA	Water Project	1,550,000.00	1,395,000.00	155,000.00	675,000.00	510,000.00	-	1,185,000.00	210,000.00	Disb Completed
	Shea butter processing	Sodangi Women Assoc.	Women Income Generating Activity	550,000.00	385,000.00	165,000.00	385,000.00	74,000.00	-	459,000.00	(74,000.00)	Disb Completed
	Groundnut farming	Youth Assoc.	Youth Income Generating Activity	300,000.00	210,000.00	90,000.00	105,000.00	65,000.00	-	170,000.00	40,000.00	Disb Completed
	Cassava farming	Zumunta multipurpose Assoc.	Farmers Micro-project	300,000.00	210,000.00	90,000.00	105,000.00	-	-	105,000.00	105,000.00	Disb Completed
	Maize farming	Dadinkowa maize Farmers Assoc.	Farmers Micro-project	700,000.00	490,000.00	210,000.00	245,000.00	-	-	245,000.00	245,000.00	Disb Completed
	Yam flour processing	Ifelodun Women Assoc.	Women Income Generating Activity	200,000.00	140,000.00	60,000.00	140,000.00	-	-	140,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>3,600,000.00</b>	<b>2,830,000.00</b>	<b>770,000.00</b>	<b>1,655,000.00</b>	<b>649,000.00</b>	-	<b>2,304,000.00</b>	<b>1,175,000.00</b>	
<b>5</b>	<b>Sansani</b>											
	Drilling of Boreholes	CPMC/CDA	Water Project	1,550,000.00	1,395,000.00	155,000.00	697,580.00	-	-	697,580.00	697,420.00	Disb Completed
	Drilling of Boreholes for fulanis	CPMC/CDA	Water Project	1,090,000.00	981,000.00	109,000.00	763,000.00	-	-	763,000.00	218,000.00	Disb Completed
	Guinea corn, millet and maize cultivation	Farmers Assoc.	Farmers Micro-project	1,100,000.00	770,000.00	330,000.00	-	-	-	-	770,000.00	Stopped
	Shea butter processing	Women Assoc.	Women Income Generating Activity	550,000.00	385,000.00	165,000.00	385,000.00	-	-	385,000.00	-	Disb Completed
	Groundnut, beans and rice cultivation	Youth Assoc.	Youth Income Generating Activity	600,000.00	420,000.00	180,000.00	-	-	-	-	420,000.00	Stopped
	Bee keeping	Fishermen's Assoc.	Farmers Micro-project	500,000.00	350,000.00	150,000.00	350,000.00	-	-	350,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>5,390,000.00</b>	<b>4,301,000.00</b>	<b>1,089,000.00</b>	<b>2,195,580.00</b>	-	-	<b>2,195,580.00</b>	<b>2,105,420.00</b>	

SN	Approved micro-projects	Name of User Gourp/CDA	Micro-project Category	Est. cost (N)	GEF Contr. (N)	Com. Contr. (N)	1st Tranche (N)	2nd Tranche (N)	3rd Tranche (N)	Total Disb. To Date (N)	Balance (N)	
6	<b>New-Kali</b>											
	Drilling of Boreholes	CPMC/CDA	Water Project	1,050,000.00	945,000.00	105,000.00	472,500.00	765,000.00	-	1,237,500.00	(292,500.00)	Disb Completed
	Shea butter processing	Women Assoc.	Women Income Generating Activity	550,000.00	385,000.00	165,000.00	385,000.00	64,000.00	-	449,000.00	(64,000.00)	Disb Completed
	Guinea corn, millet and maize cultivation	Farmers Assoc.	Farmers Micro-project	1,280,000.00	896,000.00	384,000.00	448,800.00	168,700.00	-	617,500.00	278,500.00	Disb Completed
	<b>Sub Total</b>			<b>2,880,000.00</b>	<b>2,226,000.00</b>	<b>654,000.00</b>	<b>1,306,300.00</b>	<b>997,700.00</b>	<b>-</b>	<b>2,304,000.00</b>	<b>919,700.00</b>	
7	<b>Malale</b>											
	Drilling and rehabilitation of Boreholes	CPMC/CDA	Water Project	1,479,326.00	1,331,393.40	147,932.60	665,696.50	84,303.50	-	750,000.00	581,393.40	Disb Completed
	Shea butter processing	Women Assoc.	Women Income Generating Activity	545,000.00	381,500.00	163,500.00	200,000.00	-	-	200,000.00	181,500.00	Disb Completed
	Farming activities	Gungu Farmers Assoc.	Farmers Micro-project	480,000.00	336,000.00	144,000.00	168,000.00	-	-	168,000.00	168,000.00	Disb Completed
	Farming activities	Fishermen Dev. Assoc.	Farmers Micro-project	450,000.00	315,000.00	135,000.00	315,000.00	-	-	315,000.00	-	Disb Completed
	Farming activities	Youth Farmers Dev. Assoc.	Farmers Micro-project	315,000.00	220,500.00	94,500.00	110,250.00	-	-	110,250.00	110,250.00	Disb Completed
	Multi crop Treshing	Youth Dev. Assoc.	Youth Income Generating Activity	500,000.00	350,000.00	150,000.00	350,000.00	-	-	350,000.00	-	Disb Completed
	Cattle fattening	Cattle Rearers Assoc.	Hunters Income Activity	350,000.00	245,000.00	105,000.00	157,500.00	-	-	157,500.00	87,500.00	Disb Completed
	Groundnut oil processing	Hunters Assoc.	Hunters Income Activity	1,345,000.00	941,500.00	403,500.00	162,250.00	-	-	162,250.00	779,250.00	Disb Completed
	Soap making	Community members	Youth Income Generating Activity	130,000.00	91,000.00	39,000.00	91,000.00	-	-	91,000.00	-	Disb Completed
	<b>Sub Total</b>			<b>5,594,326.00</b>	<b>4,211,893.40</b>	<b>1,382,432.60</b>	<b>2,219,696.50</b>	<b>84,303.50</b>	<b>-</b>	<b>2,304,000.00</b>	<b>1,992,196.90</b>	
8	<b>Luma</b>											
	Drilling of Boreholes	CPMC/CDA	Water Project	1,050,000.00	945,000.00	105,000.00	472,500.00	277,500.00	-	750,000.00	195,000.00	Disb Completed
	Groundnut processing	Women Assoc.	Women Income Generating Activity	703,000.00	492,100.00	210,900.00	492,100.00	-	-	492,100.00	-	Disb Completed
	Groundnut farming	Groundnut Farmers Assoc.	Farmers Micro-project	703,000.00	492,100.00	210,900.00	246,050.00	-	-	246,050.00	246,050.00	Disb Completed

	G/corn and millet farming	G/corn & millet farmers Assoc.	Farmers Micro-project	658,000.00	460,600.00	197,400.00	325,000.00	-	-	325,000.00	135,600.00	Disb Completed
	Rice farming	Rice farmers Assoc.	Farmers Micro-project	766,000.00	536,200.00	229,800.00	268,100.00	-	-	268,100.00	268,100.00	Disb Completed
	Vet drugs and services	Livestock Farmers Assoc.	Farmers Micro-project	891,644.00	802,479.60	89,164.40	222,500.00	-	-	222,500.00	579,979.60	Disb Completed
	<b>Sub Total</b>			<b>4,771,644.00</b>	<b>3,728,479.60</b>	<b>1,043,164.40</b>	<b>2,026,250.00</b>	<b>277,500.00</b>	<b>-</b>	<b>2,303,750.00</b>	<b>1,702,229.60</b>	
9	<b>Wawa</b>											
	Maize farming, Animal fattening & M/Cycles	Youth Cons.& O/P Assoc.	Hunters Income Activity	1,690,000.00	1,183,000.00	507,000.00	1,183,000.00			1,183,000.00	-	Disb Completed
	Rice farming and processing	Busu Ventera Women Assoc.	Women Income Generating Activity	1,900,000.00	1,330,000.00	570,000.00	1,330,000.00	-	-	1,330,000.00	-	Disb Completed
	Multi crop farming and Cattle fattening	Youth Farmers Assoc.	Youth Income Generating Activity	1,048,900.00	734,230.00	314,670.00	-	-	-	-	734,230.00	Stopped
	Computer Business Center	Unique Multipurpose Co-op Society	Youth Income Generating Activity	764,100.00	534,870.00	229,230.00	534,870.00	-	-	534,870.00	-	Disb Completed
	<b>Sub Total</b>			<b>5,403,000.00</b>	<b>3,782,100.00</b>	<b>1,620,900.00</b>	<b>3,047,870.00</b>	<b>-</b>	<b>-</b>	<b>3,047,870.00</b>	<b>734,230.00</b>	
10	<b>Duruma</b>											
	Drilling and rehabilitation of Boreholes	CPMC/CDA	Water Project	1,430,000.00	1,287,000.00	143,000.00	643,500.00	206,500.00	-	850,000.00	437,000.00	Disb Completed
	Motor bikes for commercial transportation	Okada Assoc.	Youth Income Generating Activity	500,000.00	350,000.00	150,000.00	350,000.00	-	-	350,000.00	-	Disb Completed
	Rice cultivation	Rice farmers Assoc.	Farmers Micro-project	1,100,000.00	770,000.00	330,000.00	-	-	-	-	770,000.00	Not Started
	Groundnut planting and processing	Women Groundnut processors Assoc.	Women Income Generating Activity	1,100,000.00	770,000.00	330,000.00	-	-	-	-	770,000.00	Not Started
	Shea butter processing	Women Shea butter processors Assoc.	Women Income Generating Activity	550,000.00	385,000.00	165,000.00	385,000.00	-	-	385,000.00	-	Disb Completed
	Elubo processing and marketing	Women multipurpose society	Women Income Generating Activity	110,000.00	77,000.00	33,000.00	-	-	-	-	77,000.00	Not Started
	Yam cultivation	Fulani farmers Assoc.	Farmers Micro-project	1,100,000.00	770,000.00	330,000.00	-	-	-	-	770,000.00	Not Started
	Multi crop farming	Farmers Assoc.	Farmers Micro-project	651,000.00	455,700.00	195,300.00	-	-	-	-	455,700.00	Not Started
	<b>Sub Total</b>			<b>6,511,000.00</b>	<b>4,644,700.00</b>	<b>1,676,200.00</b>	<b>1,378,500.00</b>	<b>206,500.00</b>	<b>-</b>	<b>1,585,000.00</b>	<b>3,486,200.00</b>	

SN	Approved micro-projects	Name of User Gourp/CDA	Micro-project Category	Est. cost (N)	GEF Contr. (N)	Com. Contr. (N)	1st Tranche (N)	2nd Tranche (N)	3rd Tranche (N)	Total Disb. To Date (N)	Balance (N)	
11	Gada-Oli											
i	Rice Farming	Young Shall Grow Farmers Ass.	Youth Income Generating Activity	600,000.00	480,000.00	120,000.00	240,000.00	240,000.00	-	480,000.00	-	Disb Completed
ii	Rice & Kuli-Kuli Proc.	Achi Abiya Women Ass.	Women Income Generating Activity	817,500.00	654,000.00	163,500.00	654,000.00	-	-	654,000.00	-	Disb Completed
iii	Shea Butter Proc.	Kungiyani Matan Ibo	Women Income Generating Activity	600,000.00	480,000.00	120,000.00	480,000.00	-	-	480,000.00	-	Disb Completed
iv	Irrigation Farming	Kungiyani Noma Rani	Farmers Micro-project	687,500.00	550,000.00	137,500.00	550,000.00	-	-	550,000.00	-	Disb Completed
v	Orchard	CPMC/CDA	Envt&Nat. Res. micro-project	200,000.00	200,000.00	-	90,000.00	90,000.00	-	180,000.00	20,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,905,000.00</b>	<b>2,364,000.00</b>	<b>541,000.00</b>	<b>2,014,000.00</b>	<b>330,000.00</b>	<b>-</b>	<b>2,344,000.00</b>	<b>20,000.00</b>	
12	Kuble											
i	Agro Processing Machine	Suruna Women Ass.	Women Income Generating Activity	832,125.00	665,700.00	166,425.00	748,912.50	-	-	748,912.50	(83,212.50)	Disb Completed
ii	Bee Keeping	Hunters Ass.	Hunters Income Activity	575,000.00	460,000.00	115,000.00	258,750.00	258,750.00	-	517,500.00	(57,500.00)	Disb Completed
iii	Rice/Beans Farming	Farmers Ass.	Farmers Micro-project	1,080,900.00	864,720.00	216,180.00	486,405.00	486,405.00	-	972,810.00	(108,090.00)	Disb Completed
iv	Orchard	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,738,025.00</b>	<b>2,240,420.00</b>	<b>497,605.00</b>	<b>1,606,567.50</b>	<b>857,655.00</b>	<b>-</b>	<b>2,464,222.50</b>	<b>(223,802.50)</b>	
13	Leshigbe											
i	G/nut & Beans Farming	Tashi Kasamu Women Ass.	Women Income Generating Activity	457,200.00	365,760.00	91,440.00	182,880.00	182,880.00	-	365,760.00	-	Disb Completed
ii	Cow/Ram Fattening	Albarka Women Ass.	Women Income Generating Activity	933,750.00	747,000.00	186,750.00	373,500.00	373,500.00	-	747,000.00	-	Disb Completed
iii	Grain Milling Machine	Alheri Women Ass.	Women Income Generating Activity	652,500.00	522,000.00	130,500.00	522,000.00	-	-	522,000.00	-	Disb Completed
iv	Orchard	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	100,000.00	100,000.00	-	200,000.00	50,000.00	Disb Completed
v	Animal Traction	Manoman Dattawa	Farmers Micro-project	544,800.00	317,920.00	108,960.00	490,432.00	-	-	490,432.00	(172,512.00)	Disb Completed
		<b>Sub Total</b>		<b>2,838,250.00</b>	<b>2,202,680.00</b>	<b>517,650.00</b>	<b>1,668,812.00</b>	<b>656,380.00</b>	<b>-</b>	<b>2,325,192.00</b>	<b>(122,512.00)</b>	
14	Tenebo											

I	Shea Butter Processing	Farmers Association	Farmers Micro-project	983,550.00	786,840.00	196,710.00	393,420.00	393,420.00	-	786,840.00	-	Not Completed
ii	Groundnut Farming	Groundnut Farmers Ass.	Farmers Micro-project	697,250.00	557,800.00	139,450.00	278,900.00	278,900.00	-	557,800.00	-	Disb Completed
iii	Bee Keeping	Okada Association	Youth Income Generating Activity	563,040.00	552,000.00	112,608.00	225,216.00	225,216.00	-	450,432.00	101,568.00	Disb Completed
Iv	Orchard	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,493,840.00</b>	<b>2,146,640.00</b>	<b>448,768.00</b>	<b>1,010,036.00</b>	<b>1,010,036.00</b>	<b>-</b>	<b>2,020,072.00</b>	<b>126,568.00</b>	
<b>15 Nanu Shugaba</b>												
I	Cow Fattening	Barki Durobe Ass.	Youth Income Generating Activity	1,493,750.00	1,195,000.00	298,750.00	597,500.00	597,500.00	-	1,195,000.00	-	Disb Completed
ii	G/nut Farming	Afiyana Women Ass.	Women Income Generating Activity	548,750.00	439,000.00	109,750.00	219,500.00	219,500.00	-	439,000.00	-	Disb Completed
iii	Orchard	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,292,500.00</b>	<b>1,884,000.00</b>	<b>408,500.00</b>	<b>929,500.00</b>	<b>929,500.00</b>	<b>-</b>	<b>1,859,000.00</b>	<b>25,000.00</b>	
<b>16 Shagunu</b>												
I	Rice Farming	Dana Sura Ass.	Farmers Micro-project	750,000.00	600,000.00	150,000.00	600,000.00	-	-	600,000.00	-	Disb Completed
ii	G/Nut Farming	Swashi Farmers Ass.	Farmers Micro-project	380,000.00	304,000.00	76,000.00	152,000.00	152,000.00	-	304,000.00	-	Disb Completed
iii	G/Corn Farming	Corn Farmers Ass.	Farmers Micro-project	875,000.00	700,000.00	175,000.00	350,000.00	350,000.00	-	700,000.00	-	Disb Completed
Iv	Animal Traction	Gbaga M/Purpose Soc.	Farmers Micro-project	625,000.00	500,000.00	125,000.00	500,000.00	-	-	500,000.00	-	Disb Completed
V	Orchard	CPMC/CDA	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-	112,500.00	112,500.00	-	225,000.00	25,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,880,000.00</b>	<b>2,354,000.00</b>	<b>526,000.00</b>	<b>1,714,500.00</b>	<b>614,500.00</b>	<b>-</b>	<b>2,329,000.00</b>	<b>25,000.00</b>	
<b>17 Gulubi</b>												
I	Yam & Maize farming	Farmer's Association	Farmers Micro-project	572,000.00	457,600.00	114,400.00	228,800.00	228,800.00	-	457,600.00	-	Disb Completed
ii	Maize & Groundnut farming	Sudakan Anfani Association	Farmers Micro-project	514,000.00	411,200.00	102,800.00	205,600.00	205,600.00	-	411,200.00	-	Disb Completed
iii	Rice farming	Zumunta Na Sarkawa	Farmers Micro-project	594,000.00	475,200.00	118,800.00	475,200.00	-	-	475,200.00	-	Disb Completed
iv	Bee keeping	Kungiyar Mungode	Youth Income Generating Activity	526,500.00	421,200.00	105,300.00	210,600.00	210,600.00	-	421,200.00	-	Disb Completed
V	Soya beans & Groundnut	Gamabaki Women Assoc	Women Income Generating	349,500.00	279,600.00	69,900.00	139,800.00	139,800.00	-	279,600.00	-	Disb Completed



	farming		Activity									
Vi	Community Orchard	Community	Envt&Nat. Res. micro-project	190,000.00	190,000.00	-	85,500.00	85,500.00	-	171,000.00	19,000.00	Disb Completed
		<b>Sub Total</b>		<b>2,746,000.00</b>	<b>2,234,800.00</b>	<b>511,200.00</b>	<b>1,345,500.00</b>	<b>870,300.00</b>	<b>-</b>	<b>2,215,800.00</b>	<b>19,000.00</b>	
<b>18</b>	<b>Kwasare</b>											
i.	Cultivation of beans Guinea Corn & Animal Traction	Kwasare farmer's Association	Farmers Micro-project	1,130,585.00	904,468.00	226,117.00						Under disbursmt
							90,448.00	90,448.00	-	180,896.00	723,572.00	
ii.	Shea butter processing machine	Kwasare Women Assoc	Women Income Generating Activity	640,500.00	512,400.00	128,100.00						Under disbursmt
							102,480.00	-	-	102,480.00	409,920.00	
iii.	Bee keeping	Kwasare Hunter's Assoc	Hunters Income Activity	535,000.00	428,000.00	107,000.00						Under disbursmt
							85,600.00	-	-	85,600.00	342,400.00	
iv.	Community Orchard	Community	Envt&Nat. Res. micro-project	250,000.00	250,000.00	-						Disb Completed
							112,500.00	112,500.00	-	225,000.00	25,000.00	
		<b>Sub Total</b>		<b>2,556,085.00</b>	<b>2,094,868.00</b>	<b>461,217.00</b>	<b>391,028.00</b>	<b>202,948.00</b>	<b>-</b>	<b>593,976.00</b>	<b>1,500,892.00</b>	
<b>19</b>	<b>Gbenji</b>											
i.	Groundnut farming	Ginzau Women Association	Women Income Generating Activity	843,000.00	674,400.00	168,600.00						Disb Completed
							337,200.00	337,200.00	-	674,400.00	-	
ii.	Bee keeping	Hunter's Association	Hunters Income Activity	535,000.00	428,000.00	107,000.00						Disb Completed
							214,000.00	214,000.00	-	428,000.00	-	
iii.	Rice farming	Zaman Lafia Women Assoc	Women Income Generating Activity	630,000.00	504,000.00	126,000.00						Disb Completed
							504,000.00	-	-	504,000.00	-	
iv.	Cotton farming	Young farmers Association	Youth Income Generating Activity	708,000.00	556,400.00							Disb Completed
							283,200.00	283,200.00	-	566,400.00	(10,000.00)	
v.	Community Orchard	Community	Envt&Nat. Res. micro-project	138,200.00	138,200.00	-						Disb Completed
							62,190.00	62,190.00	-	124,380.00	13,820.00	
		<b>Sub Total</b>		<b>2,854,200.00</b>	<b>2,301,000.00</b>	<b>401,600.00</b>	<b>1,400,590.00</b>	<b>896,590.00</b>	<b>-</b>	<b>2,297,180.00</b>	<b>3,820.00</b>	
<b>20</b>	<b>Dekara</b>											
i.	Cow fattening	Miyeti Allah Association	Youth Income Generating Activity	483,200.00	386,560.00	96,640.00						Disb Completed
							386,560.00	-	-	386,560.00	-	
ii.	Shea butter processing machine	Afiana Women Association	Women Income Generating Activity	502,350.00	497,326.50	5,023.50						Disb Completed
							401,880.00	-	-	401,880.00	95,446.50	
iii.	Maize & Guinea Corn farming	Sabuke Group	Farmers Micro-project	629,000.00	622,710.00	6,290.00						Disb Completed
							251,600.00	251,600.00	-	503,200.00	119,510.00	
iv.	Animal Traction	Hunter's Association	Hunters Income Activity	500,000.00	400,000.00	100,000.00						Disb Completed
							400,000.00	-	-	400,000.00	-	
v.	Community Orchard	Community	Envt&Nat. Res. micro-project	117,680.00	117,680.00	-						Disb Completed
							52,956.00	52,956.00	-	105,912.00	11,768.00	

		Sub Total	2,232,230.00	2,024,276.50	207,953.50	1,492,996.00	304,556.00	-	1,797,552.00	226,724.50	
	SECTOR TOTAL		78,262,755.00	61,099,836.00	16,994,967.00	32,624,935.00	11,160,268.50	-	43,785,203.50	20,976,436.00	
	GEF TOTAL		150,229,044.00	120,331,678.90	30,229,913.10	63,407,124.39	24,464,293.21	-	87,871,417.60	39,276,089.80	

Source: Nigerian National Parks Service – Global Environment Facility Report

IDA FUNDING TO GEF- SZCs											
A	BORGU SECTOR		Estimated	Expected IDA	Expected	1st Tranche	2nd Tranche	3rd Tranche	Total Disb. To		
S/N	Proposed Micro-Projects	Sector	Cost (N)	Contri (N)	C/Contr (N)	(N)	(N)	(N)	Date (N)	Balance (N)	
1	Malale										
I	Renovation of H/Centre	CPMC/CDA	392,633.00	353,369.70	39,263.30	176,684.85	176,684.85	-	353,369.70	-	Disb Completed
2	Luma										
I	Const. of 1 Blk. Classroom	CPMC/CDA	1,836,800.00	1,653,120.00	183,680.00	495,936.00	596,160.00	561,004.00	1,653,100.00	20.00	Disb Completed
II	Const. of Health Centre	CPMC/CDA	1,150,000.00	1,035,000.00	115,000.00	310,500.00	517,500.00	207,000.00	1,035,000.00	-	Disb Completed
3	Wawa										
I	Renovation of Sec. School	CPMC/CDA	700,000.00	630,000.00	70,000.00	189,000.00	384,120.00	56,880.00	630,000.00	-	Disb Completed
II	Const. of Sec. School Lab	CPMC/CDA	1,800,000.00	1,620,000.00	180,000.00	486,000.00	810,000.00	324,000.00	1,620,000.00	-	Disb Completed
III	Provision of drugs to H/center	CPMC/CDA	500,000.00	450,000.00	50,000.00	-	-	-	-	450,000.00	Not Started
4	Sansani										
I	Const. of School Block	CPMC/CDA	1,101,255.00	991,129.50	110,125.50	297,338.85	495,551.25	198,239.40	991,129.50	-	Disb Completed
II	Const. of Health Centre	CPMC/CDA	1,150,000.00	1,035,000.00	115,000.00	310,500.00	517,500.00	207,000.00	1,035,000.00	-	Disb Completed
5	New Kali										
I	Const. of Blk. of 5 Cls, Furniture & Toilets	CPMC/CDA	2,311,111.11	2,080,000.00	231,111.11	810,000.00	170,000.00	306,000.00	1,286,000.00	794,000.00	Disb Completed
II	Const. of H /Centre with Furniture	CPMC/CDA	1,838,888.89	1,655,000.00	183,888.89	310,500.00	517,500.00	827,000.00	1,655,000.00	-	Disb Completed
	Sub Total		12,780,688.00	11,502,619.20	1,278,068.80	3,386,459.70	4,185,016.10	2,687,123.40	10,258,599.20	1,244,020.00	

B	ZUGURMA			Estimated	Expected IDA	Expected	1st Tranche	2nd Tranche	3rd	Total Disb. To		
S/N	Proposed Micro-Projects			Cost (N)	Contri (N)	C/Contr (N)	(N)	(N)	Tranche	Date (N)	Balance (N)	
1	Kpelegi											
1	Furniture & VIP Toilets for School	CPMC/CDA	Education	250,000.00	225,000.00	25,000.00	67,500.00	157,500.00	-	225,000.00	-	Disb Completed
2	Patiko											
1	Const. of Dispensary	CPMC/CDA	Health	1,480,000.00	1,332,000.00	148,000.00	399,600.00	666,000.00	266,400.00	1,332,000.00	-	Disb Completed
3	Mulea											
1	Const. of Dispensary	CPMC/CDA	Health	1,124,210.00	1,011,789.00	112,421.00	303,536.70	505,800.00	202,452.30	1,011,789.00	-	Disb Completed
4	Faje											
1	Const. of Dispensary	CPMC/CDA	Health	1,513,333.33	1,362,000.00	151,333.33	303,507.00	505,845.00	202,452.20	350,000.00	1,012,000.00	Disb Completed
5	Kulho											
1	Construction of bridge	CPMC/CDA	Roads/Transport	3,000,000.00	2,700,000.00	300,000.00	-	-	-	-	2,700,000.00	Not Started
II	Upgrading of Dispensary	CPMC/CDA	Health	1,124,210.20	1,011,789.18	112,421.02	303,536.70	-	-	303,536.70	708,252.48	Disb Completed
6	Babugi											
I	Renovation of dispensary & Drugs	CPMC/CDA	Health	1,124,210.00	1,011,789.00	112,421.00	303,536.75	500,000.00	208,252.25	1,011,789.00	-	Disb Completed
7	Mazakuka											
I	Road rehabilitation	CPMC/CDA	Roads/Transport	3,720,000.00	3,348,000.00	372,000.00	2,343,600.00	1,004,400.00	-	3,348,000.00	-	Disb Completed
8	Shafini											
I	Const. of School building	CPMC/CDA	Education	2,280,000.00	2,052,000.00	228,000.00	615,600.00	915,200.00	521,200.00	2,052,000.00	-	Disb Completed
II	Renovation of Dispensary	CPMC/CDA	Health	680,000.00	612,000.00	68,000.00	183,600.00	428,400.00	-	612,000.00	-	Disb Completed
	Sub Total			16,295,963.53	14,666,367.18	1,629,596.35	4,824,017.15	4,683,145.00	1,400,756.75	10,246,114.70	4,420,252.48	
	TOTAL IDA FUNDS			29,076,651.53	26,168,986.38	2,907,665.15	8,210,476.85	8,868,161.10	4,087,880.15	20,504,713.90	5,664,272.48	
	GRAND TOTAL			179,305,695.53	146,500,665.28	33,137,578.25	71,617,601.24	33,332,454.31	4,087,880.15	108,376,131.50	44,940,362.28	

Source: Nigerian National Parks Service – Global Environment Facility Report