

Assessing Effectiveness of Forest Resource Management Approaches in Niger Delta: Comparative Analysis of Mbe Mountains and Cr National Park

Rose Chinyere Okoro^{1*}, Joseph Ugochukwu Ogbuefi²,

¹ Dept. of Estate Management, Cross River University of Technology, Calabar, NIGERIA

² Dept. of Estate Mgt., University of Nigeria, Nsuka, NIGERIA

Abstract

For years now the forest contents of the Niger Delta region of Nigeria have been seriously exploited to the penury of the world. Local public bodies and international Non-governmental (NGOs) conservative organizations have adopted several management strategies to achieve sustainability in managing these forest resources to little or no avail. This study is undertaken to assess and compare effective management approaches of two protected areas (PAs) in Cross River state to discover which one is more sustainably managed and the reasons. The publicly-owned and managed Oban Hills and community-owned and managed Mbe Mts. were chosen for study using survey approach. Structured questionnaires were distributed, retrieved and analyzed using simple frequency tables. It was discovered that the community-based managed Mbe Mts. was more sustainably managed than the public-owned and managed Oban Hills. The study recommends that for any PA to be managed sustainably, the indigenous people must be involved in all spheres of its management.

Key words: Sustainable management, endemic species, biodiversity, forest resources, indigenous people, Protected Areas (PAs)

1. Introduction

It is possible for earth's rich biodiversity to run out. The earth is a global village and all its resources belong to all humans alongside with their benefits and pains. Man's activity hurts earth's resources. Even though they can also enhance their richness and rejuvenate if guarded. Concerned with the possibilities of extinction by human activities of earth's resources, the global community, in the year 1900, commenced the conservation of earth's rich biodiversity in what is known as protected areas (PAs). From 1900 up till now, about one hundred and ten thousand official protected areas have been created, with more being added every day (Dowie (Dowie, 2009). The World Park Commission set a goal in 1900 to conserve 10 percent of the planet's surface. As at today, 12 percent of earth's surface is under conservation. Every country is given a quota to attend in protecting the rich biodiversity of the earth's surface, which in many countries are endemic. There exists however problems in the conservation exercise the world over. The indigenous people own the land upon which they have been living for centuries, perhaps. They are tied to the land from which they draw subsistence perhaps, through hunting, logging, fishing, farming, trapping, fetching water, picking forest produce thereby depleting forest resources and bring about devastating environmental consequences. How can they possibly be divorced from their ancestral style of livelihood to make room for the conservation of forest resources for the good of the globe?

Conservation scientists believe in the use of 'cargo' (promise of western material goods – schools, clinics, town halls, poultry/snail farms, boats etc.) to secure the cooperation of the indigenous people to create 'protected areas' in their land. This practice is predominant with some of the Big International Non-Governmental Organizations (BINGOs) of the world. They include The Nature Conservancy (TNC), Worldwide Fund for Nature (WWF), Conservation International (CI), Wildlife Conservation Society (WCS) and African Wildlife Foundation (AWF). To some extent, the cargo incentive could work. This is in line with the appeal of late President Nelson Mandela in the 2003 World Parks Conference in Durban, South Africa who urged the conservationists not to turn their backs to the rural economies and to treat the indigenous people fairly in their course of creating new parks and game reserves. Mandela's successor, Thabo Mbeki, also warned in that

conference that “mere exhortations to poor people to value and respect the ecosystem contents within the parks will not succeed”. To them alternative sources of livelihood should be found for the poor of the world so that hunger and underdevelopment will not drive them to act in a manner that undermines the global effort to protect the ecosystems. But this has not solved the problem. Most conservation organizations fail to fulfill promises to the indigenous people, hoping to do it in isolation thereby exploiting the people and incurring their wrath in return (Dowie, 2009). And where they keep their promises they are far cries to the exploitations caused by them to the local ecosystem of the local communities through their harvesters (concessionaries). Another problem is that of the inherent nature of the indigenous people to harvest ecosystem for their benefits. Article 10 of the UN Declaration on the Rights of Indigenous people provides that “Indigenous people shall not be forcefully removed from their lands and territories. No relocation shall take place without free, prior, informed consent of indigenous persons concerned and after agreement on first and fair compensation and, where possible with the option of return.”

Current approach is in the application of sustainable management principles in the effective management of the forest resources for the benefits of all. The success of this is closely linked to sustainably developing the local communities to diversify the subsistence practices of the indigenous people from depending on forest products to alternative sources of livelihood while allowing for forest resources conservation.

Cross River rainforest lies at the heart of Africa Gulf of Guinea rainforest and houses Africa most endangered species in fauna and flora. It is one of the eight states which constitute the Nigerian Niger Delta Region. In order to effectively conserve and manage these rich forest reserves, foremost world conservationists (World Wide Fund for Nature (WWF, 1989)) advised Nigerian government and in conjunction with Cross River Government set up some number of protected areas in the state. This work is undertaken to assess and compare the sustainable management of two of these protected areas and to discover which one is more effectively managed and why.

1.2 Statement of the research problem

For more than three decades, tropical moist forests of the world have been degraded at a very high rate. Only less than half of the rich-tropical forest remained undisturbed as at 1989 (WWF, 1989). This posed local and global devastating consequences of distorted global climate patterns resulting in global warming phenomenon, loss of world biodiversity in fauna and flora; local draughts, floods, extreme weather condition and poverty. These as observed by conservation scientists, are caused by excessive population pressure on existing forest resources, indiscriminate and extensive farming systems on weak soils with no protective measures, conversion of forest to devastating logging system and abusive fishing expeditions wherein even fingerlings are harvested (WWF,1989). The unwillingness of the indigenous people to embrace other sustainable economic activities to estrange them from depleting the forest resources This poses a huge problem. How can this problem be solved? Herein lies the major thrust of this work.

1.3 Research questions

1. What are the management principles, personnel, policies and plans in the management of the forest resources of the study areas?
2. How is sustainable management of forest resources practiced in Mbe Mts. and Oban?
3. What significant effects does sustainable management have on the preservation of the forest contents/economic development in the areas under study?
4. What factors account for the successes/failures encountered in the management of the forest resources in the study areas?
5. What solutions can be proffered for effective management of the forest resources in Nigeria Niger Delta Region?

1.4 Significance of the study

All over the world there is an outcry of environmental hazards of flood, climate change, depletion of ozone layer,

poverty, forest loss etcetera. The global community is united in finding lasting solution to these hazards which are manmade and can be corrected by man himself – simply, utilizing earth abundance resources, domiciled in the rural domain of the world in a sustainable manner to serve the present generation and the unborn future generations. It is believed that this work will unravel the pitfalls which have been posing obstacles to the implementation of conservation of our forest resources for decades now. Its contents will be useful to the Nigerian government, the global community, Cross River State Government and other conservation scientists in their conservation crusades and implementations.

1.5 The study area

Location/ Forest contents of the Niger Delta region in Cross River state

Cross River State is one of the eight states making up the Niger Delta region of Nigeria and houses the largest undisturbed forest areas in Nigeria (Morgan, 2011). The forest straddles the boundary between the Southeast of Nigeria and Southwest of Cameroon. It houses Africa most endemic species in fauna and flora such as the Cross River gorilla, forest elephants, Preuss's and drill monkeys, the endangered Cameroon-Nigeria chimpanzee, abundance of insects, birds, amphibians and mammals, plants, etcetera (WCS, 2012) (WCS,2012). Wildlife Conservation Society (WCS), reports that the area houses some densest human settlements in Africa, where indigenous people depend heavily on the forest for everything including bush meat for food and trade, fish, medicines, vines, timbers, fruits and leaves. This poses a problem to forest contents conservation of the conservation advocates.

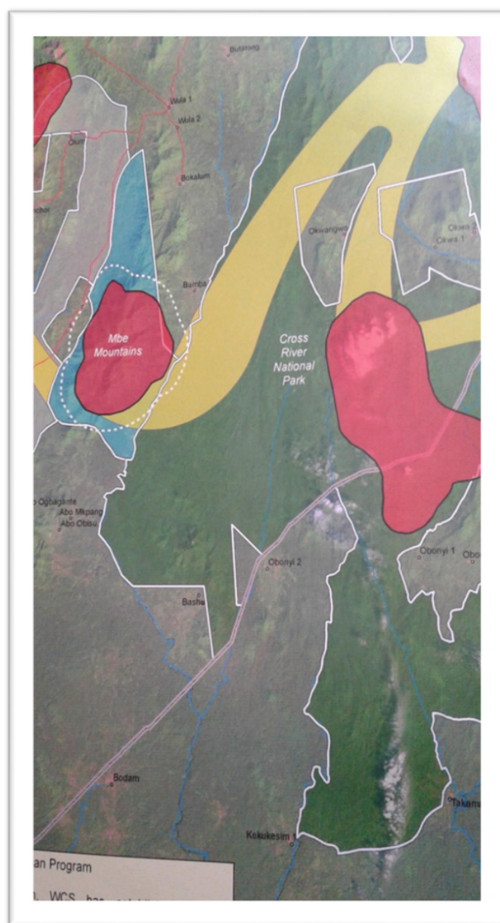


Fig.1 Aerial view showing Mbe Mts. and CR National Park

2. Literature review

Introduction

Concerned about how the contents of the world-tropical rain forests were being eroded at a terribly high rate, with resultant devastating local and global environmental and economic consequences, an international consensus was formed in the 1900s to prevent further equatorial deforestation. In 1989 Nigerian government directed that all military Governors should work out modalities to create and increase protected forest areas in their domains (WWF, 1989). This section reviews relevant works on different aspects of this present work as foundation upon which the present work rests.

2.1 Concept of Protected Areas

A Protected Area (PA), also called a National Park, is an exclusive area with clear defined boundaries wherein human disturbances in form of access (road), farming, logging, hunting, harvesting of forest produce indiscriminately are prohibited (WWF, 1989). The practice is to protect natural bio diversities in an intact form for local, national and international benefits. There are several local and international legislations and instruments that establish, guide and control the management and practices of PAs. Some of these include: *ILO Convention 169,*Agenda 21, *Draft UN Declaration on the Rights of the indigenous people and* Convention on Biological Diversity.

In Cross River State the operating legislation is the Cross River State of Nigeria Forest Commission Law of 2010. The relevant portions of the Law for establishment, operations and management of wholly or partially protected areas are:

- secs. 6(a) – (h), sec 7 (2a), Part 11 section 24 (forests classification)
- Secs. 26 and 27; sections 33, 34 and 35 (processes of land acquisition for conservation purposes); sec 39 ;
- sec 42 stipulates that PAs are controlled by the Commission in conjunction with communities, Civil Society, private sector and any Community-Based Forest Management Association or other relevant Agencies;
- Secs. 43,44 and 45 (contain policies on harvesting forest produce in PAs for public purposes).
- Sec 45 further lists protected species of fauna and flora as outlined in Schedule11 of the law to be wholly protected as they are endangered.
- Sec. 46 provides policy for protecting water quality, water supply, watershed or fisheries in PAs
- Sec 48 prohibits clear-cutting or burning of high forests for farming or hunting purposes in the protected areas.
- Sec 59 provides for the establishment of Community Based Forest Management Association; while
- Sec 60 deals with policies for the management of Community Forest in compliance with the 2010 Law.

2.1.1 Protected Areas in Cross River state

Following from the provisions of the 2010 Law the government, communities and private individual and organizations have set up several PAs in the state, including Afi Mt. Sanctuary, Mbe Mts., CR National Park-Akwangwu and Oban etcetera.

2.2 The concept of sustainable management of forest resources

Sustainable management is the ability to keep a system running indefinitely without depleting resources, maintaining economic viability and also nourishing the needs of the present and future generations.(Wikipedia, n.d).

In relation to forest resources, it is the application of sustainable practices in the management of forest resources in a way that will benefit present generation and future generations. Thus sustainable management has three key areas:

- The environment
- Need for the present and future generations and
- The economy.

In achieving sustainability in the three key areas good forest management techniques include the following:

- Replacing harvested products (timber)
- Diverting man's action from depleting the flora and fauna through domesticating forest resources for man's use, trade and consumption.
- Prohibition from harvesting by law
- Conservation education on the benefits of conservation
- Extraction of old timber
- Planting and re-planting of different species of timber
- Cutting roads and pathways through the Parks and
- Forest fire prevention

WWF (1989) believe that there exists solution to rich-forest biodiversity destruction through the application of the following sustainable management principles:

- Teaching farmers new and more productive ways of using lands. Also granting revolving credit fund to them provided they invest in appropriate projects.
- Curtailing the growth of population density around PAs and thereby stabilizing forest- farm system.
- Nationalizing forest conversion to plantations thereby making the PAs economically and ecologically appropriate.
- Reforming forest management practices to relate harvest to tree growth and regeneration rates.
- Diversifying the nature of the harvest to take advantage of output other than lumbering timber thereby leading to sustainable management of the whole forest resource.
- Granting funds to village councils for communal works which do not impact, negatively on the Park and must be conditional on village behavior with regard to the Park.

Human population pressure is one of the key factors that pose failure on the management of most PAs. To checkmate this, WWF (1989) proffers four sustainable management practices:

Defending the Park

The integrity of the Parks must be defended through well trained rangers who must keep a-24hr surveillance over the Parks to scare off poachers and other park intruders. These intruders must be arrested and charged. Laws must be promulgated to safeguard and back the operations of the rangers. Relevant implements/weapons must be given to them for their operations and defense. In 2014 Nigerian Government signed into law and gave National Park Service approval to operate as a Para military organization thus empowering Park rangers to carry arms for self-protection against dangerous poachers (Nigeria Parks,2014)

Intensifying land use around the Parks

In order to minimize encroachments by natives into the Parks for agriculture purposes WWF opined that Agroforestry must be intensified around the protected areas to cater for the food subsistent of the local communities.

Generating wealth by the PAs

Wealth potentials of the PAs are very high. Their wealth comes from cultural/nature tourisms, researches by research students all over the world, concessionary lumbering, medicine production, and materials for indigenous craft industries, edible vegetables and even genetic and phytochemical researches. (WWF, 1989). For this wealth to be harnessed, the contents of the PAs must be protected from extinction by unguarded exploited harvesting by the natives and concessionaries.

Transfer of PA's wealth to the natives

The success of the PAs rests on the activities of the host or indigenous communities. Dowie (2009) reporting on the opening speech of Sir Shridath Ramphal, president of International Union of Conservation of Nature (IUNC) during the 4th World Parks Congress in Caracas, writes "... If local people do not support protected areas, then protected areas will not last". This is wholly true except in the event that the natives are allowed to participate in the wealth accruing from the PAs. They are the closest allied of the PARKS. No matter how effective the rangers are, the natives play a vital role to the rangers' success in surveillance over the PAs. Zimbabwe's CAMPFIRE Project in 1982 succeeded because indigenous land companies were established and made to be sole controllers of the sustainable management of the forestry, wildlife and grazing in their areas. Government only played supervisory and advisory roles (WWF,1989).

Summarily, for the PAs to succeed, the natives must play key roles: participate in Parks' management, be employed as rangers and tourists' guards, given shares in concessionaries' fees and hunting rights, low-interest revolving credits in exchange for respecting the integrity of the Park, (Ban Sap Tai in Thailand), financing local development projects (Luangwa Valley, Zambia, 1983) etcetera.

2.3 Benefits derivable for sustainably managing our Niger Delta forest resources in Oban and Mbe projects

The benefits include but not limited to the following:

2.3.1 Financial benefits

Global experience of PAs shows that huge financial benefits abound where forest resources are preserved and sustainably managed effectively. This comes through:

Eco-Tourism

Tourists into the protected areas need the following services which are usually provided by the natives and money is paid for assessing such services:

Eco-guides/load carriers

Natives are the only guides that know the nook and crannies of the close-canopy forests and can lead the tourists unmolested through them while the tourists savor the sweet natural pleasure of the forests. The natives become the "beasts" of burden to the tourists in carrying their loads while leading them through the forests or to their place of abode. For these services, the tourists gladly pay the natives for them.

Rents from accommodation provision

Where tourists' accommodations are provided, rents are paid for lodging. Where they are not, natives vacate their houses temporally to earn that windfall of rent for a time.

Local arts/ crafts trade

Tourists buy local crafts e.g. cane chairs, died cloths, natively weaved mats, hats, baskets, carved images, etc. as souvenirs for their loved ones once they come to local environments. Through these the local people generate incomes for themselves. Also tourists watch native dances and plays for their pleasure. Where these are arranged tourists relish them and willingly pay hugely for them.

Fees for researches

Uncommon hidden knowledge abounds in PAs. Researchers go anywhere in the world to carry out researches where information bordering their researches are domiciled. They readily pay money to be allowed to enter such enclaves for researches. Many of these researches are sponsored by organizations which commit huge funds to sponsor such them.

2.3.2 Reducing Emission from Deforestation and Forest Degradation (REDD+)

This United Nations program brings huge monetary benefits to local communities, states and nations who preserve their forests intact to ameliorate the harsh environmental effects caused by industrialized nations who emit poisonous gasses through their industrial operations into the atmospheres thereby causing depletion of ozone layers of the earth. UN charged these organizations huge money and paid same to nations who preserve their forests enclaves. In 2012/2013 Cross River State Government received \$4million for communities for REDD+ program in Cross River State for leaving their forest intact. Report has it that only an infinitesimal amount was given to the communities' concerned while Government diverted the huge chunk of that money to other areas. This was enough to develop the communities concerned and thereby encourage them to support the REDD+ program.

2.3.3 Community developments

Conservationists seeking to partner with the indigenes naturally carry out developmental projects such as building/renovation of schools (primary and secondary), narrow roads, town halls, clinics/health centers, markets, culverts/small walk-over bridges to entice the local people to co-operate and grant them access into their land.

2.3.4 Employments

Local people are employed as eco guides, park rangers, and load-carriers, etcetera.

2.3.5 Unpolluted/abundant natural resources

Conservation promotes undisturbed forest areas which will in turn provide pure natural source of drinking water, rich agricultural soil, rich source of sustainable lumbering for economic returns, enhancement of health for visitors, amelioration of harsh weather conditions of flooding, erosion/landslides, depletion of ozone layers, etcetera(Wikipedia, undated; WWF, 1989) .

Others include:

- Ensuring abundant stock of forest resources to the unborn generations
- Enhancement of standard of living for the rural people and
- Gorilla Tourism, for Cross River state.

2.4 Establishment of the PAs, personnel, policies, management and plans in Cross River State (CRS)

This section is devoted to reviewing literature on the establishment of the two PAs under study

2.4.1 Establishment of Mbe mountains sanctuary

Background/Contents

(WCS, 2006) reports that Mbe Mts. is one of the unique biological landscapes in Nigeria linking three other rich bio diversity landscapes – Afi River Forest Reserve, Okwangwu sector of CR National Park and

Takamanda Forest Reserve in southwest Cameroun (please see plate 1). By its location its forest contents is similar to those of the other Reserve areas around it. Apart from this, gorillas were “rediscovered” on the Mts. in the 1980s and automatically threw the area into international limelight for conservation purposes.

Acting on behalf of Sustainable Practices in Agriculture for Critical Environments (SPACE) Project for Cross River State Government, in 2005, Wildlife Conservation Society (WCS), re-appraised the management option for Mbe Mountains and helped the nine communities in the area set it up. This action was a follow up of a failed intention by the CRS government to include Mbe Mountains, as part of the Cross River National Park in 1990. The earlier attempt by Government failed on grounds of disagreement on compensation payment to the communities and management strategy for the Project (WCS, 2006)

In 2007, the Mbe Mountains Sanctuary was set up by the help of WCS but owned by nine surrounding communities (WCS, 2012) and managed by the Conservation Association of the Mbe Mountains (CAMM) supported by Cross River Forestry Commission, WCS and Development in Nigeria (DIN) in tandem with the provisions of sections 6(a) to (h) and 59 of CRS Forest Commission Law, 2010 (WCS, 2012).

2.4.2 Management/Personnel

Mbe Mountains Forest is owned and managed by the nine communities which make up the area, with the WCS playing an advisory, funding and supervisory role. The day-to- day running of the project is handled by the nine communities through the following arms of CAMM:

The General Assembly (the mother Body)

This is made up of 45 members in all consisting of women leaders, youth leaders, community chairmen, opinion leaders and chiefs of the communities – five members from each of the nine communities.

The Management Committee

This is made up of selected young people of the nine communities. They carry out the day to day running of the affairs of the project.

Board of Trustees

Made up of nine members, one from each of the nine communities. These are the most respected persons in the communities.

Technical Support and Stakeholders Group (TSSG)

These are external partners to the communities and they are made up of WCS, Forestry Commission, Tourism Bureau, Local Government Council and formerly DIN, SPACE and WWF.

2.4.3 Management problems

WCS reports that the major management problems facing the management of Mbe Mountains are:

- Continued hunting of endangered species
- Habitat destruction through agricultural expansion
- Inadequate funding to support development of alternative sustainable livelihood activities
- Lack of fair attitudes of the indigenes towards alternative sources of livelihood activities. The people are more attached to harvesting the forest products than take to alternative sources provided for them by the conservationists.
- Ignorance of the indigenes to the relevance of forest resource conservation to the community, state, nation and the world at large.

2.4.4 Management plans

Their management plans and strategies follow encountered management problems and their Advisers' (WCS) global strategies:

- Improving the protection of the forest resources from depletion.
- Creating awareness about conservation and wise use of resources
- Providing support to local communities to adopt alternative sustainable livelihood activities to reduce pressure on natural forest resources.
- Strengthening law enforcement activities, control hunting and logging and limit agricultural expansion within Mbe Mountains and surrounding existing forests.
- Identifying all priority corridors and focus attention to manage them well to allow gorillas to move safely through them
- Adopting a transnational conservation approach to ensure effective mitigation of threats and management of Mbe Mountains.
- Developing sustained funding mechanism through their advisers based on carbon offsets and other innovative financing to support long-term conservation of the Project.
- To adopt high quality scientific information to guide the management of the Mbe Mountains Project.

2.5 CR National Park – Oban division

2.5.1 Location/Background

The two Divisions – Oban and Okwangwu lie between latitudes 5° 05' and 6°29'N and longitudes 8°15' and 9°30'E of Greenwich meridian – South East Nigeria in Cross River State (see Fig. 1 above). The two Divisions have area coverage of 4,000sq.km of old tropical rain forest.

The Oban Division of the Cross River National Park was created in full recognition by the international community through repeated studies of the area by World Wide Fund for Nature (WWF), as the most biologically diverse area in Africa. Oban Division is the larger (3,000 sq. kilometers) portion of the two Divisions which make up the Cross River National Park, the second, being the Okwangwu – 1,000 sq. meter (WWF, 1989). Oban National Park was established in 1991 by the Federal Government of Nigeria in conjunction with the Cross River State government and WWF. Oban Division is the largest close-canopy moist forest rich in nature bio diversities in Africa. The major threats to Oban project had been indiscriminate logging, clearing the forest for farming, conversion of forest areas to pulpwood plantations, colonization of steep lands by farmers to food crop cultivation for either commercial purposes or for subsistence, hunting, trapping and gathering forest products by villagers from 40 villages located around the Park and running local roads through and around the Park by the surrounding villages (WWF,1989). This unpleasant background of the Park informs its management strategy.

2.5.2 Contents of the forest

The vegetation of Oban National Park has been discovered to have been in existence for the past 60million years (CRN Park, undated). It is designated as one of the 25 United Nations biodiversity hotspots in the world. Oban Division which is the larger of the two Divisions is further divided into two – East and West.

The flora contents of the Park include 1,568 plant species, 77 of which are endemic to Nigeria, epiphytic ferns and orchids. The Park houses the Cross River Gorilla called *Gorilla gorilla delhi* including seventeen other primates. This scientific status has gained the Park an international attention making it to be nominated as a World Heritage Site. (CRN Park, undated).

Nigerian is a home to 23 species of primates with 18 species found in CR National Park of Oban. Two of the primates which are Gorilla gorilla Delhi and Chimpanzee named Pan troglodytes are endemic to the area. Two new species of butterfly – Tetrahanis okwango and Thermoniphas barahingam are found in the Park. Other mammals include Chevrotain, giant pangolin, the Golden potto or Calabar agwantibo and Peruss' guenon. These are endemic to the Park. Extinct birds that have resurfaced include the bare-headed rock fowl, *Picarthates oreas*.

Summarily there are 199 mammal species, 63 frog and toad families, 20 species of reptiles 380 bird types, 48 fish families and 950 butterfly species (CRN Park, undated).

2.5.3 Management/Personnel

The Cross River National Park is managed by Nigeria National Park Service – an arm of the Federal Ministry of Environment (WCS, 2012), with support from Cross River State Forest Commission and currently assisted by WCS who provides the technical knowhow in capacity building for Park staff and funding in staff, materials and equipment.

WCS assumes this responsibility because their major mission is to save the wild and the wild places of the world for the good of the global populace. Aware of their global mission, the Nigerian Federal Ministry of Environment requested WCS (Nigerian) to extend technical services to the Oban project.

To play an interface role between the government and the indigenous people is the Local Advisory Committee (LAC). The LAC, majorly, the indigenous people, advises the Park Management on matters relating to indigenous beliefs, cultures and tradition of the people in relation to their forest, medicinal plants for the native use and general intermediary functions between the people and the government. This is to remove frictions and clashes between the indigenes and Park Management.

2.5.4 Management problems

(Dunn, 2014) reports that the following management problems are prevalence in Oban National Park:

- Unresolved Park Boundary and many village communities located within the Park.
- Agricultural expansion
- Human settlements along Calabar to Ekang road thereby dissecting the Oban Park into two halves
- The inherent nature of the local people to hunt, eat and live on the fund arising from the sale of bush meat.
- Non remuneration of employed rangers providing surveillance services over the PA.
- Perennial hunting throughout Oban leading to destruction of endangered mammals, reducing their population to negligible number.
- Lazy attitude of the indigenous people towards diversified livelihood activities such as snail farming, piggery farming, fish farming, honey farms, goatry, improved crop species, general domesticating of forest animals, etcetera.
- Antagonism by the indigenous people to the presence of the National Park and any conservationists. It was reported that a European national working in Oban was ceased and beaten up. This antagonism stem from the fact that the initial cargo incentives (local developments) promised the indigenes were not made good by the earlier conservationists.
- Oban Division is surrounded by abundance of community forest, large enough to sustain the local communities in infinitum. The community forest belonging to two local villages – Iko Esai and Ekuri has been proposed for REDD+ project. (WCS, 2012).

2.5.5 Proposed management plans

These, among others, are as follows:

- Total prohibition of harvesting forest produce by law.
- Definition/Review of the current Park boundaries
- Protect the ecosystem of the Park through the division of the Park into appropriate use zones and assigning responsibilities within the management service,
- Define patterns of acceptable visitor use of the Park
- Monitoring environmental changes and the impact of management measures
- Designing liaison programs to increase public willingness to cooperate in the Park management with particular focus on villages in the support zone
- Conducting in-service training programs for Park personnel with emphasis on anti-poaching (WWF,1989).

3. Methodology

The study adopted the survey/case study approach. The study population consists of the PAs' managers (10), representatives of the support zones' dwellers (60) and the field/technical staff (10), making a total of 80 persons. Structured questionnaires were administered on 30% of the study population to elicit information for analysis. Four technical staff who worked in the PAs were employed to obtain relevant information from representatives of the indigenous people since they are more responsive to them (staff) than strangers. Secondary data sources included textbooks, journals and videos from WCS (the conservation facilitators of the two PAs) library, internet articles, periodicals and pictures. The Society does intensive daily scientific researches in the areas and keeps up-to-date records of the forest contents status and happenings, particularly in Mbe. The author relied on these data as a basis for this work.

Visits were made to offices of CR National Park located in Akamkpa and interviews held with the director of Research. Field data were analyzed with the aid of simple percentages, comparative analytical tables and explanatory notes (Asika, 1991).

4. Data presentation, analysis and discussion of findings

The data for this study is presented, analyzed and findings discussed hereunder:

4.1 Data presentation

Question 1 of the questionnaire seeks to know from the managers their level of understanding and applicability of sustainable management principle in forest resources management. The responses are tabulated in table 1 below:

Table 1 Sustainable management knowledge by PAs managers

Protected Area	Sustainable Management Knowledge	No. of Respondents	%
Mbe Mts.	Yes	05	100
Oban section of CR National Park	Yes	05	100

Table 1 shows that 100% of the managers in the two PAs show profound knowledge in the underlying principle of sustainable management of forest resources.

Table 1b Sustainable management applicability in forest resource management

Protected Area	Sustainable Management Applicability	No. of Respondents	%
Mbe Mts.	Yes	05	100
Oban section of CR National Park	Yes	02	40
-Do-	No	03	60

Source: Author's field data 2016

Table 1b shows that all the managers (100%) of Mbe Mts. agree that there is an application of sustainable management principle in the management of forest resources in the area. In Oban 40% of the respondents are of the opinion that sustainable management is applied in the management but 60% said it is not applied. When it was probed further due to the disparity in response, it was learnt that due to initial disappointment by WWF the practice was discontinued.

Question 1, section 2 of the questionnaire sort to know the managers of Oban and Mbe Mts. Table 2 below presents the information:

Table 2 Managers of Oban and Mbe

Protected Areas	Managers
Mbe Mts.	Community Association of Mbe Mountains (CAMM), through its management arms (see 6.2.6 above) assisted and supervised by WCS
Oban National Park	Federal Min. of Environment in conjunction CRS, with Local Advisory Committee (LAC); technically/financially currently assisted by WCS.

Source: field data 2016

It should be stated here that WCS assistance in the management of Oban is a recent development (2006), borne out of continuous depletion of the forest resources in Oban National Park and the realization by the Federal Director of the National Park that WCS is doing enormous work in Mbe and globally and therefore sort and retain their technical services. WCS' assistance is on: *Capacity building of Oban staff*: That is, training their rangers on anti-poaching patrols and funding by providing equipment such as rangers' tents, camping materials, global positioning systems (GPS) etc. In all, the National Park is not under compulsion to adhere to WCS management principles.

4.2 Data Analysis

Research Question 1

What are the management principles, personnel, policies and plans in the sustainable management of the two areas?

The answer to this question is elaborately supplied in sections 2.7.1, 2.7.2, 2.8.5 and 2.8.6 of the literature review and partly in table 2 above.

Research question 3 states thus:

How is sustainable management practiced in MBE Mts. and Oban?

In providing answers to this question, managers were asked question 3 of the questionnaire. Their responses are tabulated below:

Table 3. The practices of sustainable management in the PAs

Protected Areas	Sustainable Management Practices
Mbe Mts.	<ul style="list-style-type: none"> a.) Law enforcement to protect habitats and wildlife from depleting by human exploitation b.) Conservation awareness on wise use of resources c.) Provision of alternative sustainable livelihood activities to indigenes to reduce pressure on natural resources, e.g bee farming, snail farming, goatry, domesticating of forest animals, provision of improved crop species, etc
Oban National Park	<ul style="list-style-type: none"> a) Local advisory committee (LAC) is set up to be a go-between the managers and the indigenous people on matters relating to their tradition, culture, harvesting medicinal plants for their use, and general interface duties between the government and the people. b) Total protection of forest resources from encroachment by law c) Consistent and continuous researches d) Conservation awareness through educating the local communities on conservation benefits and alternative sources of livelihood other than forest endangered resources. e) Employing indigenous people in eco-tourism activities eg. tour guides, porters, load carriers, local trading in local crafts etc.

Source: Author's field survey 2016

Practices © to (e) under Oban were proposed in 2006 by WCS but not yet operational. Even though practice (d) was initially introduced by WWF it was not sustained due to deceit by them and non-availability of funds.

Research Question 4

What significant effects does sustainable forest resources management have on the areas under study?

Here the author tries to discover what effects this management principles have, not only on the contents of the forest resources but also on the development of the indigenous communities. Questions 2, 4, 7, and 8 of section 1, and 7 of section 2 in the questionnaire were asked respondents. The responses to these questions are as presented below:

Question 2 responses are:

Table 4. Conservation benefits to the local communities (communities reps only)

PAs	Conservation Benefits to host communities	Responses	Responses	% of respondents
		Agreed	Not Agreed	
Mbe Mts.	a) Economic growth emancipation	20	-	100
-do-	b) community development	20	-	100
-do-	c) Enhancement of social status of indigenes, etcetera	20	-	100
Oban	a) Economic growth/emancipation	12	08	60/40
	b) community development and	16	04	80/20
	c) Enhance of social status of indigenes, etcetera.	05	05	50/50

Source: author's field data 2016

In table 4 above all community reps(20) (100%) of Mbe Mts. interviewed agreed that conservation of their forest resources have brought the three benefits highlighted while for Oban 60%, 80% and 50% of their reps agreed that conservation have brought economic growth, community development and enhancement of social status respectively.

Responses of Question 4 are below:

Table 5. Appraisal of the socio-economic development of the host communities now compared to when their forest resources were haphazardly harvested. (communities' reps only).

PAs	Appraisal- socio-economic devt. of host communities	Responses	Responses	% of Respondents
		Better	Not Better	
Mbe Mts.	Economic growth emancipation due to increased forest contents	20	-	100/0
-do-	Community development through alternative sources of livelihood	20	-	100/0
-do-	Enhancement of social status of indigenes due to increased literacy empowered by the donor agents.	20	-	100/0
Oban	Economic growth emancipation due to increased forest contents	08	12	40/60
-do-	Community development through alternative sources of livelihood	02	18	10/90
-do-	Enhancement of social status of indigenes due to increased literacy empowered by the donor agents	-	20	0/100

Source: author's field data 201

Table 5 shows the appraisal of the socio-economic development of the host communities where the PAs are domiciled. For Mbe the 20 reps (100%) say that they are better off now on all the three socio-economic indicators than when they were exploiting their forest contents unchecked. In Oban 40% of the reps say they are better off now on economic growth due to increased forest contents while 60% say they are not. On community development 90% of Oban respondents say they are not better while 10% say they are. On enhancement of indigenes social status due to increased literacy empowered by the donor agents, 100% of Oban respondents, say they are better now.

Table 6. Current status of indigenous people economic emolument compared to when they harvested forest products unchecked. (communities' reps. only)

PAs	Economic status	Economic status	Economic status	%	%	%
	Improved	Not improved	Not known	Improved	N/Improved	Not known
Mbe mts	19	-	1	95	0	05
Oban	5	15*	-	25	75	0

Source: Author's field data, 2016

From table 6, 19 representing 95% out of 20 communities reps from Mbe mts say their economic status has now improved while 1 (5%) says he does not know. In Oban 25% of respondents say their status has improved while 75% says it has not improved.

*For those who depend on forest resources solely. Since harvesting is prohibited, their economic emolument is adversely affected.

Table 7. Indices of successful sustainable management of forest resources of the two areas

PAs	Indices	Remark
Mbe Mts	Referred to Table 5 above	
Oban National Park	a) Reduction in the level of logging, b) Reduction in the killing of endangered wildlife, c) Increased awareness of conservation matters; d) Reduction of hostilities towards conservationists and e) less influx of non-timber forest products into the local government markets.	

Source: Author's field data of 2016.

From tables 4 to 7 above the effects of sustainably managing the forest resources could be assessed. Apart from developing the local communities infrastructurally, it also increases the forest contents and brings economic emancipation to the indigenous people whoever cares to partake in the conservation activities in providing needed services.

Research Question 5:

What management problems are encountered in the sustainable management of the forest resources in the study areas?

In accessing information to answer Research question 5 above questions 5 of section 1, and 4 of section 2 in the questionnaire were asked managers and staff of the PAs. Also a 5-point rank order scale of possible setback factors in conserving forest resources in the study areas was provided for respondents to rank the factors in the order of their magnitude effect. The results are presented below:

Table 8 Are indigenes totally estranged from harvesting the forest products?

PAs	Totally estranged	Not estranged	% of Respondents
Mbe Mts.	-	20	100
Oban National Park	-	20	100

Source: Author's field data, 2016

Respondents uphold that even though harvesting of forest products is totally prohibited by law (Cross River State Government, 2010) indigenes still carry on illegal harvesting of forest products particularly in Oban. In Mbe surveillance is more serious and conscientious due to the vested interest of the indigenes in the project. Any poacher caught pays fine through his chief to CAMM. Majority of violators are external to the communities. Nonetheless indigenes still hunt the endangered species sparingly.

Table 9 Greatest management problems in Mbe Mts., and Oban National Park (managers only)

PAs	Problems	% of Respondents
Mbe Mts.	<ol style="list-style-type: none"> 1. Continued hunting of endangered species and habitat destruction 2. Inadequate funding to support development of alternative sustainable livelihood activities 	100 (5)
Oban National Park	<ol style="list-style-type: none"> 1. Agitation for alternative sources of livelihood, 2. Agitation for roads; 3. Hostility to conservationists due to initial experience of disappointment by WWF and the belief by indigenes that there are secret treasures in their forests conservationists want to defraud them of. 	100 (5)

Source: Author's field survey 2016

The management problems faced in Mbe is continuous hunting of endangered species and inadequate funding for alternative livelihood activities. All 5 managers present the same management problems. In Oban all the respondents said no alternative sources of livelihood activities are provided, lack of roads and hostility to conservationists especially whites and non-native blacks are dominant problems.

Table 10 Ranking possible factors for management failure in Mbe Mts.(managers only)

S/No	Management Problems	SA (5)	A(4)	N(3)	D(2)	SD(1)	Total	%SA	%A	%N	%D	%SD
1.	No welfare enhancement/conditional credit facilities for the people to divert them from exploiting forest resources			-	08	01	09				88.88	11.12
2.	Non-participation in the mgt of the forest resources by the indigenous people.					05	05					100
3.	Non-participation in the proceed accruing from the revenue of the forest resources					05	05					100
4.	Poverty of the indigenous people forcing them to violate Park rules		20				20		100			
5.	Exploitative nature and deceit of the native people by the conservationists.			3	08		11			27.27	72.73	
6.	Improper protection/defense of the forest resources	05	12			1	18	27.77	66.66			5.55
7.	Poor structuring of policy and implementation of Forest Management plans		16			1	17		94.12			5.88
8.	Lack of fund from Donor Agencies including State and Federal Governments of Nigeria.		16		2		18		88.88		11.12	

Source: Researcher's field survey 2016

Table 10 Ranking possible factors for management failure in Oban CR National Park

S/No.	Management Problems	SA(5)	A(4)	N(3)	D(2)	SD(1)	Total	%SA	%A	%N	%D	%SD
1.	No welfare enhancement/conditional credit facilities for the people to divert them from exploiting forest resources	25					25	100				
2.	Non-participation in the mgt of the forest resources by the indigenous people.	5	16				21	23.81	76.19			
3.	Non-participation in the proceed accruing from the revenue of the forest resources	-	20		-	-	20		100			
4.	Poverty of the indigenous people forcing them to violate Park rules	5	16				21	23.81	76.19			
5.	Exploitative nature and deceit of the native people by the conservationists.	5		3	6		14	35.71		21.43	42.86	
6.	Improper protection/defense of the forest resources	20	4				24	83.33	16.66			
7.	Poor structuring of policy and implementation of Forest Management plans		20				20		100			
8.	Lack of fund from Donor Agencies including State and Federal Governments of Nigeria.	20	4				24	83.33	16.66			

Source: Researcher's field survey, 2016.

4.3 Discussions of findings

(Campbell & Ballon, 1978) opine that the major findings in any research work form the cardinal part of that research. Hereunder the research highlights the major findings in this research following the research questions:

The general findings show that the managers of both Mbe Mts. and Oban National Park are fully abreast with the principles and practice of sustainable management in managing forest resources. The research confirms that the success of the application of the principles of sustainable management lies in the co-operation of the indigenous

people who own the land where the PAs lie. This agrees with (Dowie, 2009) who postulates that the interest of the indigenous people is paramount and must be protected through sustainable management of the forest resources with them at the center stage.

The result of research question 1 is very relevant for the assessment of the effectiveness of the practice of the sustainable management in the two areas. Sections 2.7 and 2.8 show details of the background, the managers, the principles and plans for the management of the two areas. It was discovered that the status of ownership affects the effectiveness of the management processes. While Mbe communities form a formidable surveillance through their indigenous eco-guards over their sanctuary to track down poachers whom they fined, Oban only depend on hired foreign rangers whom they scarcely paid their stipend. It was also gathered that fines from poachers are paid to the community chiefs for Mbe who are charged with the responsibilities of ensuring that none of the poachers is traced to their villages. This works to a great extent because the interest of the people is at the center stage (Dowie, 2009).

The result of research question 3 indicates that sustainable management in Mbe is anchored on three-pronged actions namely:

- *Law enforcement on total prohibition of harvesting forest produce*

Local people are employed as eco-guards, trained, empowered with ammunitions and located at different points in the mountains to keep 24-hour surveillance over the forest contents. Poachers arrested, are charged and fined a particular amount which must be paid to the chief of the poacher's community.

- *Enlightenment of the people on the merits of conservation*

Enlightenment campaigns are carried out by the conservationists on educating the natives on the merits of conserving their forest resources and the dangers of depleting them through unsustainable harvesting. This makes the local people develop interest in conserving their forest contents for themselves and posterity. This informs the positive response in table 5 above.

- *Provision of alternative sustainable livelihood activities*

WCS sources for and obtained funds globally through donor agencies to domesticate forest fauna and flora for the indigenous people to manage and live thereon (see table 6). Even though it is reported that this does not totally solve the harvesting problem, it has controlled it to a great extent and more is needed to be done.

In Oban, the premier conservationists (WWF) promised the local people as at 1989 sustainable development of the local communities, a re-settlement option together with alternative land to grow their economic trees; alternative sources of livelihood but they failed in all their promises. This has embittered Oban people to any conservationists particularly, non-natives. It was reported that the indigenous people had in times past manhandled the WCS Nigerian Director who visited Oban community to assess the work there. Therefore sustainable management in Oban, for a long time had rested on two cardinal actions:

- *Total prohibition of harvesting forest product by law (2010)*

There is a total embargo placed on harvesting of forest produce of any kind by law. In practice there is continuous harvesting because of poor or non-enforcement of the law as in Mbe, and

- *Utilization of the LAC as a go-between the local people and Park managers*

The LAC acts as an intermediary between the local people and the PA's managers on the people's beliefs regarding the forest and its contents. This is to make room for the managers to allow the people harvest some of the flora for medicine and other contents for traditional matters (Dowie, 2009).

Currently, the technical adviser from WCS has added some other activities which he said can only be adopted if the managers of Oban project oblige (please see table 3 above). This research cannot assess the effect of these additions on Oban since they are not yet operational.

Currently Mbe people are demanding that WCS must pay them for conserving their wilds and wild places. The

people believe that WCS have seen some treasures in their forest which has propelled them to spend huge sum of money trying to divert the indigenes from destroying its contents. They are oblivious of WCS's global mission of preserving the wilds and their habitats, and even if they are aware, do not believe it. This is counter-productive.

The findings of question 4 tabulated in tables 4, 5, and 6 following questions in the questionnaire show that on the general benefits from sustainable forest resources management they are more significant in Mbe than Oban. This is so because Mbe's management anchors on the management by the natives who are the owners. On the three highlighted benefits the percentage ratings in Mbe are 100%, 100% and 100% respectively whereas in Oban, they are 60%, 80% and 50% respectively. On the appraisal of the socio-economic development of the host communities presented in table 5 all Mbe respondents state that their communities are better off now than when their forest resources were exploited without sustainable management. Table 5 contents were further probed using contents of table 6. The reason for this further probe lies on the fact that if sustainable management of the forest resources is effective the economic emolument of the indigenes must be improved without recourse to harvesting the forest contents. 95% of Mbe's respondents say that their economic status has improved, while only 25 % of Oban says their status has improved with 75% respondents whose status has not improved.

It was discovered that apart from developing the infrastructures of the local communities, sustainable management also increases the forest contents and brings economic emancipation to the indigenous people whoever cares to partake in the conservation activities in providing needed services (table7).

Again despite the provision of alternative sources of livelihood activities for the people, they are not totally estranged from harvesting the forest produce whether in Mbe or Oban. The only difference is in the intensity and frequency of occurrence, which is more rampant in Oban than in Mbe (table 8 above).

Table 9 presents the greatest management problems as provided by the managers. In Mbe, they are continuous hunting of endangered species and dearth of funding while in Oban are need for alternative sources of livelihood activities, hostilities by local people on conservationists and agitation for local roads to transport their farm produce.

The problem gathered from Mbe is that the indigenes are lazy towards alternative sources of livelihood meant to divert them completely from harvesting the forests products. They prefer the ready-made natural fauna than the stress of domesticating same for trade and consumption.

One field worker advocates that lack of demarcating wall between the local dwellers and the PAs, particularly in Oban, makes it difficult to control the activities of the local people against the contents of the forest. Demarcating the people off with sufficient space to grow their farm products and local road to take them out will hugely enhance the success of sustainably managing these rich endemic biodiversity. The author agrees with him totally because there is large forest areas that could take the natives centuries to cultivate exhaustively without encroaching into the PA.

Rankings of the possible factors that impede the success of sustainable management in the two PAs are presented in table 10. From the results it is gathered that, "poverty of the indigenous people" was ranked highest (20) in Mbe, followed by "improper protection/defense of the forest resources" and "lack of funds from donor agencies" with a tie of (18). The least ranked for Mbe was "non-participation in the management of the forest resources by the indigenous people" and "non-participation in the proceed accruing from the revenue of the forest resources" (5). In Oban, "No welfare enhancement/conditional credit facilities."(25) topped the list, followed by "Lack of Fund" and "Improper protection/defense..."(24), least factor being exploitative nature and deceit of the native people by the conservationists"(14) Comparatively the mean rank for Mbe is 12.875 while that of Oban is 21.125. This means that the factors impeding success in Oban are more and stronger than those of Mbe (see table 9). The summary is that poverty disallows the community people in both areas to co-operate with the conservationists. Even though WCS has done remarkable works in Mbe regarding provision of alternative sources of livelihood the native tie to their indigenous activities of living on the forest produce and their laser fair attitude towards alternative sources of livelihood make forest resources sustainable management more difficult and less result oriented.

5. Summary, Conclusion, Recommendation

The authors set out to assess the effectiveness of management approaches of Niger Delta forest resources

through sustainable management of two PAs – one publicly owned/managed and the other owned by 9 communities, managed by them but supervised and financially assisted by a conservationist NGO, the WCS. It was discovered that the privately managed PA (Mbe) was better sustainably managed with remarkable effects than that publicly managed (Oban) for several reasons as follows:

- Not making the interest of the community people to take the center stage in the management
- Lack of sufficient fund from global/local donors
- No serious commitment by the managers of the publicly owned PA.
- The inherent nature of the local people to depend on the contents of the forest for subsistence
- Disappointment of Oban indigenes by the pioneer conservationists.

5.2 Conclusion

The study concludes that many forest resources are endemic to the localities where they are found and yet their benefits transcend the entire world. The activities of the indigenes of such localities hurt the forest resources and drive them into extinction if unchecked. Need arises to guard and protect in an unimpaired form these resources from human exploitation for the good of the present generations and countless unborn and upcoming generations. Nigeria is one of the biodiversity hot spots in the world with rich forest contents in her Niger Delta region. The contents both in fauna and flora face imminent extinction if the indigenous people are allowed to exploit unchecked the forest contents for their subsistence. Efforts by world conservationists are rebuffed by the locals who are more receptive to conserving the resources by themselves though accepting financial assistance and other helps from trusted donor Agents. Community-based managed Mbe Mts. is a better management approach than the publicly managed CRN park. For the management of any PA to succeed the interests of the indigenous people must be given a centre stage. To do this the following are recommended:

5.3 Recommendations

For Oban:

- i. Review current boundary situation and legally gazette a new Park boundary, provide concrete wall to demarcate the natives from the Park;
- ii. Provide enough lands elsewhere for cultivation for the natives to divert them from the Park
- iii. Construct narrow roads to enable them carry their farm products to the market.
- iv. Enforce harvesting prohibition by beefing up surveillance using properly trained and empowered native rangers within the Park.,
- v. Provide appropriate field equipment and vehicles for 24-hr patrol.
- vi. Involve the natives in Park management eg decision making.
- vii. Provide alternative sustainable sources of livelihood for the natives.
- viii. Enlighten the natives on the merits of conserving their forest contents for themselves. the world and their posterity.
- ix. Introduction of high-powered detective equipment like Cyber tracker and line transects for rangers and eco researchers respectively. (Dun et al (2012)

For Mbe

- i. Intensify surveillance of the forest contents and apply stringent punitive measures on arrested poachers to foster complete deterrent.

- ii. Continue to educate the local people on the global REDD+ program which will enhance the local community financially.
- iii. Sincerity on the part of government to be committed in funding conservation program in the state and release REDD+ accrued fund to the meriting communities (whenever available) and discontinue exploitative development which endanger the forest contents.
- iv. Co-operation by the local people towards conservation by adhering to the alternative sources of livelihood provided by the conservationists and steering clear from harvesting unsustainably the contents of the forest.

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Acknowledgement

We acknowledge with many thanks the contributions of Wildlife Conservative Society for granting us access to their library where monthly updates of their researches on the management of the two studied PAs are stored. Our profound appreciations go to their field staffs led by Mr Louis Nkonyu in Oban and Mbe Mts. who were a go-between the community people and we during the course of field data collection. Their Nigerian Director, Dr. I. Imong was of tremendous assistance to us during the compilation of this study in answering our question besides granting us several interviews and providing a writing space for us in their gorgeous office. Our statistician Mr. Denis Unyana of Cross River University, did a brilliant work in analysing the study raw data. In all, we are most indebted to God for His grace, wisdom and financial provisions.