

## **Sustainable Livelihood in the Cross River National Park (CRNP), Oban Division, Nigeria**

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### **Abstract**

*National parks have become one of the major strategies of conserving biodiversity. However, sustaining this conservation strategy and indigenous people's livelihood within the park areas remains a challenge. This study assessed Sustainable Livelihood in the Cross River National Park (CRNP), Oban Division, Nigeria. The household questionnaire survey and participatory rural appraisal (PRA) were adopted for data collection. Data collected were on types of occupation, National Park and livelihood provision, alternative livelihood options, constraints affecting livelihood activities, and host communities' support of National Park operations. These were analyzed and presented in tables, simple percentages and graphical illustrations. The study revealed farming, gathering of non-timber forest products (NTFPs) and petty-trading as major means of livelihood of the people. However, activities such as timber logging, poaching, gathering of NTFPs and bush burning with forest-based farming encroaching into the park were identified as issues of conflict which led to cases of arrests of community members. In order to make the livelihood of the people within the park area more sustainable the the study recommended that the: provision of micro credit facilities for small-scale businesses and poultry keeping, the law that established the national parks should be made to include alternative livelihood of the support zone communities in national annual budget, agricultural extension services should be delivered to the people to help farmers on improved and environmentally sustainable methods or techniques of cultivation and application of agricultural equipments for better yield, and the park management should establish and maintain relations with the host people, funding agencies, professional bodies and non-governmental organizations (NGOs) as well as tiers of government so as to secure funding and training schemes suitable and compatible with support villages for sustainable alternative means of livelihood.*

**Key words:** Sustainable livelihood, protected area, National Park, alternative livelihood, non-timber forest products, Oban, Cross River State.

### **Introduction**

The fundamental challenge man is faced with is how to earn a living. Livelihood is the greatest of all challenges to communities, households and individuals irrespective of age, sex, race, religion or nationality.

It is the basis for all forms of sustenance in life. The means of earning a living is normally described by scholars and researchers as “livelihood” (Rigg, 2007). Livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. In simple words, livelihood is about money, food, labour, employment, and assets (Ellis, 2000; Rigg, 2007; Development in Nigeria (DIN, 2008). The primitive man sustained himself by gathering fruits, nuts, leaves, hunting of animals, fishing, farming (at very subsistence level), trade by barter, and so on. As he developed in science and technology, his capabilities widened from self-help skills, technical skills and then, to professional abilities.

Worldwide, indigenous communities in forested areas are low income earners who build their economic activities around forest mining such as hunting of animals, forest-based farming, timber logging, gathering of building materials, materials for local craft, medicinal herbs and plants and non-timber forest products (NTFPs) such as leaves, fruits and honey (Bisong, 2001; Fox, 2006; Bassey and Obong, 2008). It is well known fact that forests perform several functions in the life of man such as socio-economic functions, productive functions and protective functions (Food and Agriculture Organization (FAO), 2007). Communities around forested areas however, often take advantage of these functions by destructive exploitation of the ecosystem. In attempt to manage the damaging and degrading exploitation, the conservation strategy of Protected Areas (PAs) emerged (Brockington, 2002); one of such PAs is the National Park.

The establishment of National Parks (a natural area of land and/or sea, designated to protect the ecological integrity of one or more ecosystems for present and future generations) normally engenders great challenges to the host communities. Such challenges include interference with their livelihood systems, loss of land for agriculture, removal of their rights and loss or restricted access to the forest and hunting grounds. Sometimes, there is need for resettlement of enclave communities whose activities are now injurious to the park and its operations. Therefore, whenever any government comes up with the policy of establishing National Parks, it is always silent about what will turn out to be the fate of the host communities of the protected areas.

Common to indigenous forest peoples the world over is the mining of forest resources. Forests provide a wide range of needs for the people, particularly Africans. For example, forest trees or plants produce a variety of seeds rich in edible oil and protein, food, spices, flavouring, etc. Forest flora and fauna supply hundreds of medicinal herbs, materials for local craft and housing, fuel-wood for cooking and heating, forest-based farming, and a gamut of diverse non-timber forest products (NTFPs). Forest peoples harvest timber, hunt animals for protein and source for income and cultural practices (Fakoner, 1990; Bisong, 2001; Goodwin and Roe, 2003; Nung, 2009; Adamu, 2008; ). It is out of this valuable resource (forest) that protected areas such as national parks are created for the purpose of management. Protected areas keep expanding (World Parks Congress, 1992; Chape, et al, 2003). Take for example, the World Parks Congress (WPC) held in Venezuela in 1992 with participants drawn across scientists, conservationists, civil servants, business leaders, resource managers and environmental ministers were pleased to announce that they had surpassed the target to devote 10% of the earth’s surface to protected areas by 2% (WPC, 1992). As good as devoting attention to creating protected areas for management purposes, the human inhabitants’ sustenance tied to the areas is equally important, but nowhere in the WPC report that the livelihood of the host people is mentioned or accommodated.

Most often, a larger population of forest dwelling communities depends completely on the ecosystem as a means of livelihood (Wilkie and Carpenter, 1999; Anani, 1999; Goodwin and Roe, 2003; Nicaragua, 2004; Colchester, 2008). Meanwhile, the establishment of National Parks removes the rights of people in the affected communities of access to the forest and its resources. It creates problems of limited land for agriculture, loss of hunting ground, loss of access to materials for housing and local craft. The establishment of National Parks increases inaccessibility to NTFPs reduces local income to completely forest-dependent households, leaving undue stress on the people. It is observed in the literature that protected areas are often located in remote areas that are subject to conflict. According to the International Union for Conservation of Nature (IUCN, 1994), protected areas are human inhabited. For example, as at 1985 figures statistics show that some 70 per cent of protected areas are inhabited by humans worldwide; 86 per cent of protected areas in Latin America are human inhabited (Kemf, 1993). Some 80 per cent of protected areas of South America have indigenous peoples living inside them. In Central America, 85 per cent of protected areas have human communities (Colchester, 2008). This is common with tropical forest-dependent people.

It has been observed by researchers that the strategy to conserve biodiversity through national parks has displaced many thousands of poor park residents, transforming them into conservation-refugees and has affected additional large numbers of people as host populations (Lieras, 1991). Other studies have also shown that there are persistent conflicts between park management and indigenous people over issues of poaching, encroachment into park area for agriculture, harvesting of non-timber forest products and timber logging (Goodwin and Roe, 2003; Colchester, 2008; Campilan, 2008). At the Cross River National Park, the case is not different. For instance, between 1999 and 2007, not less than 296 cases of arrests were recorded for trespass into the enclave (CRNP, 2008). The figure reveals that arrests were at its peak in 2005, with a total of 63. It declined to 35 in 2006 and rose again to 58 in 2007 (CRNP, 2008). From this record, it is predictable that the phenomenon is set to increase if nothing tangible is done to address the situation.

It is rather a surprise that the park management is more interested in recruiting and training of more park rangers to arrest those trespassing into the enclave (Eniang, 2001; CRNP, 2008), instead of investigating measures to salvage this helpless state. One would have concluded that the host people are not aware of the need for conservation of the forest. For instance, Ite (1996) found that despite the high level of community awareness of the need to conserve the forests of the study area, there is low level of local support for the Cross River National Park forest initiative.

As could be observed in literature, there is neglect on the side of policy makers in addressing the issues of including the plight of protected areas' host communities' interest in budget planning (Table 1) and those countries that attempt this give it little attention in national budget planning. The Table reveals that some countries of the world include protected areas in their national budgets. Kenya ranks first with a total of 56.535 per cent followed by Tanzania with 19.089 per cent and USA, third with 11.747 per cent, etc as budget allocation. This study by Wilkie and Carpenter (1999) is quite fascinating but shocking in that there is no mention of how it will be spent with respect to host communities and how they are provided for in alternative livelihood scheme/programme in order to cope with adjustment in the protected area. According to Park Congress report of 1999, traditionally, conservation efforts, the establishment of protected areas and the sustainable livelihoods by indigenous peoples have not always been supportive.

From the foregoing, one may conclude that the issue of search for livelihood is responsible for the cases of arrests since the indigenes trespass to harvest forest resources for sustenance. The presence of the park, therefore, poses a threat to the local livelihood support system. The deleterious consequences are abject poverty, severe stress, malnutrition, aggression and restiveness, social vices, conflicts, and forced out-migration to environments that may be hostile. All these problems are what this study fully explored within the support communities of the Cross River National Park, Oban Division, Nigeria.

### ***Objectives of the study***

The main objectives of the study are:

1. To examine occupational structure and the role of National Park in the provision of alternative livelihood to the support zone communities
2. To assess the preferred livelihood options by people of the affected communities.
3. To investigate the constraints affecting livelihood activities in the study area

### ***Research hypothesis***

The null hypothesis formulated for testing in this work is:

1. The alternative livelihood options of the people are not significantly related.

### ***The study area***

The Cross River National Park (CRNP) was established by the National Park Decree No. 36 of 1991 which caused the upgrading of Oban group, Okwangwo, Boshi and Boshi Extension Forest Reserves, with the head office in Akamkpa. Today, the operational law establishing it is the National Park Service Act 46 Cap 65 LFN 2004. The park occupies a total land area of about 4,000 square kilometers with central coordinates of 5° 25' North 8° 35' East, i.e. an areal coverage of 280000 ha (Figure 1.1).

The Oban Division is approximately 342,459km<sup>2</sup> South-East of Nigeria, lying south and east of a loop of the Cross River and extending along the Cameroon border. The Cross River and its tributaries drain northern parts of Oban Division, while southern parts are drained by the Calabar, Kwa and Korup rivers. The terrain is rough and elevation rises from the river valleys to over 1,000m in mountainous areas with an altitude of 100 - 1000m above sea level (NNPS, 2001).

Cross River National Park (CRNP) is divided into two. The smaller area to the North-East, Okwangwo Division (NG010), is separated by about 50 km of disturbed forest from the larger Oban Division. Oban Division is contiguous with Korup National Park in Cameroon (CM019). It is a tropical rainforest with unique experiences. At the CRNP, activities such as nature hikes, bird watching, outdoor camping, botanical gardens and river rafting abounds with a large area of lowland and submontane rainforest situated in South-East Nigeria along the Cameroon border. The study communities are low income earners depending on forest resources in the provision of food, water, shelter, medicine, recreation and other economic benefits. The land is extensively used for farming as their primary occupation.

The system of slash-and-burn agriculture has greatly impacted negatively on the forest ecosystem. Other low scale economic activities are petty retail businesses, sale of agric produce, sale of leaves and fruits from forest gathering, indiscriminate logging, poaching and bush burning. According to BirdLife International (2007), the population is growing rapidly and demand for farmland is leading to encroachment in parts of the National Park previously considered inaccessible and marginal for farming. Traditional ways of exploitation of natural resources such as hunting, fishing and shifting cultivation adversely affect the park as the human population grows. Fish stock and other aquatic life have declined as a result of the use of chemicals for fishing.

### ***Materials and methods***

A field survey of the study area was carried out and pre-test interview and a check list of questions formulated for actual field work. The study also utilized the participatory rural appraisal (PRA) in collection of data. The types of data collected for the study consist of the major occupation of the people, income, and assets owned by the people. Others include reasons for trespass into park area, constraints in carrying out livelihood activities, cases of arrest for trespass, and livelihood alternative options of the people generated from both primary and secondary sources.

Primary data was collected personally by the researcher and field assistant through structured questionnaire and participatory rural appraisal (PRA). The reason for using the two methods is because there are some limitations to questionnaire in allowing respondents in cases where further explanation would have been needed; hence, the PRA was used to get some data that would be difficult to collect with the questionnaire. During PRA, key informants who are members of the community and were able to provide needed information were gathered and apprised. Others were the chief, youths and some Park Rangers who are members of the staff.

The secondary source of information and data was obtained from the Cross River National Park Head Office on the provision of livelihood alternatives to the support zone (SZ) communities and recorded cases of arrests for violation and trespass. Other secondary sources were previous studies available in the libraries, journals, handbooks, magazines and the electronic media.

The population for the study includes all households living in Oban, Mkpot and Aking communities. The population of the communities in 1991 stood at 4,088 people (National Population Census, 1991) spread across Oban, Mkpot and Aking. However, the sample size for the study was 250 households of both males and females. The communities were purposively selected by the researcher with reasons that they have the required knowledge of the issues under study. The purposive sampling method is a method that is based on the notion that the population of study possesses the character required for study (Joshua, 2008). A simple random sampling design was used to proportionally select 250 households for administration of questionnaire.

Only household heads were administered with copies of the questionnaire, while key informants were randomly selected and interviewed with some staff with knowledge of issues on the objectives of study. Data collected from the field were analyzed and presented using tables, means, simple percentages, graphical illustrations and charts for better understanding, while data analysis was done according to stated hypotheses.

The Contingency Chi Square was used to test the hypothesis. The Contingency Chi-Square as a test statistic is used to test the strength or weakness of a relationship (Mamahlodi, 2006; Joshua, 2008). The model is given by the expression:

$$\sum \frac{(fo-fe)^2}{fe}$$

Where:

$\sum$  = summation sign

fo = frequency of observed value

fe = frequency of expected value

The Contingency Chi-Square as a test statistic is used to test the strength or weakness of a relationship (Joshua, 2008).

### **Data presentation, analysis and discussion of findings**

**Occupational structure, National Park and livelihood provision in the study area:** Data from questionnaire survey were analyzed and results as presented in Table 2 and Figure 1 reveals that majority of the sample population are farmers with a total percentage of 47.20. Forest products gathering had the second highest percentage in the occupational structure of 38.80, while others (which include food vendor (18.75%), business (6.25%), mat making (6.25%), carpentry (6.25%), driving (6.25%), carrier (6.25%), motorcyclist (12.25%), and palm wine tapping (31.25%) and timber logging (6.25%)) had total of 6.40 per cent. Civil service, hunting, and petty-business had percentages of 3.60, 2.00 and 2.00 respectively. Result shows a significant variation in the number of people involved in forest products collection. It shows that 93.60 per cent of total responses engage in collection of forest products, while 6.40 say they do not engage in the collection of forest products (Table 4.2). Further findings from PRA study reveal that a number of products such as leaves are collected from the forest for food and income. These include leaves such as *achi* leaf, *moimoi* leaf, *afang* leaf, hot leaf, *atama*, among others. Other items collected from the forest are fruits such as native pear, mimosup seeds, *achi* seeds, monkey kola, bitter kola, bush mango, *udara* and hot seeds.

Other findings from PRA revealed that almost every member of the communities find a ready source of income and food for sustenance from the forest. Tables 4.4 and 4.5 indicate that 53.20 per cent of people in the entire sample earn monthly income of below N1,000, about 24.40 per cent earn about N5,000 a month, 14.40 per cent earn between N6,000 – N10,000, while a total of 2.80 of the sample earn above N21,000 and above.

Findings were made on National Park and alternative livelihood provision to the support zone communities. Referring to Table 10, it is revealing that only four alternatives were attempted as park's provision to the support zone communities (SZC). Details to the table as obtained in the Cross River National Park Report (CRNPR, 2008) shows that 10,000 assorted tree-crop seedlings such as assorted tree-crops seedlings like cocoa, oil palm, coco yam, rubbers, citrus, banana, cassava, plantain and bush mango were distributed to interested farmers in many support zone villages, including provision of assorted agro-chemicals to farmers (see Table 3).

However, the details of provision to individual communities are not available. But the record covers the two divisions of Okwangwo and Oban. It is obvious in Table 10 that these provisions have been grossly inadequate with the phenomenal rise in cases of recorded arrest of the locals for trespass into the park area. Figure 6 shows that there is a relationship between provision of livelihood alternatives and cases of arrest for trespass. Cross examining Table 10 and 14, it is noticeable that in 1999 and 2001, 5 cases each were recorded and they were lower than any other year because there were provisions of alternative means of livelihood. All other years saw rising cases of arrest which is phenomenal. The peak however was in 2005 when 2 boreholes were provided in two communities.

A further finding from the park reveals that the Federal Law that established Nigeria National Parks (Act 46 Cap 65 LFN 2004) made no provision for alternative means of Support Zone Communities' (SZC) livelihood. Rather, it mandated the park management to collaborate with relevant agencies to provide alternative source to wildlife for protein and income. The host communities noted that there were verbal promises of providing alternatives and relocation of Mkpot community before park operations started but was not fulfilled.

Not fulfilling the promise is said to be another reason for trespass to gather forest products, hunting for animals for protein and income, as well as timber logging. Apart from the recorded arrests in Table 7, the researcher had several encounters where youths were arrested for trespass into the park area. According to Park Rangers and other staff of the National Park, the activities of some of the members of the communities are very injurious to the park, such as illegal exploitation of forest resources in the park area through timber logging, poaching, gathering of non-timber forest products (NTFPs), and bush burning with forest-based farming encroaching into the park.

**Assessment of the preferred livelihood options by people of the affected communities:** The study assessed the preferred livelihood options by the people of the affected communities. The various options of farm inputs and or improved seedlings, scholarships, micro credit loans or micro finance, market gardening, employment and skill acquisition or development were identified (Table 4 ).

As shown in Table 4, a total 68.00 per cent of the sampled population are interested in farm inputs and improved seedlings. This is followed by skill acquisition and or development with a 12.80 per cent, employment with 7.60 per cent, scholarships for education of the youths with 4.40. Others were micro credit loans or finance and market gardening with 4.80 and 2.40 respectively. Oral interviews with some selected community members why most of them are interested in farming as an occupation revealed that they have fertile soils for agriculture, that they are interested in skill because they can use them at all times and that when they are educated they can get jobs.

More findings from PRA reveals that host communities have their community members working with the park as Park Rangers. Oban is said to have one (1) indigene at the senior cadre, two (2) at intermediate, and five (5) at the lower cadre as park rangers. Other communities have one or two indigenes at the lower cadre as park rangers. Although the communities have few of their members with the civil service, they were not employed by the park. The people (indigenes) object to working as park rangers (which appears to be the only available job opportunity in the park) because it is more or less a “war-front” to do such a work. This is as a result of attacks from the members who are aggrieved at their state having been dispossessed of the enclave for conservation by the Federal Government.

Information gathered during interview in the study area shows that the park once attempted providing micro credit loans. According to them, the requirements to access the loan facility were too complex and many that none of them could meet. At the end of the day they were all turned off. Hence, no member of the communities received the micro-credit loan. They agreed that improved seedlings and other farm inputs such as bush mango, oil palm, goats were provided to some farmers five years ago. Others were bursary of five thousand (N5,000.00) Naira and some exercise books to some indigenes about once some five years ago and renovation of primary school and provision of benches to Nsan and Aking communities.

During PRA, the people were asked to rate over ten (10) the main occupation (livelihood activities) of the study area. Farming was said to be their main occupation (see Table 5). They cultivate crops such as cassava, plantain, cocoyam, rubber, palm and few cocoa as identified. Noted during the PRA is the fact that those who engage in other occupations such as petty-trading and civil service still farm and also gather non-timber forest products from time to time.

### ***Constraints affecting livelihood activities in the study area***

The study also investigated constraints affecting livelihood activities in the area. Findings include conflict with park officials, decline of forest products, and limited land for agriculture, and decline of forest products (Table 6). This means that the collection of forest product must be monitored from over harvesting and effective use and conservation of the resources. However, Table 7 shows a number of arrests recorded by the park for violation and trespass into the park area for various reasons including gathering forest products, poaching, and forest based agriculture, among others.

It is certain that this phenomenon will continue as could be deduced during interview, if nothing tangible is done to address this problem of the people’s means of livelihood within the enclave. Conflict with park officials, decline of forest products, and limited land for agriculture representing 45.60 per cent of the total sample population are constraints of carrying out livelihood activities in the study area, 30.40 per cent for decline of forest products, 12.80 per cent for limited land for agriculture, while 11.20 per cent see conflict with park officials as constraint to carrying out livelihood activities.

The arrests of local community members are due to trespass into the park enclave; reasons for the trespass are as documented in Table 8. More PRA findings on constraints in livelihood activities include inability to identify boundary lines recognizing where buffer zone stops. Others are decline in forest products in buffer zone area and community forest and arrests by Park Rangers. Some identified reasons for trespass into the park area include farming (20%), poaching (15.20%), harvesting of medicinal herbs (6.40%), and timber logging (3.60%). Other identified causes of trespass include bush burning (12.80%) and overgrown boundary line (2.40%) which covers beacons and then posing challenge of recognizing where buffer zone stops, this leads to intrusion by indigenes and use of chemicals in fishing.

### ***Test of hypotheses***

The study collected data on the preferred livelihood options in the study area. These data were basically through questionnaire. The respondents were requested to select the various options according to their preference. The data were used to test the null hypothesis which states that: "The alternative livelihood options of the people are not significantly related". The summary of the result is shown in Table 9. The Contingency Chi-Square was used to test the hypotheses. This statistic technique is used to test the strength or weakness of a relationship (Joshua, 2008).

The model is given by the expression:

$$\sum \frac{(fo-fe)^2}{fe}$$

Where:

$\sum$  = summation sign

fo = frequency of observed value

fe = frequency of expected value

Hypothesis

The alternative livelihood options of the people are not significantly related. The summary of the test is presented in Table 9.

**Decision:** From the statistical result in Table 9, the calculated  $X^2$  of 86.81 is higher than the critical  $X^2$  of 11.070 at 0.05 level of significance with 5 degrees of freedom. By this result, the null hypothesis ( $H_0$ ) is rejected and the alternate which states that "The alternative livelihood options of the people are significantly related", accepted.

### ***Discussion of findings***

Findings of this study reveal that majority of the host peoples are farmers with 47.20, followed by forest gathering in the occupational structure representing 38.80 per cent, while others (which include food vendor, business, mat making, carpentry, driving, carrier, motorcyclist, and palm wine tapping and timber logging) including civil service 2.00 per cent, hunting 2.00 per cent, and petty-business having a total of 2.00 per cent. It was the finding of the study that only four alternatives were attempted as park's provision to the support zone communities (SZC). Details as obtained in the Cross River National Park Report (CRNPR, 2008) shows that 10,000 assorted tree-crop seedlings such as assorted tree-crops seedlings like cocoa, oil palm, coco yam, rubbers, citrus, banana, cassava, plantain and bush mango were distributed to interested farmers in many support zone villages, including provision of assorted agro-chemicals to farmers.

However, information gathered from PRA study revealed that the Federal Law that established Nigeria National Parks (Act 46 Cap 65 LFN 2004) made no provision for alternative means of Support Zone Communities' (SZC) livelihood. Rather, it mandated the park management to collaborate with relevant agencies to provide alternative source to wildlife for protein and income. The host communities noted that there were verbal promises of providing alternatives and relocation of Mkpot community before park operations started but was not fulfilled.

Not fulfilling the promise is said to be another reason for trespass into the park area to gather forest products, hunting for animals for protein and income among others. The preferred livelihood options by people of the affected communities were also identified. These options includes farm inputs and or improved seedlings, scholarships, micro credit loans or micro finance, market gardening, employment and skill acquisition or development. Community members interested in farm inputs and improved seedlings had the highest frequency of 170 (68.00%), followed by skill acquisition and or development with a total of 32 responses (12.80%).

Employment was the third highest option, then scholarships for education, with little interest or frequency for micro credit loans or finance and market gardening. During PRA with some selected community members on why most of them are interested in farming as an occupation revealed that they have fertile soils for agriculture. They also said that they are interested in skills because they can use them at all times and that when they are educated they can get jobs.

Further findings show that there is less interest on micro credit loans because there was once an attempt in providing micro credit loans and no community member was able to access it. The reasons were that conditions to access the credit facility were unattainable; hence, they do not want to try it any more. But if the facility is accessible, they will gladly have it for small-scale businesses. Finally, the statistical results show that the alternative livelihood options of the people are significantly related. The finding is in agreement with the study by Sutherland (2000) who identified that most local people prefer alternatives that are close to the previous occupations. This is true since new and exotic occupation may rather cause problems to the people instead of improving their livelihood activities.

### **Conclusion**

From the findings of this study, the following conclusions were drawn: a) there are enough evidences that the establishment of national parks have not been playing the “double” sustainability of protecting and conserving biological resources and ensuring the host indigenes’ means of livelihood, b) that there is significant relationship among the occupation of the people in the study area, and that the alternative livelihood option of the people is significantly related.

### **Recommendations**

In order to make the livelihood of the communities within the Cross River National Park more sustainable, the following measures are recommended:

**Micro farming:** Provision of facilities that make it possible to engage in micro farming such as poultry keeping, goat rearing, rabbit farming, snail farming, grass cutter farming is recommended. These could be better alternatives to dependence on wildlife as well as fish farming, mushroom farming, bee keeping, and so on for protein and income. Others are provision of improved seeds such as cocoa, oil palm, rubber, coco yam, orange (*citrus*), bush mango (*evangia gabonensis*). With the services of extension workers using demonstration farms in teaching local farmers innovative techniques, these micro farming has proved to be veritable in sub-Saharan Africa in livelihood sustenance. The same bush meat for protein and income from the forest for daily living could be realized through micro farming.

**Skill acquisition or trademanship programs:** Another essential recommendation is to help train and equip as well as develop skills for technical jobs and for self-help employment within the enclave communities. Skills when developed or acquired are for life. High intelligence is not necessary since anyone can learn a skill and survive with it. Skills such as tailoring, art and craft, welding, driving, plumbing, mason, baking, hair dressing, carpentry, soap making, electrical repairing, barbing, and computer training, among others, promise to predispose the community members to be self-reliant and divert their attention from depending solely or completely on the forest.

**Micro financing:** Provision of micro finance for small-scale businesses should also be made effective and accessible to the people. Interested members should be identified and recommended from existing cooperatives age-grades, youths certified by the village council. Small-scale loans should be given without interest or with minimal or low interest rates. With the credit facility, small businesses could be started and loan paid back (where necessary) gradually. People who really need this facility for support in small-scale businesses could be identified with the help of community members otherwise, it will be taken for largesse.

**Market gardening and NTFPs domestication:** Market gardening and non-timber forest products domestication are imperative where some of the non-timber forest products could be cultivated in farmyard gardens alongside other vegetables and fruit crops. Vegetables such as pumpkin, water leaves, okra, bitter leaves, etc are normally cultivated as market gardening. NTFPs as well could be domesticated and cultivated for the market. These include *afang*, “moi moi” leaves, hot leaves, *editan*, *atama*, medicinal herbs and other edible leaves and nuts/fruits. It will heavily engage the farmers and increase their income.



**Agricultural extension services:** Extension services should be delivered to the people. Agricultural extension services are services that help farmers on improved and environmentally sustainable methods or techniques of cultivation and application of agricultural equipments for better yield. Local people often have no access or do not access them at all, but when done, farmers will learn new and innovative techniques to productive farming in the use of improved seeds, use of manure and agro-chemicals in the zone acceptable and non injurious to the park area.

**A Land use plan:** Together with the community members, a land use plan should be developed. When done, it would help farmers sustainably manage available land for their cultivation. In developing a land use plan, community members should be involved within the area allocated for farming. With such provision, improved seeds such as rubber, palm, cocoa, bush mango, etc planted, which would benefit the communities directly.

**Synergy building, integrative and participatory management system and Livelihood governance:** The park management should establish and maintain relations with the host people, funding agencies, professional bodies and non-governmental organizations (NGOs) as well as tiers of government so as to secure funding and training schemes suitable and compatible with support villages for sustainable alternative means of livelihood. This is illustrated in Figure 5.1.

**Proper legislation:** The law that established Nigeria National Parks should be repealed. This is because it does not consider the host communities in alternative means of earning a living outside the forest. The law should be made to include alternative livelihood of the support zone communities in national annual budget.

It is believed that when the recommendations above are implemented, not only would the support zone communities be taken care of in sustainable provision of alternatives to their livelihoods, it would sufficiently divert their overdependence on the forest and smooth running of the park operations meeting its establishment objectives.

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**Table 1: Percentage of national annual budget devoted to protected areas**

N	Country	Percentage annual budget	Percentage *(%)	Ranking *
1	Cameroon	0.012	0.881	7 <sup>th</sup>
2	Germany	0.01	0.734	6 <sup>th</sup>
3	Netherlands	0.02	1.468	5 <sup>th</sup>
2	Malawi	0.13	9.544	4 <sup>th</sup>
3	USA	0.16	11.747	3 <sup>rd</sup>
4	Tanzania	0.26	19.089	2 <sup>nd</sup>
5	Kenya	0.77	56.535	1 <sup>st</sup>
<b>Total</b>			<b>100</b>	

Data source: Wilkie and Carpenter (1999)

\* Calculated and ranked by the researchers

**Table 2: Occupational structure of the study area**

Sample community	Variable					
	Farming	Petty-trading	Civil Servant	Hunting	NTFPs	Others
Oban	35 (36.84%)	3 (3.16%)	6 (6.32%)	0 (0%)	41(43.16%)	10(10.53%)
Mkpot	52 (61.20%)	1 (1.20%)	1 (1.20%)	1(1.20%)	27 (31.80%)	3 (3.53%)
Aking	31 (44.30%)	1 (1.43%)	2 (2.90%)	4 (5.71%)	29(41.41%)	3 (4.30%)
<b>Total %</b>	<b>47.20</b>	<b>2.00</b>	<b>3.60</b>	<b>2.00</b>	<b>38.80</b>	<b>6.40</b>

Data source: Fieldwork (2009).

**Table 3: Provision of livelihood alternatives to host communities**

Year	Description of provision	Number provided	Description of provision
1999	Farm inputs/improved seedlings	10,000	bush mango, oil palm seedlings
2000	None	0	
2001	Livestock farming	300	Goats
2002	Educational support	7	bursary of five thousand (N5,000.00) Naira and some exercise books
2003	Health facilities/drugs	5	
2004	Road/culverts	6	
2005	Boreholes	2	provided in two communities
2006	None	0	
2007	None	0	

Source: Cross River National Park (CRNP, 2008).

**Table 4: Preferred alternative options by study communities**

Community	Variable					
	Farm inputs	Scholarships	Micro-finance	Market gardening	Employment	Skills
Oban	56 (58.95%)	3 (3.20%)	12 (12.63%)	6 (6.32%)	14 (14.73%)	4 (4.21%)
Mkpot	75 (88.24%)	1 (1.20%)	0 (0.00%)	0 (0.00%)	3 (3.53%)	6 (7.10%)
Aking	39 (55.71%)	7 (10.00%)	0 (0.00%)	0 (0.00%)	2 (2.86%)	22 (31.43%)
<b>Total %</b>	<b>68.00</b>	<b>4.40</b>	<b>4.80</b>	<b>2.40</b>	<b>7.60</b>	<b>12.80</b>

Data source: Fieldwork (2009)

**Table 5: Scoring of major occupations in the study area**

Occupation	Rating	Percentage (%)
Farming	5	50
NTFPs collection	3	30
Petty-trading	1	10
Civil service	1	10
<b>Total</b>	<b>10</b>	<b>100</b>

Data source: Fieldwork (2009)

**Table 6: Constraints on carrying out livelihood activities**

Community	Variable				
	Conflict with park Officials	Decline of forest products	Limited land for farming	Decline in fertility of soil	All the above
Oban	12(12.63%)	6(6.32%)	22(23.20%)	0(0.00%)	55(51.90%)
Mkpot	7(8.23%)	56(65.90)	6(7.10%)	0(0.00%)	16(18.82%)
Aking	9(12.86%)	14(20.00)	4(5.71%)	0(0.00%)	43(61.43%)
<b>Total %</b>	<b>11.20</b>	<b>30.40</b>	<b>12.80</b>	<b>0.00</b>	<b>45.60</b>

Data source: Fieldwork (2009).

**Table 7: Cases of arrest for trespass (1999 to 2007)**

Year	Number of arrests
1999	5
2000	17
2001	5
2002	28
2003	43
2004	42
2005	63
2006	35
2007	58
<b>Total</b>	<b>296</b>

Data source: Cross River National Park (CRNP, 2008).

**Table 8: Reasons for trespass into the park area**

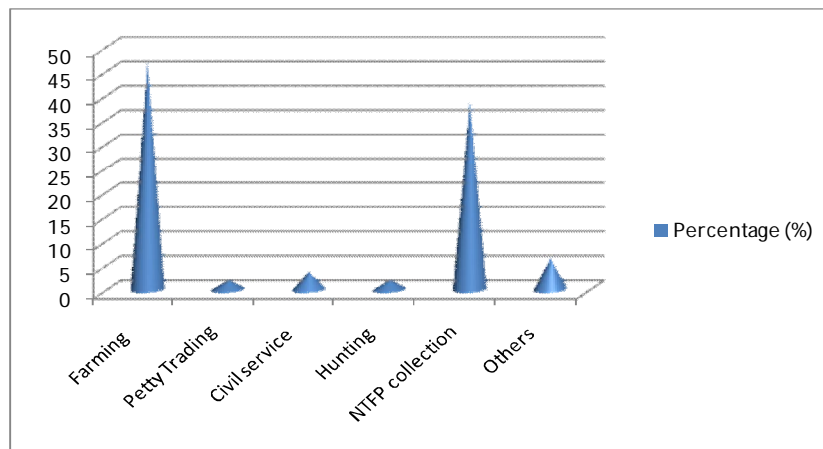
Reason(s)	Number of responses	Percentage (%)
NTFPs	87	34.80
Poaching	38	15.20
Farming activities	50	20.00
Fire wood	12	4.80
Logging	9	3.60
Medicinal herbs	16	6.40
Overgrown boundary	6	2.40
Bush burning	32	12.80
<b>Total</b>	<b>250</b>	<b>100</b>

Data source: Fieldwork (2009).

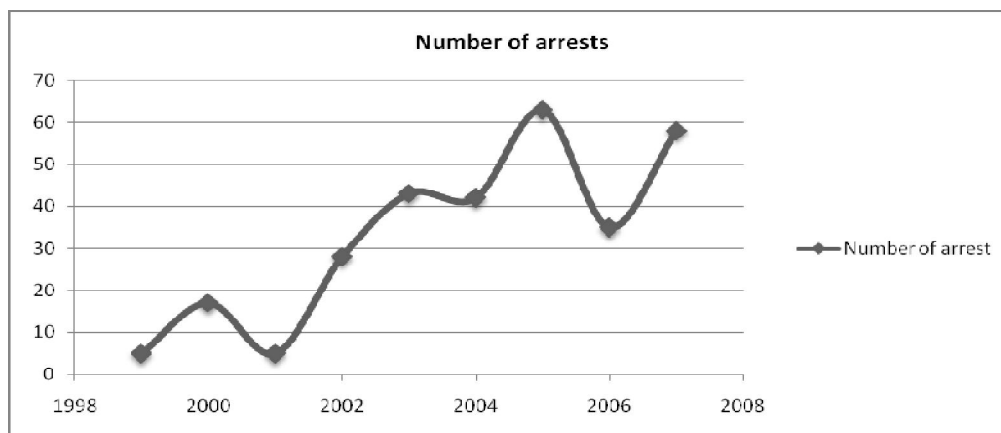
**Table 9: Summary of observation X<sup>2</sup> Table for hypothesis**

X <sup>2</sup> Calculated	X <sup>2</sup> Tabulated	Degree of freedom (df)	Confidence level
86.81	11.070	5	0.05

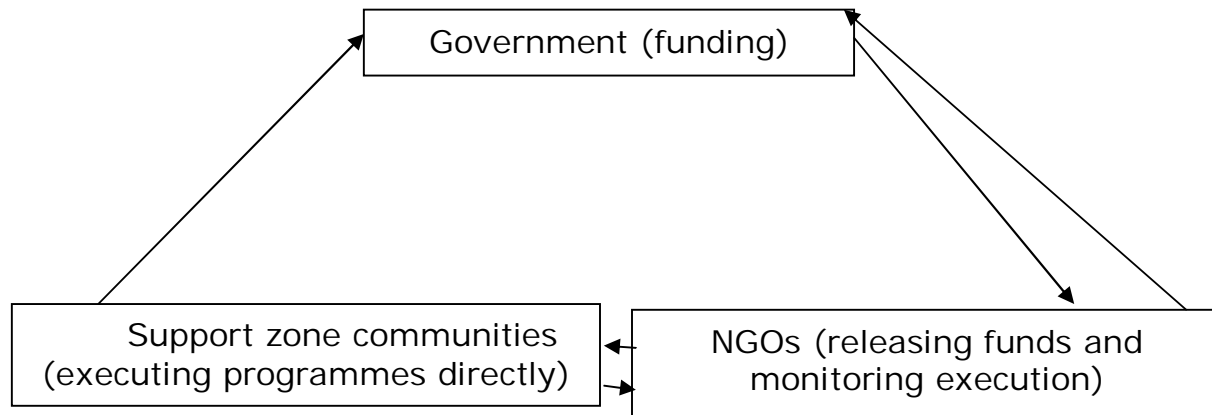
Data source: Fieldwork (2009).



**Figure 1: Occupational structure of the study area**



**Figure 2: Number of arrests for trespass**  
Source: Fieldwork, 2009.



**Figure 3: Building synergy between governments, NGOs and support zone communities. A model for the provision of sustainable alternative livelihood in protected areas.**

Source: Fieldwork, 2009