

FOREST RESERVATION AND IT IMPLICATION TO THE ENVIRONMENT

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Abstract

Forest are crucial for the well being of humanity. They provide foundation for life on earth. Through ecological functions, by regulating the climate and water resource, and by serving as habitats for plant and animals. The forest as a natural buffer, plays an important role in maintaining the ecosystem balance while being at the same time a key element in the landscape and supplier of raw material and various protective service to societies. Today, forests are under pressure from expanding human populations, which frequently leads to the conversion or degradation of forest into unsustainable forms of land use. In Nigeria, human communities are found within or beside forest ecosystems, depending on these ecosystems for survival. Their forest exploitation is considered a threat to conservation efforts, leading to constant conflicts between Government, law enforcement agencies and the communities. The best solution is a win-win system of participatory community-based forest resources management, in which the communities are regarded as stakeholders rather than as threats. In Nigeria, human communities are found within or beside forest ecosystems, depending on these ecosystems for survival. Their forest exploitation is considered a threat to conservation efforts, leading to constant conflicts between Government, law enforcement agencies and the communities. The best solution is a win-win system of participatory community-based forest resources management, in which the communities are regarded as stakeholders rather than as threats.

INTRODUCTION

From time immemorial, human settlements have been associated with tropical forests, and to date, in Nigeria, human settlements are found within or beside forest regions, mostly the rural dwellers, whose lives and existence are solely dependent on the forests and their resources. For instance, in Omo Biosphere

Reserve, Southwest Nigeria, there are about 20 enclaves inside the reserve, mainly located on the periphery, and four timber camps and one small town. There are an estimated 20,000 inhabitants living inside the reserve (Amador and Uijetwaal, 1997) and during the dry season there is a temporary influx of Hausa people from the north, Igbo people from the east and non-

Nigerians (Person and Warner, 2003). Greengrass (2006) noted that most of the inhabitants are farmers and timber workers, indicating that their livelihood depend on the forests.

Nigerian moist forests are rich in epiphytic ferns and orchids, and contain over 560 species of trees which attain heights of at least 12 meters and girth of 60 centimeters. Due to the relatively large number of plant species identified, Nigeria has been ranked the 11th in biodiversity in Africa. In addition, the West African Forests is one of the 25 biodiversity hotspots of global significance for conservation priorities (Myers *et al.*, 2000) and the Nigerian tropical rainforests form a significant part of this (Borokini *et al.*, 2010).

However, due to massive logging, fuel wood harvesting, poaching and expansion of agricultural lands, Nigeria is losing many of her natural forests and their wildlife. Nigeria was adjudged to have the highest rate of deforestation of primary forests having lost 55.7% of her natural forests between 2000 and 2005 (FAO, 2006). The FAO 2005 Forest Resources Assessment further revealed that, poor tropical countries have the highest rate of deforestation (FAO, 2006). As a result, as many as 58 (10.4%) of the tree species are listed as endangered (FORMECU, 1999). This biodiversity loss occurs in spite of the establishment of forest reserves, protected areas and associated conservation and environment laws. This indicates partial or

total failure of these legal and institutional frameworks for nature conservation in Nigeria. A good example of this was reported by Greengrass (2006) in her studies on chimpanzees in Southwest Nigeria, that in most of the forest reserves visited, the state and local forest departments are unable to control the large-scale illegal activities taking place within the forest reserves.

While the timber industries are being blamed for the illegal and excessive logging, the rural dwellers are accused of deforestation for fuel wood and farmland expansion. However, it is difficult, if not totally impossible to stop rural dwellers that live close to the forest from entering the forests because of conservation laws. These people have been depending on the forests from several centuries back and worse still, their illiteracy and poverty level is very high. Over 70% of the population in Sub-Saharan Africa (SSA) lives in rural areas where most households depend on forests and woodlands for their Livelihoods (Topa, 2005). While agricultural activities meet most of their subsistence needs, forest productstimber and non-timber forest products (NTFPs)provide a substantial part of the disposable income for at least 20 percent of rural families.

In many protected areas in Nigeria, there are active or passive conflicts on natural resource control between the Government/Government staff and the rural dwellers. The only viable solution is to consider these local people as stakeholders for effective conservation of these natural

ecosystems earmarked as protected areas. This concept is called Community-based Forest Resources Management (CBFRM), which is synonymous to Community-based Natural Resources Management (CBNRM), or simply called community forestry.

Community forestry was defined by FAO as “any situation which intimately involves local people in a forestry activity. It embraces a spectrum of situations ranging from woodlots in areas which are short of wood and other forest products for local needs, through the growing of trees at the farm level to provide cash crops and the processing of forest products at the household, artisan or small industry level to generate income, to the activities of forest dwelling communities” (FAO, 1978). It primarily entails involving the local communities in conservation of the forests around them, training them on tree plantation and management, integrating tree planting with food crop cultivation (agroforestry), employment of some of the local people as staff of the protected area, community development projects as well as involving the people in the formulation of conservation policies. Currently, the practice of CBNRM is very limited in Nigeria (Babalola, 2009).

Taungya system was probably the oldest method of community participation in forest Management, introduced by Richard St. Barber Baker in 1926 (Bada, 1999). Since then, several other practices such as agroforestry have been introduced, but it appears that most of these practices are

not being used in most of the protected areas in Nigeria. Furthermore, as much as agroforestry is effective in forest management, it does not consider or favour other important biological components of the forestecosystem, such as the wildlife, shrubs, herbs and epiphytes, which have their equally important economic and ecological significance. Therefore, this paper describes community participation in the management of Ngel Nyaki Forest reserve, as a way to advocate for best practices in community forest management in Nigeria.

Ngel Nyaki Forest Reserve

Ngel Nyaki is located towards the western escarpment of the Mambilla Plateau. Mambilla Plateau is the highest plateau in Nigeria with the mean altitude of 1,524metres (5,000 feet) above the sea level, while some hills are much higher, such as Chappal Waddi (the highest mountain in Nigeria) which is 2,419 metres (7,936 feet) high. Mambilla Plateau is located in Taraba state, North-eastern part of Nigeria, and it is characterised by semi-temperate climate.

There are about 15 forest fringes on the Mambilla Plateau, which include Ngel Nyaki Forest Reserve, Leinde Fadali, Sarkaka, Ndum Yaji, and other fringing forests; but Ngel Nyaki Forest Reserve is the most diverse forest (Chapman & Chapman 2001). Ngel Nyaki Forest is made up of a main forest and three forest fragments separated by hills covered by montane grasslands. The reserve is situated between latitudes 07° 05'N and longitude 011° 05'E

at an altitude of 1,400m – 1,600m above sea level. The Reserve occupies about 46km² area of land, with about 7.2 km² of sub-montane to midaltitude forest. It was gazetted a Local Authority Forest Reserve under Gashaka Mambilla Native Authority Forest Reserve Order of 24 April 1969.

Ngel Nyaki forest harboured several threatened species and others unknown at that time elsewhere in West Africa (*Anthonotha noldeae*, *Apodytes dimidiata* and *Pterygota mildbraedii*) and Nigeria (*Ficus chlamydocarpa* and *Isolona cf. deightonii*) (Dowsett-Lemaire, 1989). This diverse forest flora was reflected in the high number of primates and other animal species, and high bird species diversity (Hall 1976, Ash *et al.*, 1989). Over 146 vascular plant species have been identified and collected by Dr. J.D Chapman, many of which are trees and are endemic to the Afromontane region.

Community-participation in Forest management in Ngel Nyaki Forest

The area is populated by Mambilla people and Fulani herders. The Mambilla people are primarily farmers. Yelwa village appears to be the closest to the Ngel Nyaki Forest Reserve, a distance of about 40 minutes trekking. They cultivate maize for corn flour meal (tuwo). Mairiga (pers. comm.) stated that 'Nyaki' means 'bean', suggesting that they might have been cultivating beans in the past. The major agricultural crops here are coffee and tea, which are cultivated and sold in large

quantities. Mambilla Plateau is the home to Nigeria and West Africa's only highland tea plantations. Towns on the Mambilla Plateau are small with populations ranging from 100 to 5,000 people, which include Gembu (the largest town), Dorofi, Nguroje, Ngelforo, Wakili Buba and Maisamari. Other agricultural crops include plantain, a special variety of pepper which when ripe, the flesh is yellowish-orange instead of the common red colored ripe pepper fruits; and a special variety of yam that resembles cocoyam. The Fulani people are cattle herders settling on the hills where they get grass for their animals. They also sell Raw milk, cheese and yoghurt.

When Ngel Nyaki forest was to be designated a forest reserve, Yelwa community was relocated to its present location, perhaps one of the very little successful relocation of communities from the forest in Nigeria. Later, Nigerian Montane Forest Project (NMFP) was established by the University of Christchurch, New Zealand for research in biodiversity conservation and forest ecology. Ngel Nyaki Forest Reserve appears to be safe from deforestation and bush meat hunting.

POSITIVE IMPLICATION OF FOREST RESERVATION IN NIGERIA.

I) Forest as a major source of food: Forest provides food for man and animals. Food from forest include fruits, leaves, seeds and nuts, tubers and roots fungi eg mushroom, honey, palm wine, wildlife etc.

food from forest often provide essential vitamins and major source of protein to people's diet.

II) Raw material production: Forest is generally known as major supply of raw materials to both local and international industries. The main component of forest is the tree, which is made up of the crown, trunk and root, each of which is important in the provision of forest product.

I) Bio diversity conservation: forest is one of the largest repositories of biodiversity in the world. The conservation of these valuable genetic resources for future options that are yet undiscovered thus a valuable service that forest provide to us and to the future generation. It is widely acceptable that the primary course of extinction in habitat loss following over exploitation.

II) Economic services: Forest is able to contribute many social and economic benefits to people. Clearly forest from the basis of a variety of industry timbers, processed wood. And paper, rubber, and fruits. However, they also contain products that are necessary to the viability for rural agriculture communities. These products include fuel and fodder, game, fruits, building materials medicines and herbs. The trade in these commodities is an important source of income for people (farmers). Forest products play a critical role as source of basic necessities in local communities and also as a major source of revenue generation to the dwellers. Additionally, grazing occurs within forest and local

woodlands are used to satisfy basic needs. Rural people also grow crops on temporary plot within the forest on a rotational basis. These forest products contribute to a diverse rural economy and security when times are difficult.

III) Watershed production: in terms of watershed, the forest regulate the flow of water (i.e. flood control) maintains water quality by minimizing the sediments loads, nutrient loads, chemical loads and salinity. The forest also regulates the ground water levels and maintains the aquatic habitants. The forest acts as “sponge” by soaking up water and releasing it gradually thereby enhancing water during dry season flooding affect the forest environment and the ecosystem but the forest instigate the risk of flood by reducing high intensity storms.

IV) Forest and carbon sequestration: climate change occurs as a result of greenhouse effect which is caused by the buildup of GHGs CO₂, CH₄ and other compounds in the atmosphere. The largest contributor has been fossil fuel burning followed by forest degradation and deforestation. Forest is known to play an important role in regulating the global climate. Green plants take in CO₂ from the atmosphere in the process of photosynthesis using it to make sugars and other organic compound used for growth and metabolism. This process is called carbon sequestration or carbon sink or even mop up this carbon stuff from the air which may be detrimental if left to circulate in the environment. Forest based carbon sequestration is based on two

main approaches active absorption in new vegetation and avoids emulsion from existing vegetation. The first approach is achieved by planting new trees (a forestation, reforestation or agro forestry) while the later by increasing the growth rates of the existing forest stands (improved silvicultural practice). Forest therefore are both a source of CO₂ when they are destroyed or degraded and a sink when conserved, managed or planted sustainably.

VII). The educational and recreational value of trees: Increasing urbanization and industrialization have resulted in isolating human from nature. Trees help make urban areas green, livable and beautiful. Trees with colorful flowers or foliage add extra attractiveness. Trees are thus a source of pleasure and recreation when they are planted along roads and railway tracks and in botanical gardens, city parks, arboreta, squares, home gardens public places industrial area etc. the cultivation of trees for their aesthetic or recreational value is known as arboriculture.

VIII). Landscaping and Bio-aesthetic planning: Shrubs and trees improved the landscape for example, trees along roadsides are a source of beauty not only to the roads, fuel wood, fodder and thorny species should not be chosen. Shrubs components of landscaping and bio-aesthetic planning urban cities and towns.

As far as possible, native species should be selected because, apart from their aesthetic value, scenic beauty and immediate utility, these trees reduced

maintenance costs, preserve biological diversity and prevent species extinction.

NEGATIVE IMPLICATION OF FORESTS RESERVATION IN NIGERIA

i). Hazard To The Environment

Trees can eventually constitute hazards in environment, if the trees are not properly managed. Some of the possible hazards include trees falling across the road, on vehicle, houses, municipal services lines (electricity, phone etc). The roots of the trees can also damage underground cables, road kerbs, sewers, or even affect the foundation of buildings in some cases. Right choice of species and effective management are necessary to prevent and mitigate these probable hazards.

ii). Leaves And Fruits Of Trees Littering Environment

One of the commonest problems associated with the presence of trees in working environment in general and in environment in particular is messy littering of trees' leaves and fruits. Common problem though, it is easily manageable with a well organized environmental sanitation activities.

iii). Trees Falling On The Road As A Result Of Windstorms

Since some of the environment may have been in existence for many years and invariable to the trees would have been old and susceptible to with storm. It is therefore, important for managers of the environment to check on the trees regularly to identify weak, old and even diseased ones among them for proper handling and replacement.

This will go long way in providing a sustainable attractive, conducive, serene and therapeutic green environment for all.

CHALLENGES OF FOREST RESERVATION IN NIGERIA

I). **poor funding of forest operations:** For many years now, forestry Directorates in the country has been poorly funded. They have not been able to effectively carry the reservation due to insufficient funding.

II). **Deforestation:** due to uncontrollable logging tree felling. Deforestation is the removed of a forest or stand of trees where the land is thereafter converted to a non-forest use.

Conclusion

Unless the local communities neighboring protected areas are considered an important stakeholder in the management of the protected areas, there can never be a successful conservation of the nation's biodiversity. The most effective way to do this is to give these local people a cheaper and more accessible alternative to the resources they get from the forests mainly fuel wood and bush-meat in addition to community development projects, employments in the protected areas to their people, sharing of proceeds from the forests with the communities for sustainable development projects, Favorable land policies to encourage land ownership for individual afforestation micro-businesses and source of livelihood, which may be through small-scale businesses, afforestation project, bush meat rearing among others. It should be noted that

full cooperation of these communities are pivotal to successful biodiversity conservation.

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