

Forest Degradation and Deforestation in Nigeria; Poverty Link



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ABSTRACT: Forests are the most diverse terrestrial ecosystems, housing a quite large majority of the world's terrestrial species. It provides many social, economic, and environmental benefits. In addition to timber and paper products, forests provide wildlife habitat and recreational opportunities, it prevents soil erosion and flooding, provides clean air and water as well. Degradation and Deforestation occurs when changes happens which affects the characteristics of a forest negatively in such a way that the value and production of its goods and services decline or it is converted to an alternative permanent non-forested land use such as agriculture, grazing or urban development. These changes are caused by both direct and indirect causes with direct causes being human activities e.g agricultural expansion, road construction etc while indirect causes are economic growth etc. A positive correlation between the level of poverty and utilization of forest resources which leads to deforestation and exploitations of forest resources has been established, with an estimation of more than 90% of the 1.2 billion people living in extreme poverty dependence on forests for some part of their livelihood. Hence, degradation and loss of forests pose a grave threat to biodiversity. The result of degradation and deforestation include flooding, reduction in forest carbon storage, climate change etc. some perceived way forward to tackling this are poverty reduction programs, addressing land tenure matters , forest monitoring mechanism amongst others.

KEYWORDS: Forest, Degradation, Deforestation, Poverty

A. INTRODUCTION

Forest degradation is a change process that affects the characteristics of a forest negatively in such a way that the value and production of its goods and services decline. [1] Explains that this change process is caused by disturbance (although not all disturbance causes degradation), which most often vary in extent, severity, quality, origin and frequency. These disturbances may be natural (fire, storm or drought), human-disturbances (harvesting, road construction, shifting cultivation, hunting or grazing) or the combination of the two. Human caused disturbance may be intentional (direct), such as that caused by logging or grazing, or it may be unintentional (indirect), such as that caused by the spread of an invasive alien species.

Deforestation on the other hand is the conversion of forest to an alternative permanent non-forested land use such as agriculture, grazing or urban development [2]. [3] Highlights the major causes of deforestation which include urbanization, population growth, corruption, overpopulation, inequitable distribution of wealth, and poverty. [4] Further explains that there are proximate/direct causes as well as underlying/indirect causes of deforestation and forest degradation. A distinction is commonly made between proximate/direct causes and underlying/indirect causes of deforestation and forest degradation [4, 5].

Proximate causes are human activities or immediate actions that have direct impact on forest cover and loss of carbon. These causes can be grouped into categories such as agricultural expansion (subsistence and commercial agriculture), infrastructure extension (e.g road construction) and wood extraction (as harvesting of timber and other forest products). Meanwhile the Indirect or underlying drivers/causes are population and economic growth, national and international demand for commodities among others. These activities are triggered by indirect drivers covering the complex interactions of economic, political and institutional, technological, cultural, socio-political and demographic factors [4-7].

The deforestation and degradation of Nigeria forest resources according to [8] between 1980 and 1990 annually averaged at 3.5% and the forest area declined from 14.9 million ha to 10.1 million ha which translates to the loss of 350,000 to 400,000 ha of forest land per annum for the country. Also [9] reported that Nigeria has lost 55.7% of its primary forest to

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deforestation between 2000 and 2005, making the country the highest of such vegetation degradation in the world which are mainly lost to clear-cut for logging, timber export, subsistence agriculture and among others, fetching woods for fuels.

In exploitation of forest resources, [10] established a positive correlation between the level of poverty and utilization of forest resources which leads to deforestation and exploitations of forest resources. The Federal Government of Nigeria (FGN) in 2006 through its ministry (Federal Ministry of Environment) confirms that in Nigeria as in most third world countries, firewood constitutes the major source of fuel. The Rural populace being 80% of the total population depends on fuel wood for its energy needs. Meanwhile the inefficient utilization of fuel wood has contributed to the serious resource depletion which is more noticeable in the arid zone of the country.

It is estimated that more than 90% of the 1.2 billion people living in extreme poverty depend on forests for some part of their livelihood [11]. With such a high proportion of people dependent on forest resources, degradation and loss of forests indeed pose a grave threat to biodiversity. The high prevalence of poverty in Nigeria also worsens deforestation. [12] Reported that about 45% of the country's teeming populace survives below the poverty line. This has brought this paper review to study and evaluate the how poverty drives forest degradation and deforestation, adverse effect of deforestation and degradation on the environment and ascertain perceived ways forward to tackling it.

B. CHAPTER 2

I. The Forest

The forest provides us with several ecosystem goods and services that support our wellbeing and livelihoods. Forest also plays a major role in the reduction of soil and ecosystem hydrological effects and water balance. Trees capture, store, and distribute water to the soil and prevent erosion [13]. Meanwhile [14] estimates that over 1.6 billion people globally rely on forest ecosystems for their livelihood. Of these number, forest-dwelling native peoples and rural communities who live in proximity to the forest constitute about 300 - 350 million people, and almost all completely rely on the forests for their livelihood. The remaining of the forest users are people living in urban and rural areas.

Ecosystem services derived from the forest include fuel wood, fiber, materials for construction, herbal medicine, honey, fodder and water among other services [15, 16]. Also [14] ascertains that forests are an important income generator especially to rural families in Africa, Asia and Latin America. Furthermore, tropical forests are the home of an massive number of species; they are significant absorbers of carbon dioxide; they are often located in a nice countryside and they do attract tourists; they contain natural resources; they form the livelihood for human natives who are often prone to poverty. The latter point implies, natives use tropical forests as a source of wood for making fire, building houses, generating income, and so forth.

II. Nigeria's Forest Biodiversity

The variety of animal and plant in Nigeria's forest is desirable. They work together like an intricate web to maintain balance and support the ecosystem. Nigeria is rich in Biodiversity; the country hosts a richly diverse forest and wildlife. According to [17] the country is endowed with a variety of plant and animal species. There are about 7, 895 plant species identified in 338 families and 2, 215 genera. There are 22, 000 vertebrates and invertebrates species. These species include about 20, 000 insects, about 1, 000 birds, about 1, 000 fishes, 247 mammals and 123 reptiles. Of these animals about 0.14% is threatened while 0.22% is endangered. About 1, 489 species of microorganisms have also been identified. All of these animal and plant species occur in different numbers within the country's vegetation that range from the mangrove along the coast in the south to the Sahel in the north. Most of the biodiversity sustain the rural economy. With this great coverage, forests in Nigeria provides a lots of environmental and aesthetic benefits that ranges from watershed protection to animal hunting, medicine, stabilization of hydrological regimes and carbon sequestration.

Nigeria's present network of protected areas according to [17] includes a biosphere reserve, 8 national parks, 445 forest reserves, 12 strict nature reserves and 28 game reserves. Other sanctuaries and game reserves have been proposed. The total area of land under national parks is about 2.4million hectares. These game reserves were meant to conserve wild life and to supplement protein from domestic sources. Species that had priority for conservation then were identified to include chimpanzee (*Pan troglodytes*) lowland gorilla (*Gorilla gorilla*), ostrich (*Strutio camelopedalus*), Black Rhinoceros (*Diceros biocornis*) Giraffe (*Giraffa camelopardalis*), pigmy hippopotamus (*Choeropsis liberiensis*) and water chevrotain (*Hyemoschus aquaticus*). There is evidence that some of these have since become extinct and there is need for more species to receive special attention.

III. Logging Activities

Logging activities in Nigeria is an encompassing one; it ranges from how it is harvested to its transportation, processing into planks and its sales. All this are done in compliance to the laws of the nation. Logging activities becomes illegal when forest laws

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are violated. K.k..These illegal activities have negative effect on the environment and economy of the nation. Illegal logging also threatens the livelihoods of around one billion forest-dependent people. Illegal logging starves cash-strapped governments of billions of dollars in revenue, undermines the rule of law, fosters corruption, and creates and fuels armed conflict. Illegal logging is also thought to depress world timber prices by as much as 16 per cent, distorting global markets and undermining operations. According to [18], illegal activities in the forest sector occur when wood is harvested, transported, processed, bought or sold in violation of national laws

These laws are breached due to some lapses in governance and forest management which could lead to over exploitation. [19] Explains that over exploitation of forests is caused by inadequate number of protective staff, absence of working plans and stocks maps, and insufficient use of the law to reserve forestland and protect it from destruction. The forest when viewed as a free good and converted to other uses asides its role in provision of environmental services has in itself grave consequences ranging from environmental degradation to economic losses as analyzed by [20-22] that forest offenses in their entirety have caused lots of environmental damage, cost governments billions of local currencies in lost revenue, promote corruption, and undermine the rule of law as well as good governance.

The interactions of social , cultural, political and economic forces leads to deforestation in any given area as decades go by which also varies from country to country. The agents of deforestation are those slash and burn farmers, ranchers, loggers, firewood collectors, infrastructure developers and others who are cutting down the forest. The level of interactions of these agents determines how intense deforestation in any given area will be.

IV. Non Timber Forest Products (Ntfps)

NTFPS achieves multiple functions in the lives of the poor [23] ranging from direct household consumption which is by far the most important of these for both the poor and the less poor. [24-26]. This helps a lot of rural poor not to fall into further poverty and become food insecure. NTFPs play a vital livelihood resilience role. NTFPs are used to create capital assets for the household (this includes housing, house furnishings, and productive farming and making of hunting equipment). NTFPs also supply needs which would otherwise have to be paid for, such as energy and medicinal. NTFPs thus make important contributions to income indirectly, as well as directly [23, 27-29]. Finally, NTFPs offer income generation, usually as supplementary income but sometimes as a primary, though usually modest, source of income [25,29].

V. Demand For Fuel Wood

On Demand for fuel wood, [30] records that more than half of 9.6 million ha of rain forests in the south of Nigeria have been used to meet the demand for fuel wood in rural and urban neighborhoods. Rural and urban household that are nearer to the forest makes use of forest resources to meet their daily needs. [30] Analyzed that when comparing the costs of petroleum product, fuel wood is cheaper than any commercial fuel substitute, and this has over the years, increased forest depletion as this appears to decrease their expenditure on fuel to the detriment of the environment and the sustainability of the forest. The most common source of household energy in Nigeria has remained fuel wood, meeting 80% of domestic energy requirements. According to Stock 2008, [31] the majority of Nigeria's forest production is fuel wood, consumed either as charcoal or as wood. Forest wood and charcoal products consumption in 1992 alone were estimated at 55 million tons, suggesting that much forest woods are been used for domestic purposes over the years.

VI. Forest Management In Nigeria

The formation of Forest management started in Nigeria in 1889 with the opening of the "office of woods and forests "in what was then the colony and protectorate of Lagos. At the early stage, due regard was given to standard forest management practices, which bestowed a high degree of sanctity in the forestry sector [32] (FAO, 2003). Since then, there have been several forest managements programmes in Nigeria which manages the forest areas in Nigeria, these administrative bodies lie at the topmost Federal level as such spread its jurisdiction to the state and local levels. Forest management is currently perceived as an activity aiming at sustaining wood production and providing firewood, food, other goods and services to bordering populations. Forests should be managed sustainably because they are the centers for cultural, spiritual, and recreational activities [33](Mammo Siraj et.al 2016) submits.

VII. Poverty And Food Insecurity

Poverty is seen as a major problem in many developing countries in the world, including Nigeria. It is described as a vicious cycle, causing hunger and malnutrition, and is aggravated by rapid population growth. The causes of poverty have been linked to food insecurity [34]. [35] Orewa, Iyangbe 2010 ascertains that food insecurity among low-income urban and rural households is 79 %

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and 71 %, respectively with such households having limited economic and physical capacity to sustain their present level of wellbeing or cope with economic shocks as it were.

[36] Explained that the highest incidence of poverty i.e. the proportion of poor people in an area, was to be found in the most remote and forested areas, a pattern repeated again and again wherever there is the data to show the relationship between poverty and forests[37-39]. High poverty rates are found not only in remote high forest cover areas, but also in remote areas where forest is present but at much lower crown cover levels (Shepherd *et al.* 2012)[40]

Ultimately, deforestation has been traced to economic incentives. The developing world, entangled in poverty, engages in more deforestation due to this. Forests conversion, for them, is more profitable than forest conservation. Obviously, the many important functions of the forest have no markets and, hence, an economic value that is readily apparent to the people that rely on the forest for their wellbeing. Developing countries have taken a drastic stance on the issue of sustainability of the forest. They argue that the developed world had relied on deforestation for development at a point and, thus, it will be unfair to be told to conserve the forests. Moreover, they believe that the benefits of forests, such as carbon sinks and biodiversity reserves, go to the developed countries.

VIII. Effects of Degradation and Deforestation.

A. Reduction in forest carbon storage, forest quality

Degradation of a standing forest, like deforestation, reduces carbon storage, the quality of species habitat, and the provision of local ecosystem services, such as water quality. For instance, in parts of the dry tropics (e.g., in Africa, Central America, and South Asia), fuel wood and fodder collection lowers forests' quality. While degradation is more difficult to track because it is not as visible in remotely sensed images, recent estimates suggest that degradation due to logging may account for 10% of total emissions in the tropics

B. Climate change

One of the most important ramifications of deforestation is climate change as it has effect on the global atmosphere. Deforestation contributes to global warming which occurs from increased atmospheric concentrations of greenhouse gases (GHG) leading to net increase in the global mean temperature this is because the forests are primary terrestrial sink of carbon. Hence, deforestation disrupts the global carbon cycle increasing the concentration of atmospheric carbon dioxide. Deforestation can change the global change of energy not only through the micrometeorological processes but also by increasing the concentration of carbon dioxide in the atmosphere [41](Pinker, 1980). Deforestation affects wind flows, water vapor flows and absorption of solar energy and clearly influencing local and global climate (Chomitz *et al.*, 2007)[42]

C. Water and soil resources loss

Deforestation also disrupts the global water cycle (Bruijnzeel, 2004)[43]. When the parts of the forest are removed, the area removed cannot hold as much water creating a drier climate. Water resources affected by deforestation include drinking water, fisheries and aquatic habitats, flood/drought control, waterways and dams affected by siltation, less appealing water related recreation, and damage to crops and irrigation systems from erosion and turbidity[44] (Anon., 1994a;[45] Bruijnzeel *et al.*, 2005).

D. Flooding

Deforestation can also result into watersheds that are no longer able to sustain and regulate water flows from rivers and streams. Once they are gone, too much water can result into downstream flooding, many of which have caused and still causing disasters in many parts of the world. Downstream flow causes soil erosion thus also silting of water courses, lakes and dams. Deforestation increases flooding mainly for two reasons. First, with a smaller 'tree fountain' effect, soils are more likely to be fully saturated with water. The 'sponge' fills up earlier in wet season, causing additional precipitation to run off and increasing flood risk. Second, deforestation often results in soil compaction unable to absorb rain. Locally, this causes a faster response of stream flows to rainfall and thus potential flash flooding [42](Chomitz *et al.*, 2007). Moreover deforestation also decrease dry season flows.

IX. PERCEIVED WAY FORWARD

A. Poverty reduction programs

The governments are enjoined to put in place poverty reduction programs, these are crucial in reducing deforestation and degradation of the forest in the developing countries. This can be achieved through empowerment of local communities which

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will help to limit cutting down of trees as fuel wood for home consumption. These programs increases per capita income and consequently increase incomes.

B. Increased Community Management of Forests

Government should become aware that public ownership alone discriminates against indigenous and local communities. There should be recognition of local communities in managing forest rather than public authorities only. It gives a sense of belonging. Forests owned and officially administered by indigenous and traditional communities have doubled over the last 15 years, and communities now own and administer approximately one-quarter of forests in developing countries—although with a great range of different tenure arrangements [46](RRI 2007).

C. Capacity Building and Human Resource Development

Communities nearer to the forest should be actively involved in all forest management activities and decisions. This will make them feel that they own and have control over the forest hence addressing forest conservation through communal ownership and stewardship.

D. Addressing of land tenure issue

The government should address livelihood and land tenure issues in areas/communities around the forest. This will help in reducing communal clashes as it relates to land as well as reduction in pressure on the forest resources as a source of livelihood.

E. Educating nearby forest dwellers

Education of nearby forest dwellers is important in combatting forest degradation. The local communities should be educated on the importance of conserving the forest this is because literacy rates will reduce pressure on the remaining forests for new human settlement and land use change.

F. Forest monitoring mechanisms

Lastly, there is a need to put in place effective forest monitoring mechanisms so as to avoid any future repetition of encroachments and illegal settlements in the forest.

C. CONCLUSION

Forest degradation is a serious environmental, social and economic problem. In as much as global large scale agricultural activities contributes to deforestation in the world, Deforestation and Forest degradation in Africa remains dominated by small-scale processes, not by large-scale globalized agriculture. In Africa, it has been established that fuel wood collection and charcoal production, often in combination with livestock grazing in forests, contribute to forest degradation especially in other to have an additional source of income, poverty make dwellers to get involved in illegal activities such as illegal timber and NTFP extraction. Poverty can be an underlying cause for many of the direct and indirect drivers of forest degradation and deforestation. With this, much attention to baselines, monitoring, and targeted intervention will be required. It is therefore recommended that the government should put in place poverty reduction programs, these are pivotal in reducing deforestation and degradation of the forest, government should take education of nearby forest dwellers with so much importance as well as address land tenure issue amongst them. Local communities should be recognized in managing the forest and effective forest monitoring mechanisms should be in place so as to avoid any future repeat of encroachments and illegal settlements.

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