



Depleting Forest Resources: A Threat to Sustainable Agriculture

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ABSTRACT

Forest resources provide various materials that meet the basic human needs such as food and health-care. However, the use of these resources and the manners of their removal from the forest has been a serious problem when considering sustainability in agriculture. Over-exploitation hampered sustainability and efficient utilization of forest resources would lead to sustainable resource use in forest management and agricultural production. The result of efficient utilization would lead to constant supply of needed resources. Forest resources therefore must be conserved and utilized wisely in order to attain sustainability in agriculture.

Keywords: Forest resources; sustainability; agriculture; utilization; renewability; forest management.

INTRODUCTION

Nigeria is well endowed with forest resources but the excessive exploitation of these forest resources is a source of concern and threat to the economic, social and environmental importance. The forest, apart from providing a large proportion of the global supply of timber and fuel, also provide a wide range of non – wood products and environmental functions. These products include bush meat, medicine, watershed protection, stabilization of the hydrological regime and carbon sequestration. Forests regulate global climate and act as a major agents of carbon exchange in atmosphere (Aigbe and Oluku, 2012). The rate of destruction of forest resources has now become a global issue. In Nigeria, natural forests have reduced drastically and its impacts on agriculture are increasing. Measures for minimizing deforestation and managing agriculture need to be developed urgently. This paper examined the deteriorating forest resources of Nigeria and its impact on sustainable agriculture (Ehui and Hertel, 1989).

THE CONCEPT OF FOREST

Forest according to NEST (1991) is a piece of land dominated by woody species, majority of which are trees. The Advanced Learner Dictionary describes forest as large area of land covered with trees and often undergrowth. It also describes forest as area where game is hunted and preserved. Forests are vegetation types or plant formations in which trees are the dominant species. Forest can be seen as plant community, predominantly of trees or other woody vegetation, occupying an extensive area of land. In its natural state, a forest remains in a relatively fixed, self-regulated condition over a long period of time (Mbalisi & Ugwu, 2012). According to Mbalisi and Ugwu, three types of forests exist in Nigeria, namely:

1. swamp (mangrove) which is a forest type characterized by an entangled dense growth of stems and aerial roots (Online Nigeria,2011). This type of forest is mostly found in the Niger Delta region of Nigeria;
2. tropical rain forest which are forests characterized by large number of plants species per unit area with rich species diversity but usually have smooth, straight trunks and large simple leaves (Ogunleye *et al.*, 2004); and
3. Secondary forest is a type of replanted forest with one or more types of species of tree dominating. Examples include rubber and palm plantations.

FOREST RESOURCES

Resources are materials which man uses to satisfy his needs. Forest resources are materials in the forest which aid man to satisfy his needs and shape his destiny. They are grouped into timber and nontimber forest products.

Timber Products: These are woods (both hard and soft) exploited from the forest for cooking and heating, construction of houses, making of furniture, poles, baskets, boards, ply-woods and wood-pulp for making of papers and textiles.

Non-Timber Forest Products (NTFP): These are a wide array of economic or subsistence materials that come from the forest excluding timber. They range from food or food additives (nuts, mushrooms, wild fruits, herbs, spices, aromatic plants); plant materials (fibres, creepers and flowers); plant derivatives (raffia, bamboo, rattan, cork and essential oils); to animals (games, snails and bees); and animal products (honey, silk etc).

BENEFITS OF FORESTS TO HUMANITY

Man benefits from forests through the services forests provide which are social, economic and environmental in nature. Such benefits include among others, provision of:

1. woods for cooking, heating and construction;
2. environmental services such as air and water purification, watershed protection to control of runoff, soil stabilization, nutrient cycling, carbon sequestration (storage) etc;

FOREST AS A RESOURCE FOR DEVELOPMENT IN NIGERIA

A major feature of a developing Nation like Nigeria is that human and economic activities are dominated by primary production. This essentially involved the extraction of natural resources such as cutting of trees and hunting of wildlife. It also includes grazing livestock and the cultivation of crops. In such a situation, the maintenance of the quality and productive capacity of the environment depends greatly on keeping a balance between natural resource of which forest is dominant element, human population density and the means of production. In Nigeria, until the last century such a balance was maintained. The low population density and the restriction on population movements due to the insecurity caused by inter tribal wars. These combined to limit the extent of man's occupation of the land and thereby to tamper his impact on the environment (Oriola, 2009).

PRESENT STATUS OF THE FORESTRY SECTOR OF NIGERIA

A recent forest resources study carried out by the Federal Department of Forestry, revealed that the forest estate of Nigeria has been very highly depleted. It was estimated that only about 974,674 hectares of the forest reserves is productive while another 2,342,147 hectares of free areas is partially productive.

The total growing stock in terms of timber volumes is as shown in Table 1.

Table 1. High forest gross timber volumes, excluding bark by forest designation and forest types

Forest Designation	Land Forest Type	Area (ha)	Gross Volume (m ³)
Forest Reserve	Lowland Rainforest	788,053	140,682,489.73
	Freshwater swamp	186,621	24,397,003.35
	Sub-total	974,674	165,079,493.08
Free Area	Lowland Rain Forest	905,930	120,7422,644.93
	Freshwater swamp	1,424,995	187,474,508.28
	Mangrove Forest	948,430	212,613.14
	Sub Total	2,342,147	308,429,366.35
Sum total	Gross Total	3,316,821	473,509,259.43

Source FDF (1998): *Forest Resources Study, Nigeria*

In view of this dismal trend in the forest resources of the country, the need to manage the forests of Nigeria on a sustained yield basis has never been more felt in recent times. The growth rate of the natural forest is quite low; about 1 to 1.5 m³ of round wood per hectare per annum and this is a serious constraint. Afforestation in the past has not responded with the required vigour as the area under forest plantations of all types by 1998 was only 184,611 hectares with a growing stock of 78,600,160 m³.

DEFORESTATION IN TROPICAL REGIONS

Deforestation is an act of destroying forest vegetation with little or no effort to soften the harm done and it invariably results in ecological degradation (Nzeh *et al.*, 2015). Deforestation affects economic activity and threatens the livelihood and cultural integrity of forest-dependent people. It reduces the supply of forest products and causes siltation, flooding, soil nutrient lost, desertification and soil erosion. In recent years, the level of agricultural productivity continues to decline drastically. For instance, agricultural productivity declined from 258.26 in 1987 to

214.32 and 108.20 in 1999 and 2005 respectively (Ayinde *et al.*, 2011). This can be attributed to low rainfall, temperature variability, nutrient loss, drought and desertification, which are attributed to deforestation. Although much of the motives of deforestation were based on efforts to gain economic prosperity, the issue has continued to cause a lot of economic problems by threatening the sustainability of the agricultural sector through decline in agricultural productivity and the economics of Nigerian farmers. Deforestation, therefore, puts at risk all aspect of the environment, economy and to some extent agricultural productivity.

Nigeria is not exempted from the global issue of deforestation. This concern dates back since 1930s, when the United Nation (UN) sent a signal on the desert encroachments in sub- Saharan Africa. FAO (2007) reported that between 1990 and 2000, Nigeria lost an average of 4,097 hectares of forest every year, equal to an average annual deforestation rate of 3.8 percent. Between 2000 and 2005, Nigeria lost 5.7 percent of its primary forest as a result of deforestation.

Some of the driving factors of deforestation in Nigeria today are fuel wood and agricultural land expansion.

Various policies and programmes have been put in place in order to curtail deforestation in Nigeria. These policies and programmes include ban on logging of 1975, Annual Afforestation (AP) of 1988, National Forest Action Plan (NFAP) of 2005, educating farmers about danger of environmental degradation, providing farmers with high yielding varieties of crop and irrigation equipment. But deforestation continues to increase at alarming rate. For instance, between 2000 and 2005, Nigeria lost 5.7 percent of its primary forest as a result of deforestation and the rate continues to increase by 3.8 percent, which is equivalent to 4,000 hectares per annum (Ibrahim, 2015).

Agriculturally, deforestation and conversion of forest to arable land has drastic effect on soil properties. The principal effect of deforestation on chemical and nutritional properties of soil is related to a decrease in Vol.6, No.19, 2016 organic content. This leads to disruption of nutrient cycling mechanism as a result of the removal of deep rooted trees, which has serious effect on organic and nutrient content as such affects agricultural productivity (Udofia *et al.*, 2011).

EFFECTS OF DEFORESTATION

Deforestation, which is the loss of wild forest habitats due to human activity, has grown into a global problem as demand for wood climbs. Shrinking forests can cause wide-reaching problems, including soil erosion, water cycle disruption, greenhouse gas emissions and biodiversity losses. Combined, these four issues affect not only wild plants and animals but human beings as well

Human activities have always led to the reduction in forest cover, but in recent years, the intensity and scale of forest use has increased significantly. Depletion of forests had resulted into loss of biodiversity, degradation of watersheds and desertification. It has also contributed to the unfavourable global climatic change. Deforestation, together with land degradation exacerbates the problem of poverty in rural areas (Ogunleye *et al.*, 2004).

CONCLUSION AND RECOMMENDATION

The rate at which fuel wood consumption and forests are converted to agricultural land is enormous, with available forest being converted to agricultural land by farmers who cultivate land to support themselves. Logging activities, population, poverty, livestock rearing, population density and infrastructural development were among the other causes that account for 40 percent of Nigeria's deforestation.

There is a need to find a win-win situation to control the spate of tropical deforestation. This may imply improved technologies in the agriculture sector in the developing world, which would lead both to increased production in the agriculture sector, and would also help control the use of tropical forest as an input in agriculture production.

REFERENCES

- Aigbe, H. I. and Oluku, S. O.(2012).Depleting Forest Resources of Nigeria and its impact on Climate. Journal of Agriculture and Social Research (JASR) Vol.12.No 2, Pp 3-4.
- Ayinde. O. E, Muchie, M and Olatunji, G.B.(2011).Effects of Climate Change on Agricultural Productivity in Nigeria: A Co-integration Model Approach. Journal of Human Ecology. Vol. 35, No. 2, Pp189-194.
- FAO. (2007). Forest Resource Assessment: 2006. FAO Forestry Paper 140, Rome, Available at www.fao.org/forestry/site/fra/en, Retrieved on 10/02/2011.
- FDF (1998a): Nigeria Forest Resources Study; Federal Department of Forestry Abuja.
- Ehui, S. K. and Hertel, T.W. (1989). Deforestation and Agricultural Productivity in the Cote d'Ivoire. American Journal of Agricultural Economics, Vol. 71, No. 8, Pp 703 – 711.
- Ibrahim.A. (2015). Analysis of the Impact of Deforestation on Agricultural Productivity in Nigeria. Unpublished Thesis, Submitted to the Department of Agricultural Economics, Faculty of Agriculture.

Mbalisi, O.F &Ugwu, A.N. (2012). Ensuring effective forest services to mankind: Implications for environmental education in Nigeria. *Journal of Education and Practice*, 3 (3); 1-8.

Nigerian Environmental Study Team (NEST) (1991). *Nigeria's threatened environment: A national profile*. Ibadan:NEST.

Nzeh E., Eboh E and N. J Nweze (2015). State and Trend of Deforestation: An Insight and Lesson From Enugu State, Nigeria. *Net Journal of Agriculture Science*. Vol 3, No1., Pp23-31.

Ogundele A.T., Oladipo M.O, Adebisi O.M. (2004). Deforestation in Nigeria: The need for Urgent Mitigating Measures. *International Journal of Geography and Environmental Management*. 2016;2(1):526.

Ogunleye, A.J., Adeola, A.O., Ojo, L.O. & Aduradola, A.M. (2004). Impact of farming activities on vegetation in Olokemeji forest reserve, Nigeria. *Global Nest: The Int. J.*, 6 (2); 131-140.

Online Nigeria (2011). Nigeria: Vegetation. Accessed on May 12, 2011 from <http://www.onlinenigeria.com/links/adv.asp?blurn=70>. J. 1, No. 2 Pp 1048- 1059.

Oriola, E. O. (2009). Forestry for Sustainable Development in Nigeria. *International Journal of African Studies*. ISSN 1451-223X Issue I (2009)., Pp 11-16.

Udofia, S.I., Jacob, D. E., Owuah ,P. W. and Samuel, N. S. (2011). Steaming Environmental Degradation: The Afforestation Approach. *Nigerian Journal of Agriculture, Food and Environment*, Vol. 7, (1), Pp 2227. 6