

## The Nigerian Challenge in Environmental Sustainability: Forest Economics and the Need for Conservation

JONATHAN E. NWOSU<sup>i</sup>

Forests impact on human lives in many ways. They serve as safe places of solitude for animals and habitat for biological diversities. Forests have supported recreational activities and provide important natural resource for generations of people. Many rural populations, including millions of impoverished people throughout the world are dependent on forests for their way of life. In other words, forests and its resources are their important source of food, shelter and means of livelihood. This notwithstanding, the loss of forest has continued on the downward trend. Today only 36 percent of the world's forests are primary forests – forests that have never been disturbed by human activities on a large scale (Hirschberger, 2007). In Nigeria, deforestation has been identified as one of the causes of some other environmental problems in the country such as desertification and erosion and loss of biological diversity. Several efforts to preserve the forests in Nigeria have been made yet its decline has continued. The essence of this paper therefore is to identify the causes for the lost of forest around the globe with particular interest in Nigeria and to suggests ways of effective forest conservation.

**Keywords:** Nigeria, deforestation, forest resources, degradation, Biodiversity conservation, sustainable forest management.

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**Introduction.** Forests are central to all human life because they provide a diverse range of resources. In fact, over 40% of the world's oxygen according to research is produced by rainforests. Forests purify water and mitigate natural hazards such as floods. They also contain roughly 90% of the world's terrestrial biodiversity (Stern, 2008). Put differently, forests contribute to all other forms of life on Earth because they have various environmental roles. They are globally important in regulating climate and locally important in sustaining communities and supporting biodiversity by offering habitat for the majority of the globe's species. They regulate water and other nutrient cycles; filter pollutants from the air; reduce the rate of global warming by absorbing the greenhouse gas carbon dioxide. The amount of carbon in forests is estimated to exceed the amount of carbon currently in the Atmosphere. Forests reduce soil erosion with their root systems; and provide watersheds by absorbing rainfall and releasing it slowly into streams (Mazulak, 2010). According to data from the U.N. Food and Agriculture Organization, deforestation was at its highest rate in the 1990s, when each year the world lost on average 16 million hectares of forest. In the first decade of this century, the rate of deforestation was slightly lower, but still, a disturbingly high 13 million hectares were destroyed annually. Africa also suffers from extensive deforestation, having lost 34 million hectares from 2000 to 2010. Firewood harvesting and charcoal production are important drivers. Four sub-Saharan nations – Nigeria, Tanzania, Zimbabwe, and the Democratic Republic of the Congo – each cleared more than 300,000 hectares per year (FAO, 2012).

Global rates of deforestation do not show the full damage done to the world's forests. Forest degradation from selective logging, road construction, climate change, and other means

<sup>i</sup> Jonathan E. Nwosu, Postgraduate Student, Department of Management, Sumy State University.

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compromises the health of remaining forests. Each year the world has less forested area, and the forests that remain are of lower quality. For example, replacing natural old-growth forests with a monoculture of an exotic species greatly reduces biodiversity. Below is a chart showing countries with highest percentage of forest lost (See figure 1).

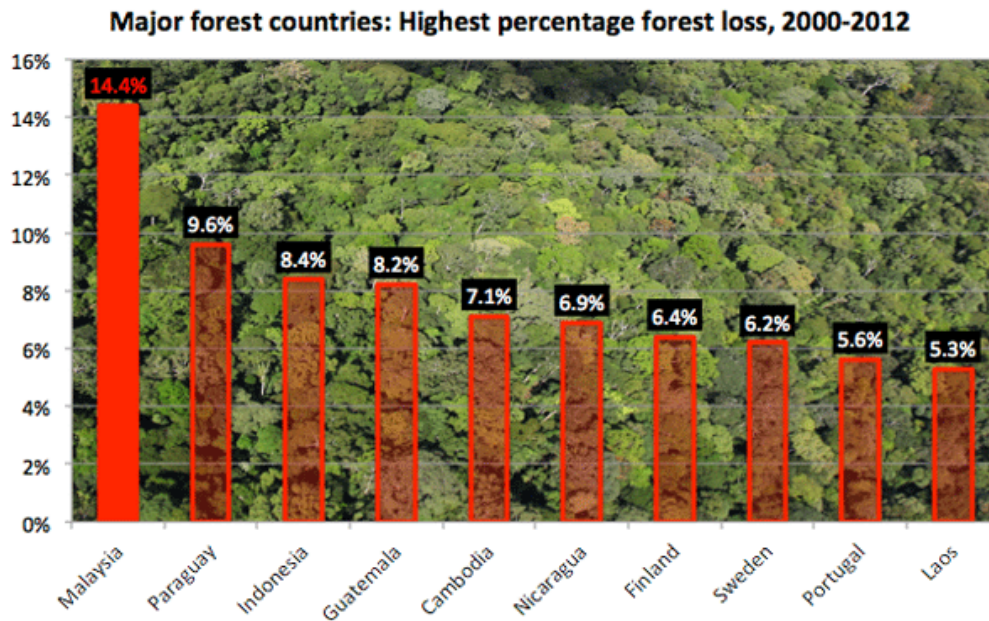


Figure 1 – Countries with highest percentage of forest loss  
Source of data: Global forest map 2012

The degradation of forest and its resources have always been justified with basic reasons. These justifications more or less continued to pose threat to the sustenance of forest and its resources across the globe.

Some of the threats to forest are summarized in the table below, showing the activities that have brought about them, reasons, main effects and the primary regions where it is predominantly practiced (see table 1).

The Nigerian National Environmental Summit of 2008 listed the following as the key environmental challenges in Nigerian:

- Deforestation and land degradation
- Biological diversity depletion
- Erosion
- Drought and desertification
- Flooding
- Pollution (Marine, Coastal, Industrial)
- Waste disposal
- Climate change

Among these environmental problems, loss of forest areas (deforestation) has been identified as one of the main causes of biodiversity depletion, desertification and drought and

other environmental problems, such as erosion and flooding. Invariably, this means that deforestation contributes to all the major environmental problems in Nigeria

*Table 1*

Basic threats to forest: cross-regional analysis [reconstructed by author]

ACTIVITIES	REASONS	MAIN EFFECTS	PRIMARY REGIONS
Bush clearing (also known as clear-cutting)	Urban development	Pollution, erosion, habitat destruction	Global (All Regions)
	Timber harvesting	Erosion, carbon dioxide production, habitat loss, desertification	Russia, China, Mexico
	Agriculture, livestock	Erosion, degradation of soil quality, habitat loss, desertification	Africa (predominantly Nigeria), Central America, South America
	Mining	Pollution, mountain destruction	North America, Africa, (Ghana and Nigeria)
Invasive species	Intentional or accidental release of Nonnative plants	Ecosystem destruction	Global
	Vineyards	Loss of native animals, insects	North America, Europe
	Urban tree planting Programs	Possible invasive species	North America, Europe
	Illegal drug cultivation	Pollution, erosion, habitat destruction	South America, North America, Asia
Fragmentation	Development	Habitat degradation	Global
Vehicle Roads	Recreation, road-building	Soil erosion, transmittance of disease	North America, South America, Australia, Asia
Conversion to monoculture	Commercial tree plantations	Loss of native animals, insects	South America
Climate change	Vehicles, population growth, industrial waste	Pollution, habitat loss, disease and pests, ecosystem destruction, desertification	Global

Source of data: Maczulak, 2010

The rate of the loss of primary forests in Nigeria ranked among the highest in the world as undisturbed forest cover decreased by 53.5% from 25,951 square kilometers in 1976 to 12,114 square kilometers in 1991 (Formecu, 1988). The worst deforestation rate of primary forest in Nigeria occurred between 2000 and 2005. This is represented in the chart below (Figure 2).

Within this year under review (2000 – 2005), 5.7% of Nigerian forest was deforested ranking the highest among the five countries with the highest deforestation rate namely: Viet Nam 5.5%, Cambodia 2.9, Sri Lanka 1.6% and Malawi 1.5%.

Again, the table below shows that by 2005, forest cover in Nigeria had an estimate of about 11,089,000 hectares. Wooded land was estimated at 5,495,000 hectares and primary forest at 326,000 hectares. The total land area was estimated at 92,377,000 hectares. In 2010,

it was 9,100,000 – total forest area; 8,234,000 – wood land; 336,000 – primary forest. When these figures are compared from 1990 to 2010, it clearly shows that there was a continuous downward trend of loss of forest in Nigeria except for an improvement on wood land. These facts are represented distinctively in table below (see table 2).

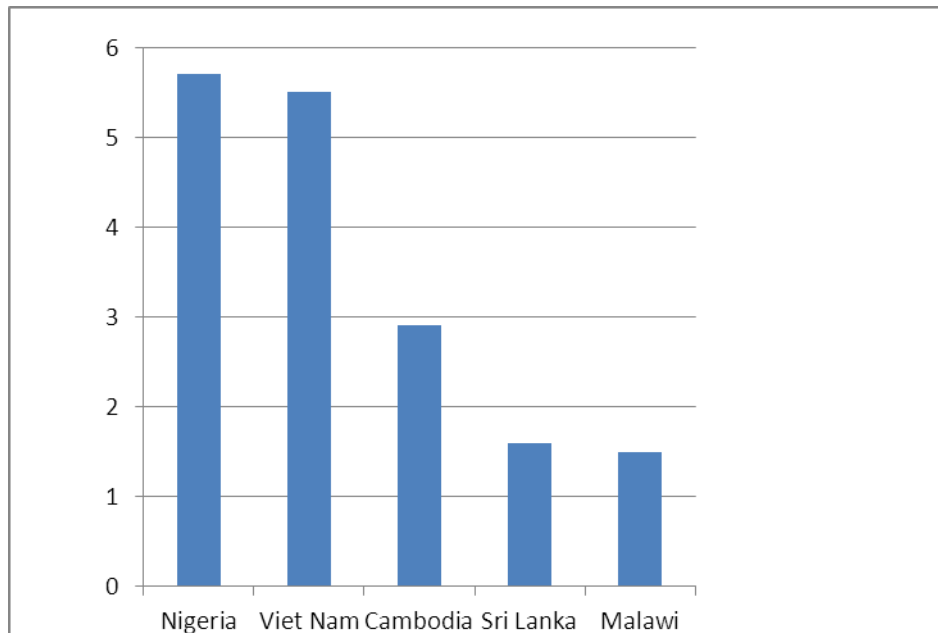


Figure 2 – Deforestation chart representing five most affected countries, 2000 – 2005 [Source of data: Mongabay, 2006]

*Table 2*

Estimated hectare of forest cover and wooded land in Nigeria within 1990 – 2000 – 2005 – 2010 [reconstructed by author]

Period	Total Forest Areas	Other wood Land	Primary Forests	Plantations	Unit
1990	17,234,000	9,717,000	1,556,000	251000	Hectare
2000	13,137,000	6,902,000	736,000	316000	Hectare
2005	11,089,000	5,495,000	326,000	349000	Hectare
2010	9,100,000	8,234,000	336,000	468000	Hectare

Source of data: Mongabay, 2006

According to the revised deforestation figures of ten most affected countries from the Food and Agricultural Organization of the United Nations (FAO), Nigeria has lost an average of 55.7% of its forest areas, again ranking highest among countries whose forest areas have been lost. The pyramid chart below gives the details (see Figure 3).

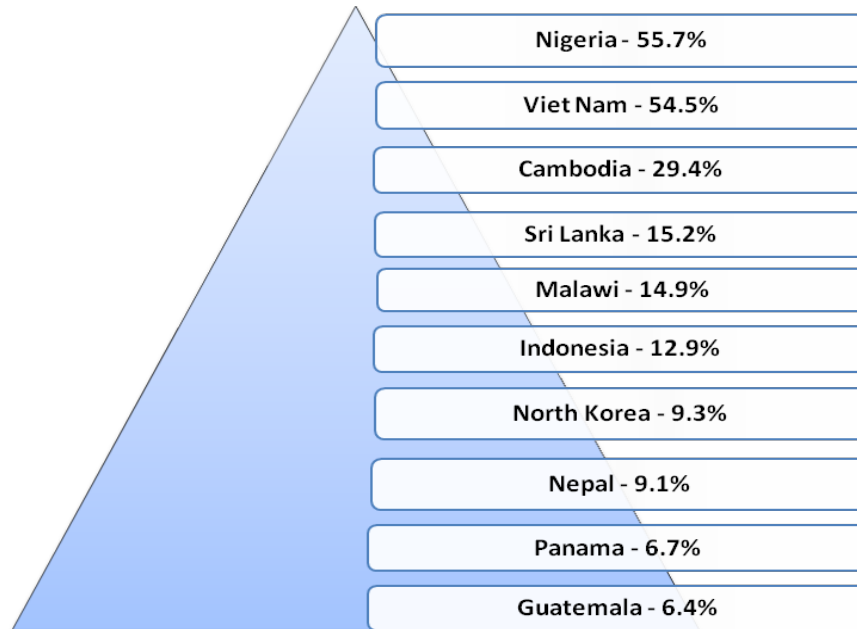


Figure 3 – Percentage of lost forest areas among the most affected countries  
Source of data: [www.illegal-logging.info](http://www.illegal-logging.info)

In Nigeria, “70% of the population approximately depends largely on biomass-based fuels which is said to be 0.4 metric tons of fuel wood, average per person. This invariably increases the rate of deforestation which has been estimated at approximately 350ha per year” (Obioh & Fagbenle, 2009). According to data of International Union for the Conservation of Nature (IUCN), Nigeria is home to 1,417 known species of fauna and at least 4,715 species of vascular plants. The degradation of forest invariably means the loss of these species and other biological diversity.

In his view, Mathew (2001) attributed the loss of forest in Nigeria to indiscriminate conversion of the forest for agricultural use and fuel wood extraction and the use of marginal land for agricultural purposes. Other factors that have necessitated the loss of forest in Nigeria include: animal grazing, indiscriminate bush burning, logging of trees and poverty. The latter have driven the rural population to depend on the forest and its resources for survival. From the above, one could sum up that economic and agricultural reasons contribute largely to loss of forest in Nigerian.

Increasing population is another reason for the rampant loss of forest in Nigeria. The 1991 census puts Nigerian population figure at 89.2 million. By 2006, it was 140.1 million and by 2013, Nigeria has a population estimate of about 170 million people. So it follows that the more the population, the more the forests go down because of increased dependence and the need for shelter. Also with increased population, wooded land disappears for various urban developmental projects.

Inefficient public regulating agencies with lack of clear roles and responsibilities has also encouraged deforestation in Nigeria. There are not enough policy instruments and conservation measures aimed at sustaining the forest and its resources and where these have

existed, they have not been effective. For example, most forests are left at the mercy of local people who are paid stipends by illegal loggers just to have their way. Again mining and oil drilling have had the worst impact on Nigerian forests yet the activities of the oil companies seem to go unchecked.

**Conclusions.** From the foregoing, it is evident that loss of forest is on a high side in Nigeria yet only few steps have been taken to arrest this trend. However, loss of forest can be controlled if not curbed in Nigeria if the following steps will be considered:

First and foremost, Sustainable Forest Management (SFM) practice should be inculcated into the Nigerian Environmental law and adequate punishment stipulated for offenders. SFM attempts to ensure a balance between the objectives of conservation and the use of forest resources. It means making use of forests and its resources in a way and at a rate that allows them to maintain their long-term health and fulfill ecological, economic, social and cultural functions now and in the future. When this practice is put into law, it will inevitably checkmate degrading forest activities such as unmonitored oil drilling and mining, illegal logging, unrestricted animal grazing, indiscriminate bush burning and other activities that have encouraged loss of forest and woodland in Nigeria.

Secondly, effective machinery for mass enlightenment and orientation campaign on the use of forest and its sustainability should be put in place. This will invariably raise the awareness level of the people on how to properly treat forest and its resources. Most of the degrading activities that were carried out on forests in Nigeria were as a result of ignorance. Many local people do not understand the negative effect their activities have on the forest. They believe the forest is a natural endowment that should serve their needs without restraint. To realize this objective, 'all hands must be put to desk'. This means the government should not be left alone to do this. All stake holders – Nature Conservation Unions, NGO organizations, Community leaders, the educational system etc., must actively be involved in this enlightenment and orientation process.

Finally, forest department of the Ministry of Environment should come up with operational forest protection policy that will restrict potentially damaging activities. According to the International Union for Conservation of Nature (IUCN), a protected area is: "a clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values". Although, this policy existed, for example there are 8 national parks in Nigeria, 1,129 forest reserves, 30 game reserves, 5 game sanctuaries and thousands of gazette forest reserves and grazing areas. However, inadequate mechanism of policy realization; uncoordinated implementation of strategic direction of government and lack of operational budget have rendered many of forest conservation efforts redundant and ineffective. Therefore, the government should re-strategize and re-enact operational and effective policies that will not only achieve a long-term conservation of forest and woodland but will strengthen the existing policies and put them to work.

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### **Экологическая устойчивость как вызов для Нигерии: экономика леса и необходимость его сохранения**

**Нвосу Э. Джонатан\***

\* аспирант кафедры управления Сумского государственного университета,  
ул. Р.-Корсакова, 2, г. Сумы, 40007, Украина,  
тел.: 00-380-542-332223, e-mail: etyjoesy@yahoo.com

Леса во многом влияют на жизнь человека. Они служат местом обитания для животных и растений, поддерживая биологическое разнообразие. Поддерживают также рекреационную деятельность и обеспечивают важными природными ресурсами поколения людей. Многочисленные деревенские поселения, включая миллионы обедневших людей во всем мире, зависят от лесов в своей повседневной жизни. Другими словами, леса и лесные ресурсы являются важным источником пищи, укрытия, средств ведения домашнего хозяйства. Тем не менее, тренд потери лесов продолжает оставаться снижающимся. Сегодня только 36% мировых лесов является первозданными – то есть такими, которые не потревожены человеческой активностью в больших масштабах (Hirschberger, 2007). В Нигерии проблема обезлесения идентифицирована как одна из важнейших экологических проблем в стране наравне с опустыниванием, эрозией почвы и потерей биологического разнообразия страны. Были предприняты несколько попыток сохранить леса в Нигерии, но они не уменьшили деградацию лесов. Цель данной статьи – идентифицировать

причины потерь лесов в мире, и в частности в Нигерии, разработать предложения по эффективной консервации лесов.

*Ключевые слова:* Нигерия, вырубка лесов, лесные ресурсы, деградация, сохранение биоразнообразия, устойчивое управление лесами.

### **Екологічна стійкість як виклик для Нігерії: економіка лісу і його необхідність збереження**

*Нвосу Е. Джонатан\**

*\* аспірант кафедри управління Сумського державного університету,  
вул. Р.-Корсакова, 2, м. Суми, 40007, Україна,  
тел.: 00-380-542-332223, e-mail: emyjoesy@yahoo.com*

Ліси багато в чому впливають на життя людини. Вони слугують місцем проживання для тварин та рослин, підтримують біологічне розмаїття. Ліси підтримують рекреаційну діяльність та забезпечують важливими природними ресурсами покоління людей. Численні сільські поселення, включаючи мільйони збіднілих людей у всьому світі, залежать від лісів у своєму повсякденному житті. Іншими словами, ліси та їх ресурси є важливим джерелом їжі, притулку та засобів для існування домашніх господарств. Незважаючи на це, втрата лісів продовжується та має негативний тренд. Згідно з даними Міжнародного Союзу зі Збереження Природи (IUCN) 80% прадавнього лісу, що покривав землю 8 000 років тому, був очищений, фрагментований та знищений сучасним суспільством. Відмічено, що більше дев'яти мільйонів гектарів лісу втрачається кожного року в усьому світі. У Нігерії ситуація не відрізняється від світової: приблизно від 350 000 до 400 000 гектарів лісу втрачається кожного року (за даними FAO, 2007). Деградація лісів продовжується певний час. Цей процес йде поруч із систематичним спадом у біорозмаїтті в тих же регіонах (згідно з DuToit et al., 2004; Bruner et al., 2001). Без збереження лісів не може бути захисту клімату, як стверджує Стерн (Stern, 2008). Місцеве населення країн по всьому світу в основному покладається на утилізацію лісних ресурсів. Хоча в цих регіонах багато областей було призначено під охорону, тим не менш площа природних лісів продовжує скорочуватися. Сьогодні лише 36 відсотків світових лісів є незайманими – тобто такими, які ніколи не зачіпала людська активність у великих масштабах (Hirschberger, 2007). У Нігерії, знищення лісів було ідентифіковано як одна з найважливіших причин екологічних проблем у країні поряд з опустелюванням та ерозією ґрунту, втратою біологічного розмаїття. Видобуток нафти в країні, а також інших корисних копалин (газ, вугілля), сприяє підвищенню темпів лісозаготівлі та природошкідливому виробництву лісоматеріалів, що в комплексі призводить до втрати лісів. Декілька спроб із збереження лісів у Нігерії були зроблені, але зниження кількості їх триває. Отже, мета цієї статті, полягає у виявленні причин втрати лісів по всьому світу, з особливим акцентом на Нігерії, та розроблення шляхів ефективного збереження лісів. У статті представлено теоретичний підхід для виявлення проблем втрати лісів. У даному дослідженні розкрито загальні природні та економічні наслідки збезлісіння у регіонах Африки та окремо – у Нігерії. У статті виокремлено ключові параметри збезлісіння в Нігерії, при цьому автор пропонує заходи, які можуть допомогти у вирішенні питання переведення природного та економічного призначення лісів до стійкого, та забезпечення стійкого розвитку регіону за рахунок збереження лісів.

*Ключові слова:* Нігерія, вирубка лісів, лісові ресурси, деградація, збереження біорізноманіття, стале управління лісами.