The Challenges of Deforestation and Management in Nigeria: Suggestions for Improvement

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Abstract

This paper appraises the dangers posed to forests regions in Nigeria resulting from deforestation impacts. The country is deprived with socio-economic and environmental benefits due to the over exploitation of forests and land cover. Nigeria is losing steadily economic opulence, leaving her with hazard from erosion, flooding and desertification culminating into climate change. Like some tropical world regions, many people illegally engaged in export of log/wood, and get solace in unlawful taxes and illegitimate royalties which fetch them personal income from this repulsive job. This work employs a classical review in examining the challenges and poor management facing the economic forest regions in Nigeria. The main goal is centred on the pressures on the forest population leading to a number of causes like; urbanization, overpopulation and over expansion of agricultural lands. The work suggests that, the stakeholders and governments need to establish some laws and regulations that can check the indiscriminate felling of trees and degrading of the environment in Nigeria. Government is also advised to find alternative means of power generation and introduce modern farming techniques for the populace. The public enlightenment campaign is also imperative for citizenry in order to forestall dangers posed by un-restrained deforestation.
Keywords: Environment, Deforestation, Illegitimate royalty, Degradation, Government

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Introduction

The major latitude and longitude of Nigeria is found within 10^{o} N and 8^{o} E.These regions house most of the forests in Nigeria that are located in the southern axis of the country and these forests include: the Swamp forests, tropical rainforests, as well as the Wooded Savannah. The total land area of Nigeria is 91,077,000 hactares (910,770 km2) with a total forest area of 11,089,000 hactares (110, 890 km2) representing 12.18% of forest cover (UNEP, 2004; Ahmed and Aliyu, 2019). In the tropical regions,forests are taken over by trees in an assorted ecological classification and the headdresses of these trees are intertwined with each other, as a result of the close-knit growth linkage. Within the forests are herbs, shrubs, climbers, and other plant species as well as assorted wildlife. In this vicinty, not less than 60% of all known species of plants are found in the tropical rainforests of the world (Park,1992).

According to the Food and Agriculture Organization's (FAO) Global Forest Resources Assessment, deforestation is the conversion of forest to other land use independently of whether human-induced or not. That is, deforestation is essentially referring to a change in land use, not in tree cover (FAO, 2022). Deforestation therefore, has a lot of meanings, if we say it is the loss of 'forest', it is heavily dependent on how we define this term, but it also depends on whether countries use an approach based on 'land use' as in the case of Nigeria (Ahmed and Aliyu,2019).In the first case, forest area is designated by the authorities: an area with few or no trees may be considered 'forest', and conversely a densely forested area may be open to agricultural development. In the second case, an area with trees is classed as forest. Nigeria among the Tropical regions of the world has one of highest rates of deforestation of primary forests, where more than 50% of such forests have been lost in the past decades through unsustainable logging, agriculture, as well as fuel wood collection among others (FAO, 2004).

Thus, nowadays, there is global surveillance on the challenges of continuous unsustainable forest destruction topping major intellectual agenda. This work therefore, focuses on global outcry on evil of deforestation and evaluates the urgent need for rigid mitigation measures and sustainable management in order to alleviate the impacts of challenges on deforestation in the tropical world including Nigeria.

Conceptual and Review Issues on Deforestation

A forest is a region with density of woodland which cohabited by a variety of living beings including man, plants, animals and other micro-organisms (Mfon, 2003). Hunan-beings intertwine with the forest in the past and exclusively depended on it for shelter, clothing, food, medicine and aesthetic functions (Ahmed & Aliyu, 2019).The tradition and art of managing forestlands as well as other natural resources such as; trees, other plants, wildlife, soil, water, air and the climate are of benefits to mankind which is referred to as 'forestry' (Adeyoju, 2001; Larinde and Chima, 2014).

Forest management on the other hand**,** is the overall administrative, economic, legal, and social aspects and with the essentially scientific and technical aspects, especially silviculture, protection, and forest regulation. This includes management for aesthetics, fishery, recreation, urban values, water, wilderness, wildlife, wood products, forest genetic resources and other forest resource values. The goal of forest management is embodied in National Forest Policy of the country and states that: 'Nigeria's natural resources and environment is to be conserved and used for the collective benefits of the people and to be replenished for the benefit of future generations' (Adeyoju, 2001). According to European Forestry Commission (EFC) (2010), the world continues to lose some 15 million hectares of forests every year.

The term deforestation refers to the felling, cutting and clearing of forest cover or vegetation including tree plantations in order to pave way to agricultural, industrial, urban or rural land use. The term is associated with modification of forestry layout such as; slash and burning technique, all of which are major component of shifting cultivation agricultural systems (Mongabay, 2007). Within 1980 to 1990 deforestation reached 8.3% of total forest area in Asia, 6.1% in Latin America and 4.8% in Africa**.** Most modern deforestation emerges in developing countries, particularly in tropical areas where there are sequential impacts of deforestation and forest degradation caused by climate change indirectly or directly and threatens as many as 400 million indigenous people who depend on the forest for subsistence in sub-Sahara Africa (EFC, 2010).

Meanwhile, Ochanda and Epp (1982) stated that in Kenya the indigenous forest covers only 1.9% of the land area and remote sensing has shown that about 16% of the forest is being lost every ten-year period. Also, Lanly (1983), pointed out that deforestation estimates for some African countries like Nigeria and Cote d'Ivoire was estimated as high as 5% to 6% per annually. For Africa in general, Parry (1986) reported that only 6% of the land area is forested and that if clearance continues at the present rate, the forest cover would have been reduced to 5% by the year 2000.For now, the forests of Nigeria contribute significantly to the national gross domestic product (GDP) and sustenance of the livelihood of the people. This may be the reason why the trend of deforestation across the country seems to be very high (Nzeh *et al*., 2015).

Many countries in Africa and in the developing world have been noted for the largest net loss of forests per year within 2000-2010, although this was reduced to six million hectares per year due to awareness and management techniques adopted in areas like; Indonesia, Sudan, Brazil and Australia among others. There were 28 countries and areas which have an estimated net loss of one per cent or more of their forest area per year. The five countries with the largest annual net

loss for 2000-2010 were Comoros (9.3**%**), Togo (5.1**%**), Nigeria (3.7**%**), Mauritania (2.7**%**) and Uganda (2.6**%**) (Anonymous, 2010). The area of other wooded land also decreased during the past two decades in Africa, Asia and South America and other Europe regions (see table 1&2 and fig. 1&2).

There are many challenges arising from depletion and degradation of forest across the tropical world, which require and urgent redemptions. Therefore, forest management based on conservation, economics, or combination of the two may benefit people of Africa and West Africa (Nigeria inclusive). However, this would depend on the forest type and ecological conditions. To cap it all, forests must be managed for the overall interest of the people as many tropical African communities are heavily dependent on the forests for survival. Nevertheless, to encourage conservation of forests in Africa and Nigeria, it can never flourish where the margin of poverty level is so high, that anyone can surrender anything for food (including forest) (FAO, 2015).

Consequence of Deforestation

Deforestation consequence is a major concern of the developing countries all over the world because of its negative effects such as: the loss of biodiversity and the increase of greenhouse effect. Forest especially those in the tropics serve as warehouses of biodiversity and consequently deforestation, fragmentation and degradation that destroy the biodiversity as a whole. More also, Tropical forests support about two thirds of all known species and contain 65% of the worlds 10,000 endangered species (Myers and Mihermeier, 2000). On the other hand, vegetation (trees/plants) is enormously useful as raw materials and plays an important role in oxygen supply and absorption of greenhouse gases (Angelsen, 2006; Effects of Deforestation, 2010). Thirty per cent of the earth's land area or about 3.9 billion hectares is covered by forests.

It was estimated that the original forest cover was approximately six billion hectares (Bryant et al., 1997; Ahmed and Aliyu,2019). Tropical forest trees cover only six percent of Earth's land surface. It is professed that trees contain between 70% and 90% of the world's entire species (Effects of Deforestation, 2010). Deforestation has caused the loss of 50 to100 animal and plant species each day. Many of these species are now at the verge of extinction even with their significant importance to humans, especially in the area of medicine (Effects of Deforestation, 2010: IITA, 2011).

Africa has 635 million hectares of forests account for 21.4% of its land area, which is equal to 16% of the global forested area. In total, some of 23 million hectares of this forest disappeared in the 1980s, while another 20 million hectares gave way for other land uses in the 1990s (Koen *et al*., 2010). Estimations revealed that another 4 million hectares of forest were deforested between 2000 and 2005, which is equivalent to one-third of the total deforested area worldwide. The current deforestation rate is estimated at about 0.4% to 0.7% per year and is likely to continue at this level (FAO, 2009) as cited in (Koen *et al*., 2010). The direct drivers of deforestation in Africa reflect the global pattern with agricultural and city expansions being very crucial drivers (FAO, 2009). However, wood extraction and infrastructure development also play a significant role in deforestation across Africa (Geist and Lambin 2002; Koen *et al*., 2010). Moreover, deforestation in Africa has devastating impacts on the continent's climate and, ecosystems. Many of the effects are related to the continent's ability to withstand the climate change challenge. Cutting down trees would reduce the forests' ability to absorb carbon dioxide and generate rainfall, exposing territories to severe droughts and worsening the ongoing water crisis that has plagued Africa for decades. Deforestation and degradation with little rejuvenation causes several societal and environmental problems capable of making human existence

unbearable. Challenges associated with this include loss of biodiversity, destruction of forest-based societies and climatic disruption (Effects of Deforestation, 2010; Wajim, 2020).

Nigeria is naturally gifted with large extent of forest land with the swamp forests located in the extreme southern part of the country surrounded by the tropical rainforest in the Southwestern fringe, while the wooded Savannah is glamorously found in the Middle-belt area of the country. Nigeria ranks great higher among developing countries with abundant forest resources, with about 60% of all type of plant species, 90% of all the world's non-human primates such as monkeys, and about 40% of all type of birds as well as about 80% of all kind of insects that can be found in the tropical rainforests (Park, 1992).Nigeria also has the status of being the nation with the highest deforestation verocity rate. The country deforestation rate stands at 3.5% and 400,000 hectares every year. According to the Federal Ministry of Environments, 400 out of every 1,000 of forestland are deforested annually, while only about 26 hectares of these are reforested leaving out about 374 hectares depleted (Babalola, 2012).

Generally, deforestation is a global problem which threatens environmental sustainability with more impact on Africa, of which Nigeria is a part. This is due to the high rate of African's concentration. It exerts adverse effects on the entire environment; the economy and the citizenry's land use and management (see figs.4-8). Conversely, the exploitation of forests could improve the social asset base of dependent communities if we well managed and sustained. However, it is realized often that forests are located in be remote areas where investments by national governments are lowdown to the minor. The FAO Global Forest Resources Assessment (FRA) (2020) estimated that 420 million ha of forest was deforested and converted to other land uses between 1990 and 2020; although the rate has dwindled over the period, but deforestation is

still estimated at 10 million ha per year in 2015–2020 (approximately 0.25% per year) (FAO. 2020)

The regional breakdown of deforestation in Nigeria from 1979 to 2020 shows that total forest declined by 48% in the North-central 7% in the North East, 60% in the North West, 53% in the south East, 13% in the South-South and 12% in the South West (FORMECU 1996; FAO.2020). In 2000, the forest cover was estimated at 13.5 million hectares compared to 17.5 million hectares in 1990 (FAO, 2001; FAO,2020), indicating a forest cover loss of close to 400 thousand ha per annum, or a decline of about 2.6%. Forest/woodlands now stand at only 13% of the total land area (FAO, 2001;FAO,2020). Hence, the global observation on the discrepancy impacts of challenges on deforestation and its consequences of continuous unsustainable forest destruction topping major intellectual lists of planning awaitng execution.

Global Rates of Tropical Deforestation

Several international legislative bodies produce regular approximation of tropical deforestation, most notably the Food and Agriculture Organization (FAO) of the United Nations, which has been producing a global forest resources assessment every 5-10 years since the late 1940s. The FAO report is based on statistics provided by countries themselves, and because the ability of countries to accurately assess their forest resources varies depending on their financial, technological, and institutional resources, the estimates for some countries are likely more accurate than others (see Table 1 & 2). Many tropical regions use satellite imagery as the source for their assessments, and data from a few research teams used satellite data for worldwide estimates of tropical deforestation from 1980s, 1990s. In addition, from 2000-2020, many countries, mainly from the tropics, lost their tree cover to different causes. The countries include; Brazil, Indonesia, the Democratic Republic of Congo (DRC), and Bolivia. In the order

that they are mentioned, these four countries also topped the list of countries most hit by deforestation impacts (FAO, 2020: Mongabay, 2022).

Table 1. Annual change in forest area in Africa, Asia and Europe regions/sub-regions,1990-2010

Region/sub-region	1990-2000		2000-2010	
	1000 ha/year	%	1000 ha/year	%
Eastern and Southern Africa	1841	45.25	1839	53.85
Northern Africa	590	14.5	41	1.2
Western and Central Africa	1637	40.24	1535	44.95
(i)Total Africa	4068	100	3414	100
East Asia	1762	42.05	2781	77.49
South and Southeast Asia	2428	57.93	677	18.86
Western and Central Asia	72	0.02	131	3.65
(ii)Total Asia	4190	100	3589	100
Russian Federation (RF)	32	1754	1800	72.17
Europe excluding RF	845	4842	694	27.83
(iii)Total Europe	877	6596	2494	100

Source: Anonymous (2010), modified by the Authors (2023).

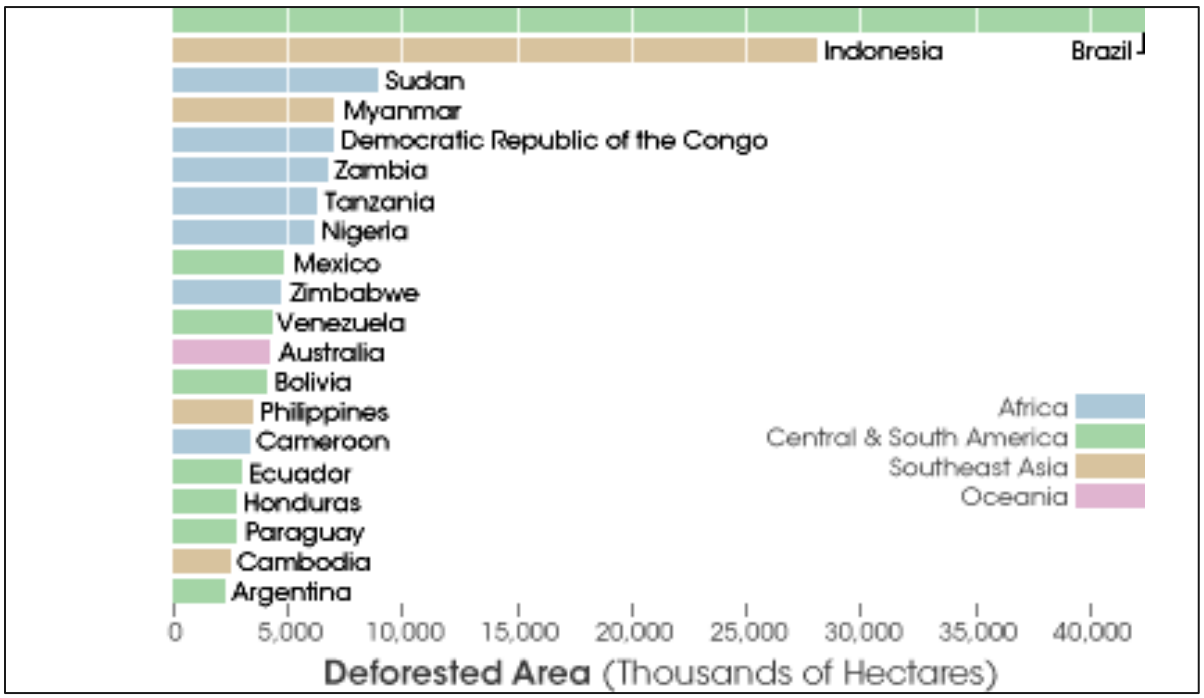

Table 2. Rates of Tropical Deforestation

Source: Global Forest Resources Assessment Report 2005-2010.)

Figure1.Impacts of Deforestation.

Source: http://en.wikipedia.org/wiki/deforestation

Figure 2. FAO. Global Forest Resources Assessment.

Source: medium.com

Causes of Deforestation Challenges in Nigeria

Mining and Petroleum Extraction: The increase in legal/illegal mining and petroleum extraction inNigeria is furthering damage due to the rising demand and high mineral prices. The extraction of petroleum and mineralssuch as; crude oil, bayrite, tin, coal and many others, has led to the destruction of the forests and scarification of the landscape due to over exploitation. In the same vein, Nigeria is well endowed with abundant forest resources and got involved in the its exportation. This also has brought about increase in the level of deforestation in the country. Considering the economic benefits that accrued to the country from this forest resources, more and more forests products are exported from Nigeria to the outside world.. This has consequentlyled to an increase in the rate of deforestation and increase in the rate of massive reduction in the country's forest cover over time (Mather,1991; Sands, 2005).

Logging: Cooking at homes and heating of metal or iron all around the tropical regions use these resources and half of the illegal removal of forests is used as fuel wood. Large areas are also cleared to construct roads in order for large trucks to have entry into logging sites. None of

these are done legally. In many parts of South-south geo-political zone of Nigeria,trees are felled and sawn without any commensurate effort to replenish them. This has transformed from tropical high forests into grassland as a result of unsustainable agriculture and logging (see figs.3 & 4). In Nigeriain the recent times, households could not afford the use of electricity to cook where it is available or use gas for cooking because its price have swelled up. Most households seek solace in charcoal obtained from illegal means, which the governments do not approve since it depletes the forest environment.

Figure 3. Logging of Forest and Wood

The swamp forests of Southern Nigeria were previously protected from destruction and over exploitation due to their relative inaccessibility as a result of the swampy nature of the environment. Howevertoday, these forests are being destroyed as a result of petroleum exploration, exploitation, spillage, stealing and illegal logging/mining (Akachuku, 2007).

Expansion of Landuse and Land Reclaim : Not less than 60% of the cleared forest in tropical land are used for agricultural settlement.With the fact that more than 80% of Nigeria population are engaged in one form of agricultural practices or the others (Nwosboshi, 1986; Ogundele *et al*., 2016). An increasing supply-demand for products such as palm oil/ palm kernel and soybeans are driving producers to clear forests at an unnerving rate. Farmers often clear the land for cattle by using slash and burn techniques. Unfortunately, the soils are over used until they are completely degraded and when the processes are repeated on a new patch of woodlandthey will take many years to return to their original condition. Hence, more damages are done with little or no replenishment.

Overgrazing: Is a well established fact that overgrazing leads to a gradual change in vegetation from derived savannah to Sudan savannah where animals feed on tree seedlings especially in the dry season when there is herders' transhumane little grass to sustain them. The animals not only feed on tree seedlings but also on branches of mature trees, thereby leading to deforestation (NEST, 1992).

Poor Government Policies: The policy of government on deforestation represents what to do or not to do regarding the prevention of the loss of forest cover and land use conversions among other necessary needs. So many reasons have been adduced for the increase in over-exploitation of our forestry resources including wood and wildlife. Illegal contracts offer and approval by private enterprises and forestry officers, harvesting of protected trees by commercial corporations, smuggling of forest products across borders and processing of forest raw materials without a license. All these are causing more harm than gain in managing our forests. (Chakravarty *et al*., 2014; Ahmed & Aliyu, 2019).

Poverty and Surging Population: In Nigeria, many communities heavily depend on the forests for survival and this has created serious problems for conservation of forests. Thus, to instil conservation of forests in Nigeria, it can never flourish where the margin of poverty level is so high, that anyone can sacrifice anything for food (including the forest) (Davis,2022).

According to the United Nations, Nigeria's population has exploded in the last century, and job creation has not kept pace, forcing people to choose between forests and their families. There is enough evidence that indicate that 4 out of 10 Nigerians (about 80 million) were living in poverty in 2019, with the COVID-19 pandemic pushing another 5 million people below the poverty line by 2022 (World Bank 2022). All these have proved that overhauling the needs of people with protection and a broad management of the environment is a challenging and it needs a widespread revitalization.

Societal and Environmental Problems

There is a usual competition between humans and other animal/plant species that are found in ecological niches within Nigeria's environmental (land and water). This challenge is substantially demonstrated by the conversion of forest land to other uses such as; agriculture, infrastructure, urban development, industry and others (Pearce and Brown, 1994).

Deforestation causes several societal and environmental problems capable of making human existence unbearable. Challenges associated with it include loss of biodiversity, destruction of forest based societies and climatic disruption (Effects of Deforestation,2010;Wajim, 2020; and Butler, 2020). Deforestation is a global problem which threatens environmental sustainability with more impact on Nigeria due to its high rate of population concentration. Deforestation exerts adverse effects on the entire environment; the economy and the citizenry's land use and management (see figs.4-8).

Figure 4. Aspect of Deforestation Impacts

Sources: Legit Social Media. 2019.

Climate Change: Forests are essentially the lungs of our planet. All plants take in carbon dioxide and release oxygen. Trees are able to convert more carbon dioxide than a regular plant. Though, forest loss is often caused by climate change, tropical rainforests are extremely humid due to the water vapor released along with the oxygen. However, when forest is cut down, the humidity levels decrease and causes the remaining plants to dry out. Deforestation can cause alteration in the global climate, not only through the micro-meteorological processes but also by increasing the concentration of carbon dioxide in the atmosphere which absorbs thermal infrared radiation in the atmosphere (Gupta et al., 2005). Thus, deforestation disrupts the global carbon cycle increasing the concentration of atmospheric carbon dioxide. Trees absorb CO_2 from the atmosphere and store the carbon as wood or in soils. The conversion and burning of forest for farming and the harvest of forest for timber and fuel wood cause a net release of CO_2 from the biota to the atmosphere (see figs.5-8).Tropical deforestation is responsible for the emission of roughly two billion tonnes of carbon (CO_2) to the atmosphere per year (Houghton, 2005).

Figures 5/6. Over logged Environment and climatic consequences

Source: FACTS.NET@2019

Urbanization and Environment Problem

Urbanization process is another major factor blameable for deforestation. Lack of awareness on the adverse effects of deforestation has caused the destruction of over 8.5 million hectares of tropical forest permanently and yearly in the processof construction of buildings and urban/city renewal. This leads to uncontainable and continuous destruction of forest resources. In Nigeria, 81% of the original forest cover is removed (Effects of Deforestation, 2010). Deforestation, apart from causing urbanization processes, it can as well cause several environmental problems capable of making human existence horrendous. The challenges associated with it include loss of biodiversity, disruption of climatic and anthropogenic structures (Effects of Deforestation, 2010).

Corruption and Forest Crime: The FAO identified forest crime and corruption as one of the main causes of deforestation in its 2001 report and warned that immediate attention has to be

given to illegal activities and corruption in the world's forests in many countries (Anonymous, 2001b). In Nigeria context, theillegality of forest practices include among others, the approval of illegal contracts by forestry officers, illegal sale of harvesting permits, under-declaring volumes cut in public forest, underpricing of wood in concessions, harvesting of protected trees by commercial corporations, smuggling of forest products across borders and allowing illegal logging, processing forest raw materials without a license (Contreras-Hermosilla,2000; 2001). By and large, Chakravartyet al.(2012) also pointed out that poaching by farmers and other miscreants in the forests are corruptly allowed by forest guards in Nigeria.

Increase Global Warming and Greenhouse Gas Emissions

Trees play a major role in controlling global warming as they utilize greenhouse gases, restoring the balance in the atmosphere. With constant deforestation, the ratio of greenhouse gases in the atmosphere always increases and this adds to our global warming afflictions. Forests help to mitigate carbon dioxide and other toxic greenhouse gas emissions. However, once they are cut and burned, they become carbon sources. It is estimated that deforestation is responsible for about 20% of greenhouse gas emissions, and due to tropical deforestation, 1.5 billion tons of carbon is released to the atmosphere annually, every tropical forest regions including Nigeria experience this (Butler, 2020). Soil erosion and water cycle on the other hand have impacts on the trees/forests. For instance, one significant impact of deforestation as a result of soil erosion is the disruption of global water cycle. With removal of part of the forest or its total cut-down, the area cannot hold as much water creating a drier climate. Deforestation decreases our source of oxygen, increases atmospheric carbon dioxide concentrations, and having direct impacts on the water cycle (Bruijnzeel, 2004). As mentioned above, the effects of green gas emissions are also essential for our local water cycles as they responsible in keeping on returning water vapour to

the atmosphere. However, where tress/forests are destroyed negatively by man or agents of deforestation (slash and burn farmers, ranchers, loggers, firewood collectors), different types of erosion may occur including gully, sheet and rill. Thus, the soil remains moist as the rainwater percolates within thin soil leading to weathering by agents of denudation (see Figs.7 &8). These kinds of erosions often produce substantial impacts which are common in the tropical/subtropical world (Chakravarty *et al*., 2012; Ahmed and Aliyu, 2019).

Figures. 7/8. Deforestation leading to depletion of Soil in Nigeria.

Mitigation Efforts to Control and Manage Deforestation Challenges in Nigeria

The sustainable efforts advanced to control deforestation in Nigeria include:

i. Creation of Forest Reserves: These are areas delineated and gazetted by government and activities, such as taking and selling of forest produce without license, destruction of forest estate, destruction of water ways as well as kindling of fire without consent are prohibited.

ii. Commencement of in-situ conservation processes: For biodiversity through the creation of strict nature reserves, National Parks, Biosphere Reserves, Investigation plots for natural regeneration, some sanctuaries, fish parks, wetland conservation areas etc.

iii. Legislation: From the past centuries till date, many laws and edicts have been enacted to control and enhance forest conservation in the country. However, the problems still persist and since, these laws have not been properly enforced to serve as a deterrent to defaulters.

iv. Rainforest Management: Many techniques have been utilized to manage the rainforest. These methods include; enrichment planting, tropical shelter-wood system, taungya system, establishment of plantation, malayan uniform system among others. It is unfortunate that these management techniques have not been able to save the rainforest in Nigeria.

v. Afforestation Programmes: Many afforestation programmes have been carried out in Nigeria, but there are very few mature forest plantations to offer fuel wood and sawn timber. Also, very few wood based companies have plantations of their own as well as annual tree planting campaign, which was started by the Forestry Association of Nigeria (FAN) in order to create awareness for tree planting which has been taking over by politicians. In recent times, politicians often create exhibition out of this afforestation programme. For instance, they plant ceremonial trees and thereafter the dignitaries (the president and state governors) who are supposed to release funds to maintain trees planted may not do so, thereby many of these seedlings do not stay alive the first six to one year of planting (Akintoye *et al*.,2014).

Discussions

This work used appraisal approach to explain the challengesof deforestation and its management measures in Nigeria, using extant reviews and some literatures on the subject matter. This was done in order to get additional improvement where challenges stillpersist.Accordingly, it is suggested that despite the available ways at reducing deforestation in Nigeria, these rules must go hand in hand with improving the welfare of stakeholders such as; the government of all categories, cultivators, pressure group at the forest frontier among others. In other to ensure

sustainablity of the forest management, the forest must be ecologically, economically and socially sustained. In other words, ecologically, values of the forest can only be maintained when actions to sustain the forests are channelized. While silviculture and management should not reduce biodiversity only; but soil erosion should be controlled, soil fertility should not be lost, even as water quality on and off site should be maintained and that forest health as well as vitality should be safeguarded (Chakravarty *et al*., 2012). There must be attending policy control if the cost of sustainable forest management has to be met by the governments and stakeholders to facilitate mitigation standard. Any policy that does not carry others along is imperfect and undesirable. Nonetheless, there are no general solutions and strategies to challenges of deforestation as they vary from one region to the others, and they are not static though they may change over time.

Findings from the work directly pointed out that, the unify strategies to reducing deforestation in Nigeria must go hand in hand with improving the welfare of stakeholders such as; the government at all levels, cultivators, pressure group at the forest frontier among others. Any policy that does not carry other along is blemished and detrimental. There are no general solutions and strategies to challenges of deforestation as they vary from one region to the others (environment), as policies of government are not static, as they may change over time. Also, reduction of agricultural rent, increase and capture forest rent, directly regulate land use, and cross-sector. While Payments for Environmental Services (PES) have clear advantages in the early and later stages. Therefore, what comes to mind is the development of national REDD+ strategies with the Millennium Development Goals (MDGs). With these to address, underlying causes are more feasible and likely to be more successful. Government is currently embarking on a number of afforestation agenda. Under the guidance of the African Union Commission,

Nigeria is keying into the project on the "Green Wall Initiative" in which a "green wall" of trees (40 million trees annually) will be planted across the dry-land area of Nigeria in order not only push back deforestation but secure agriculture and livelihoods across the Sudano-Sahelian zone of the country (Ogundele *et al*., 2016). This will also enhance biological diversity resources that will mitigate against deforestation in the country if not totally eradicated.

Recommendations

In view of the above, this study has made the following recommendations for consideration by the policy makers, government and all stakeholders as ways of tackling all deforestation challenges in Nigeria, as well as for proper management of our environment:

i. Government Regulations and Legislation

In Nigeria from past to present, many laws and edicts have been enacted to control and enhance forest conservation, but the associate problem is that, these laws have not been properly enforced to the latter. The best solution to deforestation in Nigeria is to curb the felling of trees by enforcing a series of rules and laws to govern its utilization, as there are still found in some forest defaulters who use forests for other nefarious activities like; kidnapping dens, cattle rustlings, and hidden places for highway robbers. Thus, there should be proper enforcement of policies and measures meant to curb the menace as the country is moving into another transition henceforth.

ii. Rainforest Management

Many techniques have been utilized to manage the rainforest in some more conservative areas. These methods include; enrichment planting, tropical shelter of wood system, Taungya system, plantation establishment, and Malayan uniform system etc. It is unfortunate that these

management techniques have not been able to save the rainforest in Nigeria. Thus, new forest conservation methods must be encouraged through community participation and enlightenment programmes (Ogundele and Oladipo, 2016; Ahmed and Aliyu, 2019).

iii Giving Encouragement to private developers of forests

Incentives like; free seedling distribution and free land holding should be provided for forest developers and cultivators. This will not only encourage more people into the trade, but sustains and increases Forest Area Plantation (FAP) and Area Permanent Reserve (APR) for timber production. A sustainable policy framework is important to give room for a progressive growth in the forestry industry throughout the country (Ahmed and Aliyu, 2019).

iv. Lessening Emissions from deforestation and forest degradation

Many international organizations including the United Nations and the World Bank have started programmes to curb deforestation mainly through Reducing Emissions Deforestation & Forest Degradation (REDD), which uses direct monetary or other incentives to encourage developing country like Nigeria in order to roll back deforestation. Significant work is underway on tools for use in monitoring the adherence of developing countries to their agreed REDDs targets (Chomitz *et al*., 2007).

v. Banning Clear-Cutting of Forests

This will equally curb the total depletion of the forest cover. It is a practical solution and very feasible where adopted.

vi. Reforestation and Afforestation massive

People who fell trees for urban settlements should be urged to plant trees in the vicinity and replace the cut trees. Also, the cutting must be replaced by planting young trees to replace the

older ones that were cut. Trees are being planted under several initiatives every year, but they still don't match the numbers of the ones that have already been lost.

vii. Reduce Consumption of Papers

The daily consumption of papers daily include; printing, notebooks, napkins, toilet paper, among others. It is recommended, that citizenry must try to reduce the consumption, reduce waste paper and also opt for recycled paper products all these can enhance rejuvenation of our depleted forests in the tropical regions. Citizenry

viii. The need for Massive Research in Forest Education and Occasional Campaign

Many people are entirely unaware of the global warming problems that the entire world is facing.

They therefore need to be enlightened and educated through various means of campaigning strategies. Hence, researchers, students and learned community members as well as the general masses must be educated by sharing the deforestation facts such as; its causes, the divergence impacts and its consequential implications within our community and the country at large.

Conclusion

Conclusively, deforestation is a serious issue in Nigeria, with significant impact on both the environment and the people who rely on it. Deforestation in Nigeria is undeniable, and urgent action is needed to tackle the situation in a large scale for the sake of present time and the future to come.It is justified from the above that colossal destructions of forests in Nigeria is carried out by none than the grassroots poor people, who do not have or are denied access to land.These people depend on the forest for their existence. The Nigerian rainforest has been seriously encroached upon and afforestation programmes in the country are inadequate. Other agents of

forest depletion are major developmental oriented projects. Persistent deforestation is further compounded by the fact that majority of Nigerian populace lack an in-depth knowledge of the consequences of deforestation. Ways of minimizing forest destruction must therefore go along with improving the welfare and environmental knowledge of the down-rodent individuals; else, the entire forest conservation programmes would fail. These circumstances can be checked by promoting all that were tendered above,so that; sustainable agriculture, land-use reformation measures and cordial forestry management would improve our environment.

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