Deforestation and Greening the Nigerian Environment

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Abstract-Trees in forested and agricultural landscapes are particularly important because they disproportionately provide high values of environmental services and biodiversity. The Government has over the years promulgated laws as regards forest conservation and protection but these laws are not enforced. The objective of this study is to analyze the current deforestation status of the Nigerian economy and its capacity for depleting the green environment. The methodological approach to this study relies on the use of primary data sources. The data were sourced through questionnaire and interview to test the participation of households in deforestation activities from the six geo-political zones of Nigeria. The Results of the qualitative analysis shows that poverty, awareness and lack of enforcement are important variables that affect greening the environment. The paper concludes that the three levels of Government, communities and individuals can successfully manage forests in a sustainable way, when the appropriate policy actions are enforced.

Index Terms – Deforestation, Green Environment, Vegetation, Forest.

I. INTRODUCTION

Background and Statement of Research Problem

Mankind's activities on the environment in his quest for development have resulted in a continuous and serious degradation of the ecosystem, thus pose a threat to both his present and future living. Human beings use the environment in three basic ways: as a resource bank-the environment supplies them with raw materials needed to maintain their existence, and their social and technological structures; as a habitat – people require more space per individual than any other species and as sink for wastes- human beings produce more waste than other species (Ndahlahwa 2005). Rapid population growth and urbanization is of great concern to the sustainability of cities, the more people are there on the earth, the greater the impact on the environment and pressures on resources. As such, the unwise use of the natural environment due to ignorance, poverty, overpopulation and greed amongst others has led to the deforestation and degradation of the environment.

Currently, deforestation constitutes one of the global development challenges. Specifically, it is the most serious long term environmental problem facing the world and Nigeria is not an exception. Historically, the critical long term development challenge at the attainment of independence in 1960 was how to grow rapidly from a predominantly primary production based economy to an industrialized one with strong inter-sectoral linkages. The optimism regarding the possibility of a significant progress towards attaining self-sustained and rapid industrialized development within a generation or two was heightened by the emergence of the unprecedented large foreign exchange earnings from crude oil and gas exports. But after over four decades, this dream has remained largely unfulfilled in spite of all the development initiatives adopted.

Adebayo (2010), opined that poor living conditions and illiteracy are causes as well as consequences of environmental degradation. The high level of poverty and illiteracy in Africa directly linked to the current level of environmental pollution and degradation in the continent. The poor and the illiterate are often more interested in issues related to their daily survival than environmental management; this lack of interest and awareness often lead to more reckless environmental behaviour which in turn breeds more environmental problems and leads to a vicious cycle of poverty.

The growing concerns about the environmental un-sustainability of economic growth patterns and increased awareness of a potential forest degradation crisis have made it clear that the environment and the economy can no longer be considered in isolation. At the same time, financial and economic crisis has provided the opportunity for policy interventions aimed at discouraging deforestation of the environment and renewed growth on more environmentally and socially

sustainable grounds. A strategic vision is necessary to ensure that policies that governments will implement are the most appropriate from an economic efficiency, environmental integrity and social equity point of views, as well as coherent policy at the national level. Against this backdrop, the paper is investigating the effect of deforestation and its influence on green environment in Nigeria.

Research objectives

The main objective of this study is to analyse the current deforestation status of the Nigerian economy and its capacity for harnessing opportunities for green growth. The specific objectives are to:

1. Examine Nigeria's environmental challenges through deforestation and the extent to which past and current economic development blueprints have promoted the greening of the economy.
2. Examine what mechanisms (policies, institutions, infrastructure, etc) exist to ensure that our environment is always green.
3. Assess the drivers of household deforestation behavior in Nigeria.
4. Appraise the determinants of change towards green environmental behavior in Nigeria.

Rationale for the Study

A green economy values and invests in natural capital. Ecosystem services are better conserved, leading to improved safety nets and household incomes for poor rural communities. Ecologically friendly farming methods improve yields significantly for subsistence farmers. Besides, improvements in freshwater access and sanitation, and innovations for non-grid energy (solar electricity, biomass stoves, etc) add to the suite of green economy strategies, which can help alleviate poverty.

It has been demonstrated that even small increases in farm yields contribute directly to reducing poverty, based on data from Africa and Asia (Irz et al, 2001). Furthermore, studies have documented that conversion of peasant farm lands to mechanized farming practices have resulted in large productivity gains but has effects on destruction of vegetation. A review of 286 "best practice" projects across 12.6 million farms in 57 developing countries found that adopting resource-conserving practices (such as integrated pest management, integrated nutrient management, low-tillage farming, agroforestry, acquaculture, water harvesting and livestock integration) resulted in average yield increases of 79%, while improving the supply of critical environmental services (Pretty et al, 2006).

In spite of its relatively low level of industrialization, Nigeria continues to rank very low in terms of its environmental performance. In 2010, the country's Environmental Performance Index (EPI) was 40.2, ranking it as number 153 out of 163 countries surveyed in the world by the Yale University, USA. The low EPI figure puts the country behind several African countries such as Mauritius (80.6), Morocco (65.6), Egypt (62.0), Namibia (59.3), Gabon (56.4), Kenya (51.4), Ghana (51.3), and South Africa (50.8) (Emerson et al, 2010).

In the face of pressing economic and environmental challenges, national and international efforts to promote green growth have been intensifying in recent years. Building on this momentum can help to accelerate progress towards sustainable development and poverty reduction through, for example, more sustainable use of natural resources, efficiencies in the use of energy, and valuation of ecosystem services. Therefore, given the current global debate and moves towards a green economy as demonstrated above, it becomes imperative to assess the status of the Nigerian economic development within the context of green growth. While not losing focus on the urgency of growing the economy, Nigeria's capacity for harnessing the new opportunities created by green development pathways are worth examining in order to promote green environment that is poverty reducing and less burdensome to the increasingly threatened natural environment.

II. CONCEPTUAL CLARIFICATION

Deforestation: Deforestation simply put is the clearing away of forests. It is the process by which an area is deprived of existing natural forest vegetation and resources. This can be brought about by systematic felling, indiscriminate logging or total clearing of existing vegetation for arable farm or industrial purposes. It usually results in destabilization of forest ecosystems and the surrounding environment (Adebayo, 2010).

Green Environment: Greening environment is often used as a catchall term referring to resource protection and practices which emphasize certain core concepts, such as resource efficiency (notably balancing consumption with nature's ability to replenish these resources) and the need to protect the natural systems upon which humans and other species depend (Carley et al, 2011). Green is also used to refer generically to certain policy topics or business sectors, including activities and technology associated with the movement of people and goods; waste management and recycling; pollution prevention, treatment, or abatement; energy that

is clean or efficiently produced and consumed; the design, construction, maintenance, and dismantling of buildings; resource extraction; agriculture/gardening; natural resource management (e.g. air, water, land/open space, forests/other ecosystems, fisheries) and other environmental services (Andrade and Scarpati,2007). Finally, green environment is not another name for sustainable development (Hammer et al, 2011). Greening the environment emphasizes the inter-relatedness of economic and environmental concerns. Thus, green environment policies aim to identify the complementarities between economic and environmental challenges in a way that highlights the opportunities for new sources of economic growth.

Building of Roads and Citing of Large Projects: In developing communities social amenities such as roads, hospital, water plants etc. are regularly provided by the government and or the communities themselves. Most times without proper planning, primary forests are cleared to site such projects. In Nigeria sites presently occupied by Petrochemicals, Refineries, Fertilizer Companies and Liquified Natural Gas Plants where sometime, naturally occurring forest ecosystems (Irz et al., 2001).

Mineral/Oil Exploration Activities: Mineral/Oil exploration activities in Nigeria are major causes of deforestation, especially in the Niger Delta region. Since the early 1950s when the Nigerian oil industry was developed, its activities have been responsible for crossing the deltas with oil and gas pipe lines thereby removing vegetation cover along their paths. Facilities such as oil well heads, major pipelines manifolds and flow stations have also been sited in previously forested area (Mirza, 2003).

Bush Burning: Both farmers and hunters in this part of the world use fire as a tool notwithstanding the fact that it is one of the most serious agents of forest destruction especially during the dry season. Most fires are caused either deliberately or by accident and these destroy trees of all sizes including seedlings. Fire hazards are more where the herbs and fallen leaves on the forest floor become dry. Most often cattle-rearers burn the old grasses to encourage growth of succulent grass for pasture. It has also been suggested that grass lands were sometime forested areas on which man had deliberately set fire to catch game thereby destroying previously existing forest vegetation. Timber loggers also set fire on forest accidentally while smoking or while carrying out any fire prone activity. This most times result in ground forest fires, surface fires and eventually wild crown forest fires (Okiwelu and Anyanwu, 2003).

Logging: The high forests is the main sources of logs in Nigeria as cited by Kio in 1983; by the years 2000 the consumption of wood based products will be 19 million cu meters from 3 million cu meters of 1975. In order to meet this demand, timber dealers encourage unlawful and indiscriminate logging in naturally occurring forests. Depletion of unreserved forests has also resulted in the concentration of logging activities within protected forest reserves in Nigeria. for example in 1960 western Nigeria, the areas outside the forest reserves, amounted to 52 percent of the total timber volume output, but five years later, this had fallen to just 16 percent. For the period of 1971-1975 for the whole country the long output of the unreserved forests was only 38 percent the total. It is therefore clear that logging is one of man's activities which cause deforestation in both protected and unreserved forests in Nigeria(Etuuonovba,2009).

Solid Mineral Exploration: In the cause of solid mineral exploration large factories such as the Ajaokuta steel mill in Kogi State have occupied previously forested areas. All these contribute to further depletion of the nation's forest estate which is below the international standard of 20-25 percent of the total reserved high forested areas of the country (Areola 1987).

Agricultural Activities: Large scale agriculture which requires a large land capital has also consumed a large portion of forested areas in Nigeria. Mechanized farming in the middle belt was practiced by indigenous farmers, but the system of shifting cultivation is still employed to improve crop yield. This required shifting of the farm sites to virgin and uncultivated lands thereby clearing existing natural forests. Even if the best natural forest management systems available could be implemented in Nigeria, the forest reserves would not be able to meet the country's timber needs of 19 million m3 cu in the year 2000. Yields of the natural high forests are about 10-25 percent of the short-time yields from plantations (Lawtan 1973). The trend is therefore, for the clearance of primary forest for plantation development with both indigenous and exotic timber species, often to be detriment of the country's natural forests. According to Boelke and Croze (1986), the total land area planted increase with an annual average area of 26,000 ha. This implies that agricultural development is a major factor causing deforestation in Nigeria. The study therefore investigated the extent to which these activities have impeded deforestation in Nigeria over the years (Chapple, 2008).

III. METHODOLOGY

The methodological approach to this study relies on the use of both primary and secondary data sources. The

first two research objectives are largely addressed by extensive review of documents and reports of statistical abstracts from different sources. Major sources of data at the national level include National Environmental Standards and Regulations Enforcement Agency (NESREA), Federal Ministry of Environment, National Bureau of Statistics, Central Bank of Nigeria, Federal Ministries of Agriculture, Industry, Water Resources, Power, Lands, Housing and Urban Development, Transport and Tourism, National Planning Commission, the Federal Capital Development Authority, and non-governmental organizations (NGOs) working on environmental and economic development issues. At the state level, data were sourced from the state ministries of environment, agriculture, works and transport, economic development, energy, department of statistics, and NGOs working on environmental issues.

Household Survey and Qualitative Analysis

The third and fourth research objectives of this study were addressed mainly through a survey of household behaviour on greening issues, and interviews of relevant stakeholders involved in programmes and projects that have potentials for contributing to the greening of the economy. Environmental pressures from households are significant, and without continued policy efforts their impacts are likely to intensify over the coming years. In other words, household consumption patterns and behaviour have a profound effect on stocks of natural resources and the quality of the environment (Imeht, 2001). Developing green growth strategy and analysing environmental policy from the demand side is receiving increasing attention. To do this in the context of this study, the household survey focused on green behaviour in selected cities accross the six geo-political zones of Nigeria. This was meant to enable us undestand the drivers of environmental behaviour and the determinants of change towards greener behaviour. Sectors covered by specific issues in the household survey included energy, transportation, water and sanitation, waste, and building. The questionnaire used for the household survey was partly adapted from the 2011 OECD's Survey on Environmental Policy for Individual Behaviour Change (EPIC) questionnaire (OECD 2012). The household survey covered the Federal Capital Territory (FCT), and 12 states out of the 36 states in Nigeria: two each from the 6 geo-political zones. The 12 states selected are Imo and Anambra in the South East, Lagos and Ondo in the South West, Cross Rivers and Rivers in the South South, Kwara and Benue in the North Central, Katsina and Sokoto in the North West, and Gombe and Bauchi in the North East. The criteria used in selecting these states include the spatial location of the states, existence of Environmental Protection Agencies and/or ministries of environment, existence of environmental initiatives,

existence of state environmental policy, and outstanding green growth initiatives. Abuja was selected on its own merit being the nation's capital.

In addition to conducting household surveys in these states and Abuja, in-depth interviews were also conducted among relevant stakeholders that include public sector officials and private sector agents. The interviews covered the 5 domains of deforestation issues (i.e., bio-fuel, charcoal, agricultural activities, construction and natural agents, bush burning, and buildings). Where possible, the perceptions of the agency in charge of environment were also collected and reviewed to ascertain the scope and extent of greening effects of environmental regulations in the surveyed area.

Data Sources and Sampling Technique

The study adopted the purposive random sampling procedure to select the rural communities for the study. Since the rural communities are the most liable to deforestation in Nigeria. The next stage was a random selection of two states from each of the geo-political zone. From each state, a random selection of one local government was made from each of the three senatorial districts while three communities were again randomly chosen from each local government area. A random selection of 10 households was made from the list of the communities in the state visited. The study adopted household survey method. Thus, a total of 180 households were randomly selected from the communities visited across the six geo-political zones. Only the house hold heads were interviewed. This gave us a total of *180 Respondents* from all the households visited. They were drawn across the selected states in the six geo-political zones since the research could not afford to visit all the six geo-political zones   In addition, 2 farmers' were randomly selected from each of the households visited since they are the most vulnerable to deforestation in Nigeria, at least a sample of 2 farmers were interviewed in each of the household visited in the rural areas We interviewed a total of *360 farmers* across the six geo-political zones. The addition of 180 household heads together with 360 farmers gave us a total of *540 Respondents* interviewed for the study. (See Tables I and II)

The questionnaire covered basic information of respondents profile such as age, educational level, occupation, in come among others. Other questions raised include   primary source of energy for cooking, nature of the impact of deforestation, method of grazing impact of tree felling, change in the density of trees, effects of deforestation on socio-economic development of Nigeria. The secondary data source for the study involved the search into published and unpublished materials relevant to the subject matter.

TABLE I: SAMPLING PROCEDURE FOR FARMER'S VALUE CHAIN

Geo-political zone	No. of states sampled per zone	No. of Senatorial District per state	No. of Local Government Area (LGA) per Senatorial District	No. of communities sampled per LGA	No. of Household sampled per community	Total no. of Households sampled per state
North Central	2	3	1	3	10	30
South East	2	3	1	3	10	30
South West	2	3	1	3	10	30
South South	2	3	1	3	10	30
North East	2	3	1	3	10	30
North West	2	3	1	3	10	30
Total	12	27	6	27	60	180

Source: Field Survey, 2014.

TABLE II: SAMPLING PROCEDURE OF FARMERS IN THE SAMPLED COMMUNITIES

Geo-political zone	No. of state per zone	No. Of Households per state	No. Of Farmers per Household	No. of Farmers per state
North Central	2	30	2	60
South East	2	30	2	60
South West	2	30	2	60
South South	2	30	2	60
North East	2	30	2	60
North West	2	30	2	60
Total	12	180	12	360

Source: Field Survey, 2014.

Analytical Techniques

Statistical techniques such as the trend analysis, ratios, percentages, graphical depictions, frequency counts, tables, etc., were used mainly to analyse the primary data collected. A logistic regression model of the following form was estimated to capture the effect of human activities in deforestation on green environment in Nigeria.

Def = f(RCS,CLP,MOE,BBN,LGG,AGA,NAD,FWC,CHC)

Where Def is deforestation, RCS is road construction, CLP is citing of large projects, MOE is mineral/ oil exploration, BBN is bush burning, LGG is logging, AGA is agricultural activities, NAD is natural disaster, FWC is firewood consumption and CHC is charcoal consumption.

IV. EFFECTS OF DEFORESTATION ON GREENING THE ENVIRONMENT IN NIGERIA

Respondents Assessment of Domestic Sources of Cooking Materials in Nigeria.

The results from the analysis of the sources of domestic cooking materials in Nigeria are reflected in Fig.1.The figure presents the distribution of respondents that assert that most of the agents of deforestation in Nigeria are as a result of sourcing energy for domestic cooking.

One of the policies of government to prevent deforestation is prohibition of indiscriminate tree felling and encouraging tree planting in Nigeria. In spite of these policies rural dwellers that constitute about 65 percent of total population still engage in fuel wood as their major source of cooking energy. The results indicate that a large proportion of the respondents attest that 56 per cent of the respondents still engage in fuel wood as a major source of fuel for domestic cooking. Specifically, Fig. 1 indicates that 29 per cent of the total respondents claimed that they relied mostly on charcoal for their cooking. The remaining 11 percent use kerosene as their source of energy for cooking even though Nigeria is an oil producing nation. Only 4 percent of the respondents use other means which are environment friendly.
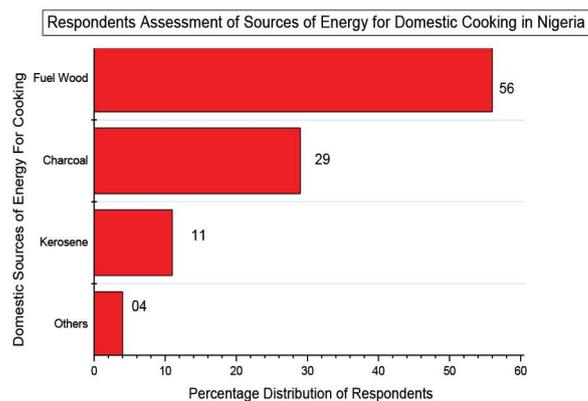

Fig..1. Respondents Assessment of Sources of Energy for Domestic Cooking in Nigeria (%).
Source: 2014 Field Survey.

Respondents Assessment of Factor Responsible for Desertification in Nigeria.

In Nigeria forest has been cleared for logging, timber export, subsistence agriculture and notably the collection of wood for fuel which remains problematic in West Africa. A lot of damage has been done to Nigeria's land through the process of deforestation, notably contributing to the overwhelming trend of desertification.
Forests are one of the most important parts of the environment. The reason why economic trees are so important is because they provide raw materials for making finished furniture products sold in departmental stores which help our economy to thrive. They also

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provide clean air and medicine which also help out our economy. Preventing deforestation can be a hard thing to do since companies are expanding and new buildings are being built. As this happens, rain forests and forests are being taken over and destroyed. This causes changes in the environment and depletion of water in the soil and moisture in the atmosphere. It also increases pollution. Recycling is one of the big ways in preventing deforestation. It lessens the demand for raw materials which would be used to build new products. If we recycle and reuse old products we slow the process of using up our resources. Another way to prevent this is to decrease the amount of trees we cut down. Trees produce food and resources so if we cut down trees we should make sure that we plant more to replace them. Trees help our economy thrive by being used to make products like pencils, making houses, and equipment. Deforestation is a growing problem in our economy if we don't do something about it we are going to have a substantial decrease in resources. Fig. 2 below shows the respondents' assessment of the causes of deforestation in Nigeria.
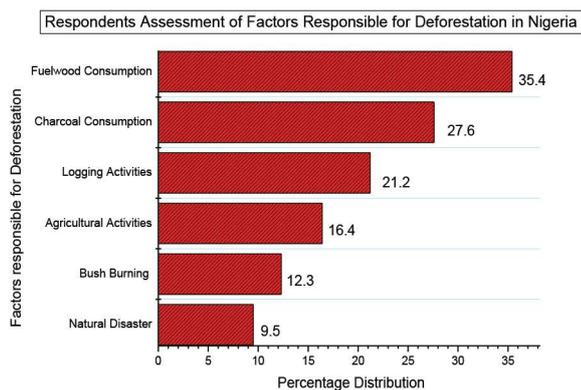
stabilization . The soil protects the plants and the roots, helping them retain water. Forests do the same thing for our environment. They provide shelter, water, building materials, and food for livestock and hunters. Forests and trees are important in the progress of our country because they provide economic development. Without trees our economy won't be able to thrive because a lot of the products on the market today have wood. We also rely on trees a lot in order to build houses and buildings. In Nigeria, the pressure from available forest resources for housing and farming has contributed to deforestation. Mining in Nigeria is a big reason why there is deforestation most especially in the coastal areas of Nigeria. Nigeria needs to look at the long run effects of deforestation and the challenges that it may likely create on the environment. If the cut down all of their trees now because they need to mine, then they aren't efficiently allocating their resources and before they know it, they are going to run out of woods and forests to clear out and it's going to hurt our economy. Fig. 3 below describes the Respondents Assessment of the effects of Deforestation in Nigeria.
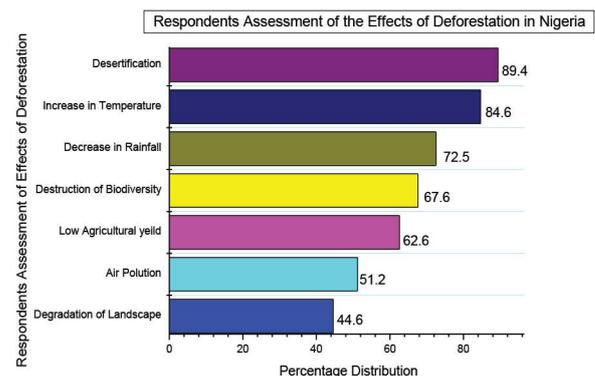

Fig. 2. Respondents Assessment of Factors Responsible for Deforestation in Nigeria (%)
Source: 2014 Field Survey

Fig. 3. Respondents Assessment of the Effects of Deforestation in Nigeria
Source: 2014 Field Survey

Respondents Assessment of the factors responsible for deforestation in Nigeria shows that majority of the respondents' isolated Fuel wood consumption as a factor major with 35.4 per cent of the respondents. This is followed by charcoal consumption (27 per cent), Logging activities (Agric 21.2 per cent) while agricultural activities followed with 16.4 per cent. Other activities responsible for deforestation in Nigeria are bush burning (12.3 percent) and natural disaster followed from behind with just 9.5 per cent.

Respondents Assessment of the Effects of Deforestation in Nigeria.

Forests in Nigeria is rich in wildlife, aquatic and terrestrial biodiversity which is a major source of rural life sustenance   as well as play vital role in ecosystems

The analysis of Fig. 3 shows that majority of the respondents in showing their perceptions on the likely effects of Deforestation in Nigeria depicts that Desertification was described as most significant effect with 89.4 per cent of the respondents attesting to the fact. This effect was closely followed by increase in temperature (84.6 per cent); Decrease in rainfall (72.5 per cent) and destruction of biodiversity (67.6 per cent) Other effects by the respondents are low agricultural yield (62.6 per cent), air pollution (51.2 per cent) and degradation of landscape (44.6 percent) respectively.

From the forgone analysis, it is shown that deforestation is a menace that must be addressed so as to benefit from output growth and other parameters of economic growth in Nigeria. It is also established that vegetation is one of the most important parts of the environment therefore any attempt to deforest ate the

country is likely to have a serious effect on the economic growth of the country as the combination of extremely high deforestation rates, increased temperature and decreasing rainfall are all contributing to desertification in the country. The effect of all these will result in low economic growth most especially from the agricultural sector of the economy.

Logistic Results

The logistic results of the relationship between deforestation variables and green environment in Nigeria are presented in Table III.

Generally, the results indicated that six human activities variables Mineral/Oil Exploration (MOE), Bush Burning (BBN), Logging (LGG), Agricultural Activities (AGA), Fuel-wood Consumption (FWC) and Charcoal Consumption (CHC) had the expected signs in 2014. However, MOE, AGA and CHC are significant implying that these activities negatively impacted on green environment in the rural areas of Nigeria. The results further showed that three variables namely; Roads Construction (RCS), Citing of Large Projects (CLP) and Natural Disaster (NAD) with positive signs did not affect the green environment so much in the rural areas of Nigeria where the survey was conducted. The magnitude of the negative impact of the six human activity variables increased from -0.104 to -0.488 in 2014. The results corroborate the field survey analysis on deforestation in Nigeria. Therefore to ensure sustainability of our green environment, there is need to regulate the activities of everyone on deforestation in Nigeria

TABLE III: LOGISTICS REGRESSION RESULTS

Variables	Dependent variable: DEF		
	Coefficient	Std. Error	Prob.
C	0.085	0.030	0.005
RCS	0.081	0.036	0.123
CLP	0.139	0.054	0.010
MOE	-0.488	1.467	0.001
BBN	-0.027	0.056	0.626
LGG	-0.061	0.055	0.266
AGA	-0.115	0.055	0.037
NAD	0.129	0.054	0.010
FWC	-0.067	0.057	0.632
CHC	-0.104	0.061	0.088

Source: Estimated

VI. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Mankind's activities on the environment in his quest for development have resulted in a continuous and serious degradation of the ecosystem, thus posing a threat to both his present and future living. Currently, deforestation constitutes one of the global development challenges. Specifically, it is one of the most serious long term environmental problems facing the world and Nigeria is not an exception. On these bases, this study analyzed deforestation and the extent to which past and current economic development efforts have impaired the greening of the Nigerian's economy. The analysis from the study revealed that despite the promulgation of the act forbidding indiscriminate tree felling in Nigeria, majority of the rural dwellers still engage in using fuel wood as their major source of cooking energy. Higher proportions of the rural dwellers also use charcoal which is a bye product of wood burning, as their source of energy for domestic cooking. The respondents affirmed that fuel wood consumption is the most compelling factor responsible for deforestation in the rural areas of Nigeria. This is closely followed by charcoal consumption, logging activities, agricultural activities, bush burning and mining, in that order. Other effects of deforestation as opined by the respondents include increase in temperature, decrease in rainfall, destruction of biodiversity, low agricultural yield, air pollution and degradation of landscape.

Recommendations

- There is need to improve the legal and political frameworks for forest conservation and management in the country. Developing sound policies for effective management of the country biodiversity is imperative. Policy makers and executing officials need to look beyond capacity building; it must entail building right political attitude and sense of dedication to ensure enforcement of conservation policies in Nigeria.

- Emphasis must be on provision of basic education on forestry and wildlife to the citizens of Nigeria. This is important to sensitize the entity of the populace on importance of forest conservation. Expansion of research in the areas of forest and green economy with emphasis on productivity, decomposition and recycling to provide information for evaluating the potential yields of conserving forest among others should be encouraged.

- Sustainability in natural resources conservation can only be achieved when the primary custodians are involved in the process. By involving and assigning participatory roles to those that have incentives to not conserve the forest, the likelihood that the defaulters will be reduced is very high.

- Government should employ more field staff for effective monitoring of forest reserves and to promote programmes that encourage afforestation, especially in the marginal areas.

CONCLUSION

Forest conservation and protection is an important component of adaptation strategies needed to address continuing changes in the natural resource base that sustains our livelihoods. Sustainable forest management is thus a critical component of any policy, action and programme that seeks to address the growing global concern about deforestation, the impact of climate change, green economy and inclusive economic development. Thus, policies gear toward sustaining forest conservation and encouraging afforestation is imperative to sustain economic development.

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