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Perceived Effects of Deforestation among Households in Awka South Local Government Area of Anambra State, Nigeria

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ABSTRACT

The study examined the effect of deforestation among Awka south local government household of Anambra state. Specifically, the study described the socio-economic characteristics of households, the level of awareness of deforestation, causes of deforestation and its effects. A purposive sampling technique was used to select 90 households. Data was obtained using structured questionnaire. The study revealed that 64.44% were female while 35.56% were males. The mean age of the respondent was 40.44, 54.44% were married, the average household size was 3.6, 36.67% attained primary education and 82.22% practice farming as their main occupation. The level of awareness showed that 68.88% were aware of desertification as the most common cause of deforestation. 80% of the respondents stated that the major cause of deforestation was for cutting of woods for cooking. 35% of the respondents held that demand for wood in the study area is the major cause of deforestation, 27% of the respondent posited that increase in population could be attributed as the major cause of deforestation, 15% of the respondent posited that urbanization was the major cause of deforestation. The mean of the variables shows that increase in surface temperature (2.35), Extinction of Non-Timber Forest Product, desertification (2.57) and increased erosion (2.37) are the effects deforestation in the study area. Various recommendations were proffered; Enactment of laws to discourage indiscriminate deforestation, government should encourage afforestation campaign this will help to encourage people to plant more trees to reduce environmental hazards such as erosion, global warming due to greenhouse gas emission, inclusion of the expertise of extension personnel in training and awareness of deforestation in the study area.

INTRODUCTION

Forests are viewed, defined, assessed, and valued through different lenses. From different vantage points, forest can be seen as a source of timber products, an ecosystem composed of trees along with myriad forms of biological diversity, a home for indigenous people, a repository for carbon storage, and as a socio-ecological system or as all of the above (Naushad & Syed, 2017). A basic and comprehensive definition of forest according to Food and Agricultural Organisation (FAO, 2020) is that it is a large area of land (about 0.5 hectares) dominated by trees higher than 5meters and a canopy cover of more than 10 percent or trees able to reach these thresholds situated naturally and uninterrupted.

The FAO provided some criteria as to what a forest is and these include:

It does not include land that is predominantly under agricultural or urban land use. Forest is determined both by the presence of trees and the absence of other pre dominant land uses. The trees should be able to reach a minimum height of 5 meters in situ.

Includes areas with young trees that have not yet reached but which are expected to reach a canopy cover of 10 percent and tree height of 5 meters. It also includes areas that are temporarily not stocked due to clear-cutting as part of a forest management practice or natural disasters, and which are expected to be regenerated within 5 years. Local conditions may, in exceptional cases, justify that a longer time frame is used.

Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific environmental, scientific, historical, cultural or spiritual interest.

Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 hectares and width of more than 20 meters.

Includes abandoned shifting cultivation land with a regeneration of trees that have, or is expected to reach, a canopy cover of 10 percent and tree height of 5 meters.

Includes areas with mangroves in tidal zones, regardless whether this area is classified as land area or

Includes rubber-wood, cork oak and Christmas tree plantations and Includes areas with bamboo and palms provided that land use, height and canopy cover criteria are met.

Deforestation can be defined as the process where woods are cut through different techniques and methods from the surface of the earth for the purpose of livelihood while such type of activities disturb the ecosystem of the world and make the environment unfavorable (Naushad & Syed, 2017). It also refers to any process that alters an original tree covers, which includes felling of all trees on a site, thinning a forest and setting bush on fire. Trees are cut down by people for various reasons, examples include trees being cut down and used or sold as fuel in the form of charcoal and sometimes it can be used as pastures for livestock, building of houses and settlements etc. The removal of trees without adequate planting or reforestation can result to loss of biodiversity, habitat and aridity (Anyanwu *et al.*, 2015).

Deforestation is primary a concern for developing countries of the tropics as it is shrinking areas of the tropical forest causing loss of biodiversity and enhancing the greenhouse effect. (Angelson *et al.*, 2011). It is a severe crisis that continually threaten earth's delicate ecosystems. Although its effects are well known and have been documented on various occasions, deforestation is an environmental threat that remains. Although, scientists and researchers around the world have given several warnings to this effect.

According to Global Forest Resource (2010), deforestation releases nearly a billion tons of carbon into the atmosphere per year, though the numbers are not as high as the ones recorded in the previous decade. This carbon released causes climate change which creates severe weather conditions like droughts, floods and hot weather conditions. Deforestation is a leading factor in rising global greenhouse emissions, but many developing nations lack the means and institutions to combat illegal logging and regulate forest industries. The Department of International Development (DFID) will shortly lay out plans to help countries strengthen rule of law, support the trade in responsible forestry and provide an on-the-ground assistance to stamp out illegal logging.

Nigeria is considered to be one of the countries with highest estimate of deforestation (FAO, 2020). With 12.2% equivalent of 11,089,000 hectares had been deforested and between (2005 to 2010), 55.7% of our primary forest was been lost and the rate of forest change increased by 31.2% to 3.12% per annum, which is approximately 350,000 to 400,000 hectares per year (Ezeano *et al.*, 2012). Nigeria lost an average of 409,700 hectares of forest every year which is equal to annual deforestation rate of 2.38%. This is quite alarming considering that the country is at risk of facing scarcity in timber and fuel wood towards the end of the century, unless proper and effective measures are taken.

Forest management offers a promising alternative to depletion of resources. Continuous degradation has major effects on other segments of the economy. Forest has been subjected to degradation and careless destruction posing environmental, biological and medicinal problems. (Ezeano *et al.*, 2012). Deprivation, poverty, hunger, insecurity, ignorance, fraud, corruption etc. are also factors that harshly-affect management of problems that affect environmental hazards and Biodiversity. As a result of these socioeconomic ailments, forest reserves make significant contributions to the development of Nigeria, there is the need to strongly create awareness and understanding of the extent and nature of the endowed forest resource as well as the method of exploitation in Anambra State. Hence, the reason for this research.

The broad objective of this study was to determine the perceived effects of deforestation and the level of awareness of these effects of deforestation on the environment by household. The specific objectives were to:

i. describe the perceived socioeconomic characteristics of households in Awka South LGA;

ii. ascertain the perceived level of awareness about the effects of deforestation on household environment in Awka South LGA;

iii. identify the causes of deforestation among household in the study area; and

iv. identify the effects of deforestation on the household in the study area.

Forests are natures gift to man which if its resources are properly managed, would solve one of the earth's greatest threats; global warming. This study is of great importance because it will help the people of the area in study to curb unlawful deforestation of our forest; the department of Forestry to curtail illegal deforestation in the study area; and to enlighten the leaders and public of our obligation of the forest.

METHODOLOGY

Awka is a town and the capital of Anambra State, southern Nigeria. Its theme as 'Light of the nation' and town lies along roads leading from Owerri, Umuahia, Onitsha and Enugu. It is formerly covered with tropical forest, the area around Awka now mostly consist of wooded grassland. Awka south L.G.A has an estimated population of about 189,654 using the state's growth rate of the 2006 census figure as reported by the National Population Commission (NPC) (State Bureau of Statistics, Awka, 2011) and counts as one of the 21 existing L.G.As of the state comprising nine towns namely, Amawbia, Awka-ifite, Ezinato, Isiagu, Mbaukwu, NiboNise, Okpuno and Umuawulu, Awka South Local Government Area lies between 6°10'N 7°04'E and covers an area of about 170km2, a larger extent of the area is moderately prone to erosion and vulnerable zones for deforestation.

A multi-stage sampling technique was employed in selecting the respondent in this study

Stage 1: This involves purposive selection of (3) three towns (Nibo, Amawbia and Okpuno) from Awka South L.G.A out of the Eleven (11) towns in the study area because of the level of erosion and land degradation in three town.

Stage 2: Three (3) villages were selected randomly from the three (3) towns that were selected.

State 3: Out of the three (3) villages randomly selected, 30 households were selected randomly to give a total of (90) households which formed the sample size.

Data Analysis

Statistical tools were employed to analyze the data that was collected in order to achieve the stated objectives of the study. The study utilized a combination of analytical tools of both descriptive, graph and Mean threshold from 3 Point Likert scale. Objective 1, 4 and 3 was achieved with the help of descriptive statistics which include mean, graph, frequency table, and percentage. Objective 2 was achieved from the mean threshold of 3 Point Likert type. Thus, models for the study were stated as follows:

The descriptive statistic:

$$\overline{X} = \sum \frac{FX}{n} \ldots\ldots Eqn..3$$

Where;

$\overline{X}$ = mean, X = variable, n = sample size, and F = frequency

b). The mean threshold from the 3 Point Likert Scale is stated as follows;

$$\overline{X} = \frac{1+2+3}{3} \ldots\ldots Eqn\ldots 1 \text{ decision rule of } 2.0$$

Where:

$\overline{X}$ = mean threshold

3 = strongly agree, 2 = agree, 1 = not agree

RESULTS AND DISCUSSIONS

Perceived Socioeconomics Characteristic of Households in the Study Area

Table 1: Socioeconomic Characteristics of Respondents

Variables	Frequency (90)	Percentage	Mean
Gender			
Male	58	64.44	
Female	32	35.56	
Age			
20-30	12	13.33	
31-40	21	23.33	
41-50	39	43.33	40.44
51-60	11	12.22	
>60	7	7.78	

Marital status			
Single	13	14.44	
Married	49	54.44	
Divorced	11	12.22	
Widowed	17	18.89	
Household size			
1-2	14	15.56	
3-4	16	17.78	3.0
5-6	27	30.0	
>6	33	36.67	
Level of education			
No formal education	19	21.11	
Primary	33	36.67	
Secondary	28	31.11	
Tertiary	10	11.11	
Occupation			
Farming	74	82.22	
Non-farming	16	17.78	

Field survey, 2021

The Table 1 shows the socio-economic characteristics of the respondents. Majority 64.44% of the respondents were females while 35.56% were male. This is due to the level of female involvement in fuel wood are mostly involved in deforestation related activities. The respondents 36.67% had a household size of > 6, 30% had 5-6 household size, 17.77% had household size of 3-4 while 15.55% had 1-2 household sizes. The high proportion of family size is common in the study area, hence increase in population in rural areas leads to pressure on forest. This is also in view of Food and Agriculture Organization (FAO, 2020), who posited that population growth and the demand for food; fibre and fuel have accelerated the pace for forest clearance. The respondents 36.67% had primary education, 31.11% had secondary education, 21.11% had no form of formal education while 11.11% had tertiary education. Majority 82.22% are involved in farm related occupations while 17.78% are involved in non-farm related occupation. This higher percentage of farmers indicated greater farming activities resulting in deforestation of the area collection. This agrees with Chinafumnanya (2018) who opined that female were more involved in fuel wood collection in Economic livelihood of Michika people of Adamawa state of Nigeria.

Table 1 also shows that 43.33% were between the age range of 41 – 50, 23.33% were within the age range of 31 – 40, 13.33% were within 20-30 years, 12.22% were within the range of 51 – 60 years while 7.78% were more than 60 years. The high proportion of people between the age range of 41 – 50 years shows that majority of the respondents were within the active years engaged in logging activities. A good number of the respondents (54.44%) were married, 18.88% were widowed, 14.44% were single while 12.22% were divorced or not living with their families. This suggest that logging activities in the study area is mostly associated with the married individuals

and it is also likely that they engaged their family members in logging activities. This agrees with Chinafumnanya *et al.* (2018) who held that married people are mostly involved in agricultural production as a proof of responsibility.

The Perceived Level of Awareness of the Effects of Deforestation Among the Households in the Study Area.

Table 2: Level of awareness of the effects of deforestation among the households

Deforestation variability	Strongly aware (%)	Aware (%)	Not aware (%)	Mean 2.0
Decreased rainfall	13 (1.44)	26 (2.88)	51 (3.66)	2.3
Flooding	19 (1.11)	7 (2.77)	64 (1.4)	2.0
Increase in surface temperature	48 (3.33)	26 (2.88)	16 (1.77)	2.1
Loss of soil nutrient/ fertility	17 (1.88)	24 (2.66)	49 (1.44)	2.2
Extinction of NTFP	46 (1.11)	28 (1.11)	16 (1.77)	2.5
Desertification	62 (3.88)	18 (2.0)	10 (1.11)	2.7
Increased erosion	46 (3.55)	32 (1.33)	42 (1.11)	2.3

Field Survey, 2021

Table 2 shows the level of aware of the effect of deforestation in the study area. The study shows that 56.66% were not aware of the effect of deforestation in the study area. 71.4% were not aware of flooding as a result of deforestation. 53.33% were aware of the effect of deforestation that led to increase in surface temperature. The respondents 54.44% were not aware of loss of soil fertility as a result of deforestation. The respondents 51.11% were aware of extinction of non-timber forest product as a result of deforestation. Majority 68.88 were aware of desertification as a result of deforestation.

The Cause of Deforestation in the Study Area

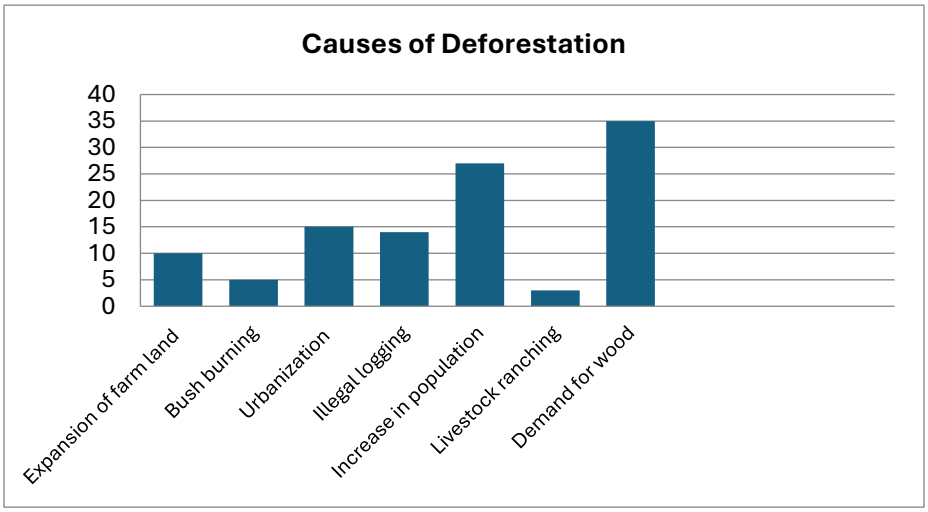

Figure 1: Causes of Deforestation; Source: Field Survey, 2021

The bar chart above shows causes of deforestation as depicted from the data collected from the field. Based on the data analyzed using simple percentage as shown on the bar chart on figure .1 on the causes of deforestation in Awka South LGA, the result revealed that 35% of the respondents held that demand for wood in the study area is the major cause of deforestation, 27% of the respondent held that increase in population could be attributed as the major cause of deforestation, 15% of the respondent posited that urbanization was the major cause of deforestation, 13% held that illegal logging of woods could be the most cause of deforestation. While 5% of the respondent allegedly held that bush burning was the major cause, only 2% attributed livestock ranching to be the cause of deforestation.

From this analysis, one can observe that increase in population, Demand for wood, urbanization, illegal logging of wood and expansion of farmland are the major drivers of deforestation in the study area, these factors combined (94%) account majorly for the deforestation occurring within the study area, while factors like bush burning, and livestock ranching contributes a meager 6% of the causes of deforestation.

Results showed that greater percentage of deforestation is caused by Demand for wood which could be linked to demographic increase in the study area and environs. This agreed with the work of Chinafumnanya *et al* (2018) who said that human activities, climate change coupled with rural poverty have led to increased deforestation in the rural areas of Nigeria. Abane *et al* (2017 reported that "very few private forest plantations and woodlots across Adamawa state reveals unexplored and poor public participation in forest regeneration and management in the state. It is disturbing that forest regeneration pace by government agency had tremendously declined over the years against the high rate of exploitation of trees for fuels, poles and construction materials. In the same vein, urbanization due to land development through construction of roads, building dams and other infrastructural developments also have it toll on forest land.

According to Abane *et al* (2017) and Aduse-Poku *et al* (2013) reported that the destruction of natural habitants results in depletion of bio diversity. Aduse-Poku *et al* (2013) also held that the demand and usage of food for cooking, heating and small-scale industrial purposes were the major causes of deforestation.

Table 3: Perceived Effects of Deforestation among Awka South LGA Households

Variables	Frequency	%	Frequency	%
Climate change	6	6.66	84	93.33
Soil erosion	58	64.4	32	35.55
Flooding	18	20	72	80
Loss of biodiversity	37	58.88	53	41.11
Easy spread of disease	26	28.88	64	71.11
Loss of medicinal trees	66	73.33	24	26.66
High temperature	86	95.55	4	4.44

Field Survey, 2021

From the result of the analysis, 93.33% of the respondents held that climate change is not an effect of deforestation while 6.66% of the respondents held that climate change is as a result of deforestation. This agreed with Appiah e*t al.* (2019) who found out similar response in Michika community of Adamawa State. 64.44% of the respondents held that an overt effect of deforestation is soil erosion while 35.55% had dissimilar view. Majority 80% of the respondents also held that

deforestation does not result to flooding in the area while 20% of them opined that deforestation aided flooding. The implication is that deforestation leads to erosion.

The respondents 58.88% of the respondents held that deforestation leads to loss in biodiversity while 41.11% held that it does not. This agrees with Appiah *et al*. (2019) which held that deforestation encourages loss of biodiversity. The study further revealed that 71.11% of the respondent opined that deforestation does not necessitate easy spread of disease while 28.88% suggested that it does enhance the spread of disease.

Majority 73.33% noted that deforestation led to the loss of various medicinal trees which are of health importance to them while 26.66% opined that it does not lead to the lack of medicinal trees in the study area. This agreed to Asare *et al*. (2015) which held that agro-forestry is beneficial especially in offering a wide range of wood and wood products such as medicines, dyes, cosmetics etc. Finally, 95.55% of the respondents held that deforestation led to increase in temperature as some of these trees serves as shade in the study area and they help to absorb heat from the sun while 4.44% held that it has no effect on increase in temperature.

CONCLUSION AND RECOMMENDATIONS

Deforestation is recognized as a known problem that affects the people, their socio-economic activities as well as biodiversity in the study area, Awka South Local Government Area of Anambra State, Nigeria. The respondents were aware of environmental temperature variations and fast disappearing vegetation which is a clear indication of their awareness of the consequences of deforestation. On the whole, they perceived that the land is getting barred due to reduction in forest cover, climate changes, land degradation through soil erosion. Therefore, the rate at which the forests lands are being converted to farmlands and infrastructural development may put the study area in serious danger of desertification and drastic consequences of global warming.

Based on the findings from this study, the following are the recommendations:

1. Government should encourage afforestation campaign. This will help to encourage people to plant more trees to reduce environmental hazards such as erosion, global warming due to greenhouse gas emission.
2. Areas where agriculture is highly practiced should adopt afforestation practices, this will increase output and income of farmers for economic trees.
3. Extension workers should be motivated by the government so that they can educate rural farmers on important strategies to mitigate the impacts of desertification in their individual localities through conservation education.
4. Enactment of laws to discourage indiscriminate deforestation and bush burning should be implemented.

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