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IMPACT OF DEFORESTATION ON RURAL HOUSEHOLD INCOME. A CASE STUDY OF YEWA SOUTH LOCAL GOVERNMENT AREA OF OGUN STATE

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ABSTRACT This study investigated the impact of deforestation on rural household income in Yewa South Local Government Area of Ogun State. The study adopted random survey research design. There were a total number of one hundred and twenty (180) respondents (rural households) randomly selected from Yewa South Local Government Area of Ogun State. Purposive sampling was used to select six (6) villages namely: Ilaro, Idogo, Ijanna, Erinja, Ilobi and Owoye. 30 respondents were randomly selected from each of the villages. A structured questionnaire was used as an instrument of data collection. The socio-economic characteristics of respondents were analyzed using simple percentages, tables, Z-Test and students T- test, F-test and PPMCC statistics to test the hypotheses at 0.05 level of significance. Results revealed that challenges of deforestation include forest clearing for farming purpose, logging of wood for timber and fuel wood. The consequences of deforestation are decreased rural household incomes and rural poverty among the villagers. There was significant difference ($P<0.05$) between the responses of the respondents based on their household incomes. It is recommended that logging plans should not only be aimed at ecologically sound tree felling practices. Reforestation exercises should be carried out by the State Government and logging companies to replace extracted tree species in the forests.

KEY WORDS: Challenges of deforestation, Deforestation**,** Demand for Agricultural Land, Household Income, Logging, Timber.

INTRODUCTION

Trees are perennial woody plants usually with stems which supports branches and leaves. In any given locality, a tree reaches the height of at least 6 meters on maturity; however, some tree species get to the height of over 100 meters. Within the forests are herbs, shrubs, climbers, lianas and other plant species as well as assorted wildlife. On the forest floor are litter and soil microbes which render forest soils fertile for tropical farming. Park (1992) stated that at least 60 percent of all known species of plants (about 155,000 out of 250,000), about 90 percent of all the world's non-human primates such as monkeys, about 40 percent of all the birds of prey and about 80 percent of all the insects live in the tropical rainforests of the world. Within these species, about 1.2% are endemic, that is, they are found in no other country except Nigeria, while 3.5% are threatened. Nigeria is a habitat to at least 4715 species of vascular plants of which 4 are endemic. Also, about 3.6% of Nigeria species is protected under IUCN category I-V. Many fauna and flora species in the forests are threatened, endangered or extinct (Akachuwku, 2007). Endangered plants include: *Afrormosia elata* (*Afrormosia*), *Irvingia* species (bush mango) and *Funtumia* species (native rubber). Endangered animals include: The Drills (*Papio leucophaeus*), Gorillas (*gorilla gorilla*), Chimpanzee (*pan troglodytes*), Elephants (*loxodonta africana*), Hippopotamus (*hippopotamus amphibious*), Lions (*panther leo*), Leopard (*panther pardus*), Giraffe (*Giraffa camelopardalis*), and Manatee (*Trichecus Senegalensis*).

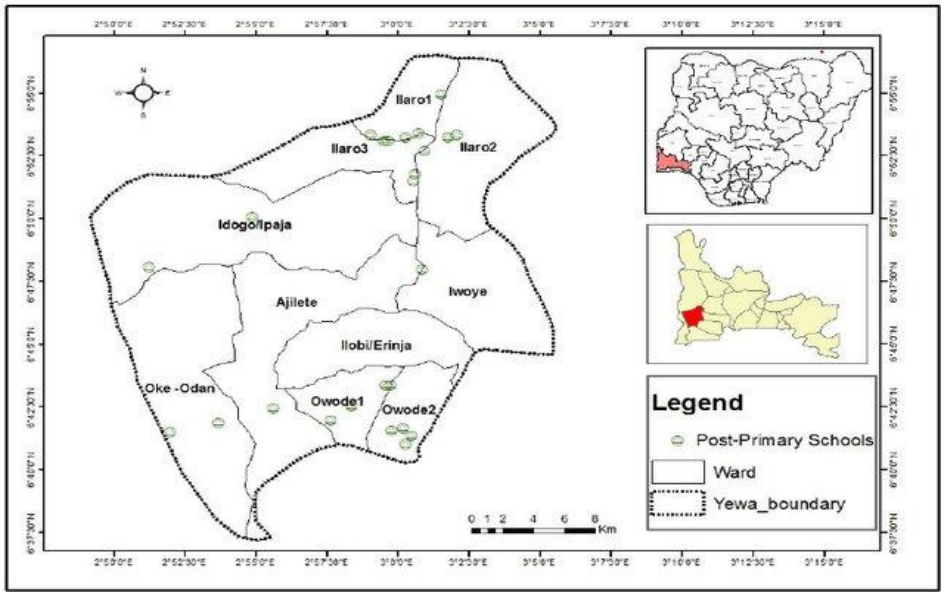
Nigeria has one of the world's highest rate of deforestation of primary forests, where more than 50% of such forests have been lost in the past decades through unsustainable logging, agriculture, as well as fuel wood collection (FAO, 2004). Issues on the encroachment of the logging industry on non-logged species and the socio-economic implications has been examined by Akintoye (2003). The forests provide a wide variety of wood and non-wood products such as honey, incense, medicinal plants, bamboo, foodstuffs, etc. They are socially and commercially significant to the livelihoods of rural households. Some studies

show that forests provide up to 40 percent of the total household income (Cavendish, 1999b; Mamo et al., 2006). Like other many developing countries, forests are also a very important source of energy for both rural households. Rural households consume about 92% of all biomass energy, with the remaining being consumed by small-scale industry and food enterprises (Nune et al., 2010). The urban population is also highly dependent on fuel wood and other biomass energy sources such as charcoal, dung and residues for their cooking activities. Moreover, biomass energy use in both rural and urban is characterized by a very low efficiency of 5 to 10% (ADC, 2003), which can readily be improved with appropriate intervention measures such as introducing and disseminating improved biomass cook stoves.

Despite the contribution of the forestry sector to the livelihoods of the people and the country as a whole, the country loses about 141,000 hectares of forest each year (FAO, 2009). For a country with a total of 180 million people, forest degradation, deforestation, overgrazing, and land degradation are serious environmental problems that negatively affect the welfare of the people and the overall economy of the country (MoFED, 2002). Many factors contribute to the forest degradation and deforestation problem, harvesting fuel wood and logging, clearing for agricultural land and grazing, expansion of rural areas and villages into forest regions and lack of clear forest and land tenure policies are believed to be the major factors of forest degradation and deforestation (Mulugeta and Melaku, 2008. The study carried by Forestry Management and Coordinating Unit on vegetation and land use changes in Nigeria showed that undisturbed forest decreased from 2.9% of total land area of Nigeria in 1976/1978 to 1.3% in 1993/1995 – (decrease of 1,383,700 hectares); also the disturbed forest increased from 1.6% of total area of Nigeria in 1976/1978 to 2.1% in 1993/1995 – (an increase of 441,700) hectares. [10] also revealed that the Riparian forest decreased from 0.8% to 0.6% - a decrease of 214,800 hectares within the same period. Global Forest Assessment reported that Nigeria's forests and woodlands, which currently cover about 9.6 million hectares, have been dwindling rapidly over the past decades. It stated that the country's current deforestation rate is estimated at 3.7% and one of the highest in the world. It further stated that between 1990 and 2015, Nigeria lost about 35% of its remaining forest resources and over 50% of another wooded land. This is an alarming trend that suggests that the assertion that the remaining forest area of the country would disappear in the next three decades might become a reality if steps and necessary initiatives are not taken to check this development. However, much of the human induced deforestation and forest degradation is, in varying degrees, economically wasteful and environmentally negative, as well as socially undesirable as just a few individuals benefit. The process usually induces adverse effects on the social condition of weaker sectors of society and leads to the progressive impoverishment of ecosystem. Some types of deforestation and forest degradation result in costs to society that

amply exceeds benefits. There is enough evidence that Nigeria is facing an environmental crisis on account of heavy deforestation. For several years, there has been remorseless destruction which must be put under control to avoid some bad consequences associated with deforestation. This study sought to investigate the effect of deforestation on rural household income in Yewa South Local Government area of Ogun State. The objectives of this study are to examine the impact of deforestation on rural household income and the challenges of deforestation in Yewa South Local Government area of Ogun State.

MATERIALS AND METHODS



The Study Area

The study was carried out in Yewa South local government area. Yewa South, (formerly Egbado South), is a Local Government Area in the west of Ogun State, Nigeria bordering the Republic of Benin. Its headquarters are in the town of Ilaro at6°53′00″N 3°01′00″E in the north of the Area.

Sample and Sampling Techniques

The sample size for this study comprised of 180 rural households from Yewa South Local Government Area of Ogun State. Purposive sampling was used to select six (6) villages namely: Ilaro, Idogo, Ijanna, Erinja, Ilobi and Owoye. 30 respondents were randomly selected each from the villages. In all, 180 respondents were selected for the study and structured questionnaire was administered to them. The respondents were cut across farmers, hunters and knowledgeable members of the community. The distribution of the respondents is presented in Table 1.

Table 1: The Distribution of Samples from the Various Randomly selected Farmers Yewa South Local Government Area of Ogun State

NAMES OF VILLAGES	NO OF FARMERS
Ilaro	30
Idogo	30
Ijanna	30
Erinja	30
Ilobi	30
Owoye	30

Total	**180**

Source: Field Survey, 2020

Method of Data Analysis

Data collected from the field were sorted and analyzed using Z-test, independent student's T-test, F-test and Pearson Product Moment Coefficient of Correlation (PPMCC) (inferential) statistics for testing the research hypotheses formulated at 0.05 level of significance (which implies that if the study is replicated 100 times, the same outcome will occur 95 out of 100, and ≤ 5 out of 100 may vary due to chance).

RESULT AND DISCUSSION

Table 2: Socio-Economic Characteristics of Respondents

Variables	Frequency	Percentage (%)	Mode
	SEX		
Male	110	61	Male
Female	70	39	
Total	**180**	**100**	
	AGE		
21 – 30 Years	40	22	
31 – 40 Years	72	40	31 – 40 Years
41 - 50 Years	54	30	
Above 50 Years	14	8	
Total	**180**	**100**	
	MARITAL STATUS		
Single	14	8	
Married	126	70	Married
Divorced	22	12	
Widow(er)	18	10	
Separated	0	0	
Total	**180**	**100**	

RELIGION			
Christianity	99	55	Christianity
Islam	72	40	
Traditional	9	5	
Total	**180**	**100**	
TRIBE			
Yoruba	162	90	Yoruba
Igbo	10	6	
Hausa/Fulani	8	4	
Total	**180**	**100**	
EDUCATIONAL STATUS			
No formal education	77	43	No formal education
Primary education	67	37	
Secondary education	25	14	
Tertiary education	11	6	
Total	**180**	**100**	
NUMBER OF PERSONS PER HOUSEHOLD			
Less than 3 persons	18	10	
3 – 6 persons	108	60	3 – 5
7 – 9 persons	40	22	
Above 9 persons	14	8	
Total	**180**	**100**	
MAJOR OCCUPATION			
Farming	135	75	Farming

Trading	13	7	
Motorcycling	9	5	
Teacher	18	10	
Others	5	3	
Total	**180**	**100**	
	INCOME (MONTHLY)		
#10,000-50,000	9	5	
#51,000-100,000	32	18	
#101,000-150,000	108	60	#101,000-150,000
#151,000-200000	18	10	
Above #200,000	13	7	
Total	180	100	

Source: Field survey, 2020

Table 2 above showed socio-economic characteristics of the rural households. In terms of sex distribution, majority of the actors 110 (61%) were male while 70 (39%) were female. This implies that more males were involved in deforestation business than female.

Age distribution of the respondent showed that majority 72 (40%) of the respondents were between 31 – 40 years of age, 54 (30%) were within the age range of 41 - 50 years of age. Those that were within the age range of 21 – 30 years and above 50 years accounted for 40 (22%) and 14 (8%) respectively. On the whole, Majority 162 (90%) of the deforestation actors were Yorubas, 10 (6%) were Igbos while only 8 (4%) were Hausa/Fulanis. This implies that Yorubas engaged in deforestation activities than their other counterparts.

The study showed that majority 77 (43%) of the respondents had no level of formal education; 67 (37%) had primary school education, 25 (14%) had secondary school education while 11 (6%) had tertiary level of education. This situation of illiteracy has serious consequences on the level of deforestation and forest degradation in the study area.

Majority 108 (60%) of the respondents had 3-6 members, 40 (22%) had 7-9 members, 18 (10%) had

70% of actors fall into the economically active age group of 31–50 years showing that the majority of deforestation actors are in the physically active age group.

About 126 (70%) of the respondents were married, 22 (12%), 18 (10%), 14 (8%) and 0% were divorced, widow(er) single and separated respectively. This assured that married households have a significant influence on deforestation activities as compared to other participants.

less than 3 members while only 14 (8%) had above 9 person per household. This implies that household with 3-9 persons per household engaged in deforestation activities than their other counterparts.

Mjority 135 (75%) of the respondents engaged solely on farming, 18 (10%) were teachers who engaged in farming to supplement their salary, 13 (7%) were traders who engaged in farming to supplement their income, 9 (5%) were motorcyclist who engaged in farming business while 5 (3%) who belong to other occupations also engaged in farming business.

Monthly income from income distribution showed that majority 108 (60%) of the respondents were between

#101,000-150,000 monthly income, 32 (18%) of the farm actors were within the monthly income of #51,000-100,000, 18 (10%) of the respondents earned between #151,000-200000 per month, 13 (7%) earned above #200,000 per month while monthly income of less than #50,000 constituted the least of the respondents with 9 (5%). On the whole 140 (78%) of the actors in the study area earned between #51,000 - #150,000 income monthly.

Table 3: Challenges of Deforestation

S/no	Contributions of Forest Resources	Sample Size	Mean score	St Deviation	Remarks
1.	Forest is being cleared for farming purpose.	180	2.87	1.1030	Agreed
2.	Logging for fuel wood is heavily practiced in the forest.	180	3.27	0.9821	Agreed
3.	Mining operation is very destructive to the forest.	180	3.86	0.8344	Agreed
4.	Setting forest ablaze using wildfire to hunt animals is highly intensive.	180	3.93	0.8175	Agreed
5.	Urbanization to create more cities and towns is done by clearing the forest.	180	3.55	0.9926	Agreed
6.	Poverty caused most houses to rely on the resources obtained from the forest.	180	3.18	1.0184	Agreed
7.	Low illiteracy level among the populace will lead to removal of the forest.	180	3.26	1.0157	Agreed
8.	Expanding global market for timber has encouraged forest clearing.	180	3.86	0.9375	Agreed
9.	Natural causes such as floods and erosions destroying the forest.	180	3.78	0.7912	Agreed

Source: Field survey, 2020

Table 3 showed the challenges of deforestation with mean score of 2.87 and standard deviation of 1.1030; logging for fuel wood was heavily practiced in the forest with mean score of 3.27 and standard deviation of 0.9821; mining operation which was very destructive to the forest with mean score of 3.86 and standard deviation of 0.8344; setting forest ablaze using wildfire to hunt animals was highly intensive with mean score of 3.93 and standard deviation of 0.8175; urbanization to create more cities and towns was done by clearing the forest with mean score of 3.55 and standard deviation of 0.9926; poverty that caused most houses to rely on the resources obtained from the forest with mean score of 3.18 and standard deviation of 1.0184; low illiteracy level among the populace which often lead to removal of the forest with mean score of 3.26 and standard deviation of 1.0157; expanding global market for timber had encouraged forest clearing with mean score of 3.86 and standard deviation of 0.9375; while natural causes such as floods and erosions destroying the forest with mean score of 3.78 and standard deviation of 0.7912 was the last challenge facing deforestation in this study.

Table 4: Consequences of Deforestation

S/no	Problems	Sample Size	Mean score	St Deviation	Remarks
1.	Loss of bio-diversity.	180	2.92	1.0824	Agreed
2.	Depletion of soil and water resources.	180	3.81	0.8995	Agreed
3.	Atmospheric pollution.	180	3.49	1.0023	Agreed
4.	Environmental Calamities (Acid rain, Desertification and Flood).	180	3.17	1.0601	Agreed
5.	Decreased rural household incomes.	180	3.79	0.8867	Agreed
6.	Rural poverty among the villagers.	180	3.53	1.1090	Agreed

Source: Field survey, 2020

Table 4 above showed that the deforestation had the following consequences: loss of bio-diversity with mean score of 2.92 and standard deviation of 1.0824, depletion of soil and water resources with mean score of 3.81 and standard deviation of 0.8995, atmospheric pollution with mean score of 3.49 and standard deviation of 1.0023, environmental Calamities (Acid rain, Desertification and Flood) with mean score of 3.17 and standard deviation of 1.0601, decreased rural household incomes with mean score of 3.79 and standard deviation of 0.8867 while rural poverty among the villagers with mean score of 3.53 and standard deviation of 1.1090 concluded the study on consequences of deforestation.

Table 7: Summary of Z-Test Statistics on Forest Resources and Reduction of Crimes

Variables	N	Mean score	St Dev	DF	Zcal	Zcrit	Prob > Z	Decision
Sample Population	180	3.79 2.5	0.8867	179	19.516	1.96	0.0002	Reject Ho

Source: Field survey, 2020

Hypothesis One

There was no significant difference between the responses of male and female respondents.

This hypothesis showed that there was no significant difference between the responses of male and female respondents. The result showed that T-Test statistic computed was -0.396 (not significant 0.559) at 0.05 level of significant, this indicated that there was no significant difference between the responses of male and female respondents ($T = -0.396$ at $p<0.05$). It implied that there was no significant difference between the responses of male and female respondents. The finding was in agreement with (FAO, 2015; Aguilar et al, 2011; Agarwal 2009) who found that men control the most valuable forest resources that can be sold on the market,

Hypothesis Two

There was significant difference between the responses of the respondents based on their household incomes

This hypothesis showed there was significant difference between the responses of the respondents based on their household incomes. The result showed that absolute value of F-Test computed was 301.26 (significant 0.0002) at .05 alpha level, this indicated that there was significant difference between the responses of the respondents based on their household incomes ($F = 301.26$ at $p<0.05$). It implied that there was significant difference between the responses of the respondents based on their household incomes. This finding was in alignment with the findings of Ayinde et al (2013) who found that income is widely used as a welfare measure because it is strongly correlated with the capacity to acquire many things that are associated with an improved standard of living such as food, clothing, shelter, health care, education and recreation. This finding was consistent with Debela et al (2012) who maintained that the poor households are likely to sell the NTFPs as among the few assets able to sell to the wealthier households with the aim of generating income and use that income for satisfying basic needs such as in their household. It was in consonance with Dewees, (2013) who

concluded that NTFPs can increase household food security and income in many families.

Hypothesis Three

Deforestation contributes to decreased income of the rural households

This hypothesis showed that deforestation contributes to decreased income of the rural households. The result showed that absolute value of Z-Test computed was 19.516 (significant 0.0002) at 0.05 level of significant, this indicated that deforestation contributes to decreased income of the rural households ($Z = 19.516$ at $p<0.05$). This implied that deforestation contributes to decreased income of the rural households. This is because increased deforestation means loss of livelihood assets and outcomes (loss incomes, employment, food, medicine, and energy) for most of the 500 million to 1.6 billion people in forest fringe communities who directly and indirectly depend on forest resources for their survival. This finding was in alignment with the work of (Bosu et al, 2010) who maintained that the impacts of deforestation in exacerbating rural poverty are complex and widespread. Not only does forest loss reduce forest communities' contributions to national economic growth, but more critically, it threatens the livelihoods and traditions of rural and forest dwelling people across the country. The finding was confirmed by Acheampong and Marfo, (2011) who asserted that with the availability of NTFPs reducing alongside the trees that support them, forest communities often have to travel further distances into the forest to access products that sustain their food security and socioeconomic well-being (incomes).

Hypothesis Four

Deforestation has significant relationship with rural poverty

Hypothesis four showed that deforestation has significant relationship with rural poverty. The result showed that absolute value of T-test computed was 2.760 (significant 0.0002) at 0.05 alpha level, this indicated that deforestation has significant relationship with rural poverty ($T = 2.760$, $r = 0.89$ at $p<0.05$). The finding was in harmony with FAO, (2010) who found that NTFPs are important tool in addressing poverty issues for marginalized, catchment forest dependent communities, by contributing to livelihood outcomes including food security, health and wellbeing and income. In many parts of the world these resources are critical especially for rural poor men and women, and may provide them the only source of personal income. Chakrabarti, (2005) concurred with the finding when she opined that since the survival of most households is dependent on the livelihoods identified above, it is likely to aggravate poverty which is often endemic in rural areas. An important emphasis is to understand how this increased poverty manifest within a gender perspective, that is, the socially determined roles female or male are expected to play in a society. This assessment is important because according to the district's poverty profiling, it is stated that women are more vulnerable to poverty than men (Asante Akim Central Municipal Assembly, 2010).

CONCLUSION AND RECOMMENDATION

Challenges of deforestation among others include forest clearing for farming purpose, logging of wood for timber and fuel wood, the consequences of deforestation are decreased rural household incomes, rural poverty among the villagers among others, there was no significant difference between the responses of male and female respondents, there was significant difference between the responses of the respondents based on their household incomes, deforestation contributes to decreased income of the rural households, and lastly deforestation has significant relationship with rural poverty. Finally, the findings of this study should be considered in the light of its further limitations apart from the ones highlighted in chapter one. Firstly, external validity was limited by the fact that selected participants were from one Local Government. This means that the result applies only to Yewa South Local Government Area of Ogun State. The generalizability of the results must await the outcome of future research employing samples of forest dependent people in different Local Government of the Federation.

It is recommended that Logging plans should not only be aimed at ecologically sound tree felling practices, it is also very vital that the economic, social, aesthetic, religious and to pophillic benefits of the tropical forests accruing to forest people should be preserved. The forest people should be consulted as regards the specific socio-economic developments required and not what the forest resources exploiters and/or government agencies assume are their needs. Reforestation exercises should be carried out by the State Government and logging companies to replace extracted tree species in the forests. Training courses on appropriate methods of timber harvesting and conveyance out of forest sites should be taught to loggers. Road construction and drag trails should be established in ways, which reduces the opening of the forest to other users and also makes little or no

contribution to induced erosion. Forest areas, which are known to be sensitive to erosion, especially around slopes and stream edges, should be considered for zero or light logging only.

Conflict of Interest

The authors declare that there is no conflict of interest.

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