



PERCEIVED IMPACT OF DEFORESTATION ON RURAL HOUSEHOLDS INCOME: A CASE STUDY OF YEWA SOUTH LOCAL GOVERNMENT AREA OF OGUN STATE

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Abstract

The rate of deforestation and degradation of Nigeria forest resources is alarming. This study was carried out to investigate the impact of deforestation on rural household income in Yewa South Local Government Area of Ogun State. The selection of 180 respondents was done using two stage sampling techniques. Instrument used in data collection was structured questionnaires. Data were analysed and presented in tables using mean, standard deviation, mode, frequency and percentage, hypotheses were tested using inferential statistics (Z- Test, T- test, and Pearson Product Moment Coefficient of Correlation). The major causes of deforestation include; clearing of forest for farming purpose and logging of wood for timber and fuel wood. The perceived consequences of deforestation are decreased rural household incomes and rural poverty among the villagers. There was no significant difference ($p < 0.05$) observed between respondents household income. Deforestation contributes to decreased income of the rural households. This study recommend that Logging plans should be adopted with ecological sound tree felling practices. The benefits such as economic, social, aesthetic and religious of forest people should be preserved. Consultation with the forest people by government agencies or forest resources exploiters should be done – this is to know their socio-economic development need without assuming their needs. Government and logging companies should carry out reforestation exercises to replace extracted tree species in the forests. There should be a zero or light logging in the areas prone to erosion (slopes and stream edges) in the forest.

Keywords: Deforestation, Household income, Demand for agricultural land

Introduction

In Nigeria, most forests are located in the southern axis and they include; Tropical Rainforests, the Swamp forests and Wooded Savannah. The total forest land cover is 91,077,000 Ha (910,770 km²) and this represent 12.18% of the total land area (11,089,000 Ha (110, 890 km²)) of Nigeria. Forest provide varieties of wood and non-wood products such as foodstuffs, medicinal plants, honey, incense, bamboo and so on. Within the Forest are trees, herbs, shrubs, climbers, lianas and other plant species as well as different wild animals that are of great value to the populace.

Forests have both social and economic benefit to the livelihoods of rural households by providing up to 40% of the total household income (Cavendish, 1999b; Mamo *et al.*, 2006). Rural households depend on forests as source of livelihood (WRI, 2005). Majority of rural households in Nigeria have an average land size of <1 hectare with low production and this could be as a result of increased human population (Birhanu, 2009). Due to land fragmentation, farmers are left with option of land clearing for agricultural purposes. Land clearing for agriculture is one of the causes of forest degradation and deforestation. Deforestation is a serious environmental problems that affect the welfare of the people negatively and the overall economy of the country (MoFED, 2002). Other factors like wood fuel harvesting by rural dwellers, logging and expansion of rural areas/villages, policy failure due to implementation and so on are also responsible to deforestation (Mulugeta and Melaku, 2008; Mekonnen and Bluffstone, 2008). The annual rate of deforestation in Nigeria averaged 3.5% which is one of the highest in the world (Martins and Kuriakose, 2017). The forest area declined from 14.9 million ha to 10.1 million ha which translates to the loss of 350,000 to 400,000 ha of forest land per annum (Martins and Kuriakose, 2017). 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. Between 1990 and 2015, Nigeria lost about 35% of its remaining forest resources and over 50% of another wooded land. This situation is pathetic and signaled that the remaining forest area of the country might disappear in the next three decades if nothing is done.

The objective of this study therefore is to examine the impact of deforestation on rural household income and the challenges of deforestation in Yewa South Local Government Area of Ogun State.

Methodology

The Study Area

The study was carried out in Yewa South Local Government area of Ogun State, South-west, Nigeria. Ilaro is the headquarters of Yewa South Local Government with a coordinates of 6°53'00"N 3°01'00"E. The climate of the study area is tropical and characterized with wet and dry seasons. The wet season is associated with the South-West monsoon wind from the Atlantic Ocean while the dry season is associated with the northeast trade wind from the Sahara desert. The temperature ranges between 21 °C and 34 °C while the annual rainfall ranges between 1500mm and 3000mm. The vegetation is fresh water swamp and mangrove forest.

Sample and Sampling Techniques

The sampling techniques was two stage sampling procedure. The first stage was purposive, which involved selection of six (6) villages (Ilaro, Idogo, Ijanna, Erinja, Ilobi and Owoye). In the second stage, 30 respondents were randomly selected each from the villages. A total of 180 respondents were selected for the study. The respondents comprise of farmers, hunters and educated members of the community.

Statistical Analysis

Data were collected, sorted and presented using mean, standard deviation, frequency and standard deviation. The research hypotheses were tested at $p < 0.05$ level of significance using Z-test, independent student's t-test and Pearson Product Moment Coefficient of Correlation (PPMCC) statistics.

Results

The socio-economic characteristics of the rural households was presented in Table 2. Sixty-one percent of the respondents were male while 39% were female. This implies that more males were involved in deforestation than female.

Age distribution of the respondent showed that majority 40% of the respondents were between 31 – 40 years of age, 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 22% and 8% respectively. On the whole, 70% of the respondents 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 70% of the respondents were married, 12% were divorced, 10% were widow and 8% were divorced. This assured that married households have a significant influence on deforestation activities as compared to other participants.

The study showed that 43% of the respondents had no level of formal education; 37% had primary school education, 14% had secondary school education while 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 (60%) of the respondents had 3-6 members, 22% had 7-9 members, 10% had less than 3 members while only 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.

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

Monthly income from income distribution showed that majority 60% of the respondents earned between ₦101,000-150,000 monthly income, 18% of the farm actors were within the monthly income of ₦51,000-100,000, (10%) of the respondents earned between ₦151,000-200000 per month, 7% earned above ₦200,000 per month while monthly income of less than ₦50,000 constituted the least of the respondents with 5%. On the whole 78% of the actors in the study area earned between ₦51,000 - ₦150,000 income monthly.

Table 1: Demography of the respondents (n = 180)

Variables	Frequency	Percentage (%)	Mode
Gender	110	61	Male
Male			
Female	70	39	
Total	180	100	
Age (year)	40	22	
21 – 30			
31 – 40	72	40	31 – 40 Years
41 - 50	54	30	
Above 50	14	8	
Total	180	100	
Marital status	14	8	
Single			
Married	126	70	Married
Divorced	22	12	
Widow(er)	18	10	
Separated	0	0	
Total	180	100	
Ethnicity			
Yoruba	162	90	Yoruba
Igbo	10	6	
Hausa/Fulani	8	4	
Total	180	100	
Education	77	43	No formal education
No formal education			
Primary education	67	37	

Variables	Frequency	Percentage (%)	Mode
Secondary education	25	14	
Tertiary education	11	6	
Total	180	100	
Household size	18	10	
Less than 3 persons			
3 – 6 persons	108	60	3 – 5
7 – 9 persons	40	22	
Above 9 persons	14	8	
Total	180	100	
Major occupation	135	75	Farming
Farming			
Trading	13	7	
Motorcycling	9	5	
Teacher	18	10	
Others	5	3	
Total	180	100	
Monthly Income	9	5	
₦10,000-50,000			
₦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

The results of practices contributing to deforestation was presented in Table 2. The of forest resources with their mean score and standard deviation were reported as follow; Forest was being cleared for farming purpose (mean = 2.87 and standard deviation = 1.1030); logging for fuel wood was heavily practiced in the forest (mean = 3.27 and standard deviation = 0.9821; mining operation which was very destructive to the forest (mean = 3.86 and standard deviation = 0.8344); setting forest ablaze using wildfire to hunt animals was highly intensive (mean = 3.93 and standard deviation = 0.8175); urbanization to create more cities and towns was done by clearing the forest (mean = 3.55 and standard deviation = 0.9926); poverty that caused most houses to rely on the resources obtained from the forest (mean = 3.18 and standard deviation = 1.0184); low illiteracy level among the populace which often lead to removal of the forest (mean = 3.26 and standard deviation = 1.0157); expanding global market for timber had encouraged forest clearing (mean score = 3.86 and standard deviation = 0.9375; while natural causes such as floods and erosions destroying the forest (mean = 3.78 and standard deviation = 0.7912). This implies that setting forest ablaze using wildfire to hunt animals was a great challenge in the study area.

Table 2: Challenges of Deforestation in the study area

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 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

Results in Table 3 showed that the deforestation had the following consequences: loss of bio-diversity (mean =2.92 and standard deviation = 1.0824), depletion of soil and water resources (mean =3.81 and standard deviation = 0.8995), atmospheric pollution

(mean = 3.49 and standard deviation = 1.0023), environmental Calamities (Acid rain, Desertification and Flood) (mean = 3.17 and standard deviation = 1.0601), decreased rural household incomes (mean = 3.79 and standard deviation = 0.8867) while rural poverty among the villagers (mean = 3.53 and standard deviation = 1.1090) concluded the study on consequences of deforestation.

Table 3: Perceived 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: Summary of T-Test Statistics on the Responses of Male and Female Respondents.

Gender	N	Mean	SD	Df	T-cal	T-crit	Prob > T	Decision
Male	110	3.1856	0.1088	178	-0.396	-1.96	0.559	Not Significant
Female	70	3.2078	0.4612					

Source: Field survey, 2020

* P > 0.05

The asterisks indicated that there was no significant difference between the responses of male and female respondents.

Table 5: Summary of F-Test Statistics on Respondents' Responses Based on their Incomes

Sources of Variation	Sum of Squares	Df	Mean Square (Variance)	Fcal	Fcrit	Prob > F	Decision
Treatment	25,030	4	6,257.5	301.26	3.24	0.002	Significant
Error	3,536.007	175	20.771				
Total	28,566.007	179					

Source: Field survey, 2020

* P < 0.05 (significant)

Table 6: 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	180	3.79	0.8867	179	19.516	1.96	0.0002	Significant
Population		2.5						

Source: Field survey, 2020

* P < 0.05

Table 7: Summary of item-total PPMCC on Deforestation and Rural Poverty

Variables	Pearson r	df	T-cal	T-crit	Prob>T	Decision
Deforestation (x)	0.89	2	2.760	1.96	0.0002	Significant
Rural Poverty (y)						

Source: Field survey, 2020

* P < 0.05

Discussion

Table 4 revealed that no significant difference was observed between the responses of male and female respondents on forest deforestation. This finding also agreed with (FAO, 2015; Aguilar *et al.*, 2011; Agarwal, 2009) who found that men control the most valuable forest resources such as timber while women’s control of forest resources could centered on management, use of fuel-wood and non-timber products. The finding was also in corroboration with Kiptot (2015) who asserted that women’s forest livelihoods and employment depend on their access to and ownership of forest resources, which are mainly determined by laws and socio-cultural norms.

Result in Table 6 showed a 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 a significant difference between the responses of the respondents based on their household incomes (F = 301.26 at p<0.05). This finding aligned with Ayinde *et al.* (2013) who reported a strong correlation between income and its capacity to acquire things that were associated with improved standard of living such as food, clothing, shelter, health care, education and recreation. The finding was also

consistent with Debela *et al.* (2012) who maintained that poor households could sell some of their assets such as NTFPs to wealthier households in order to generate income to meet basic household needs. Dewees (2013) concluded that NTFPs can increase household food security and income.

Table 6 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 finding was in line with Boafo (2013) who found a close relationship between deforestation, decreased incomes and poverty of rural households. This is because increased deforestation means loss of livelihood assets and outcomes. This finding aligned with Bosu *et al.* (2010) who maintained that forest loss could reduce forest communities' contributions to national economic growth and also threatens both the livelihoods and traditions of rural dwelling people.

Table 7 showed that deforestation had significant relationship with rural poverty. The 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 can address poverty for the marginalized, catchment forest dependent communities through contribution to livelihood outcomes (food security, health and wellbeing) and income. The survival of most households depend on their livelihoods (Chakrabarti, 2005).

Conclusion and Recommendations

Perceived 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 apply only to Yewa South Local Government Area of Ogun State.

This study recommend that Logging plans should be adopted with ecological sound tree felling practices. The benefits such as economic, social, aesthetic and religious of forest people should be preserved. Consultation with the forest people by government agencies or forest resources exploiters should be done – this is to know their socio-economic development need without assuming their needs. Government and logging companies should carry out reforestation exercises to replace extracted tree species in the forests. There should be a zero or light logging in the areas prone to erosion (slopes and stream edges) in the forest.

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