

Impact of Deforestation on the Socio-Economic Livelihood of Farmers in Rural Communities of Benue State, Nigeria

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Received: April 5, 2023|**Accepted:** May 29, 2023|**Published:** June 30, 2023

Abstract: *This study examined the impact of deforestation on the socio-economic livelihood of farmers in rural communities of Benue State. Four specific objectives and corresponding research questions guided the study. The study used survey research design. The population for this study was nine hundred and seventeen (917) respondents comprising of forest users and teachers of forestry and forest related courses. The sample size of 319 respondents was drawn from the population using simple random sampling. The instrument for data collection was a 21-item structured questionnaire titled "Deforestation Impact Questionnaire (DIQ)" with a four point response options of Strongly agreed (SA), Agreed (A), Disagreed (D) and Strongly disagreed (SD) with a corresponding nominal values of 4, 3, 2 and 1 respectively. The instrument was validated by three (3) experts and had a reliability coefficient of 0.78. The researchers and three research assistants administered the instrument. Mean was used to answer research questions and standard deviation was used to determine the spread and closeness of responses for each item. Findings of the study indicated that deforestation grant rural people access to affordable cooking energy. It however, increases the rate and volume of run-off thereby increasing the rate of flooding. On the basis of the findings, it was recommended that regulations and legislative measures should be adopted and enforced to mitigate the impact of deforestation on livelihood of rural farmers in Benue State.*

Keywords: Deforestation, Socio-economic livelihood, farmers, rural communities

Introduction

Deforestation is known as one of the most important elements for changes in land use and land cover. It is recognized as a major driver of the loss of biodiversity and ecosystem services. Deforestation constitutes one of the threatening global development challenges and also a serious long-term environmental problem facing Nigeria and Benue State today. Mfon, Akintoye, Mfon, Olorundami, Ukata and Akintoye, (2014) deforestation refers to indiscriminate cutting down of

Citation: Wever, Azuaga & Fanafa (2023). Impact of Deforestation on the Socio-Economic Livelihood of Farmers in Rural Communities of Benue State, Nigeria. *International Journal of Agricultural and Home Economics Education* 10(1), 73-80.

trees or over-harvesting of trees in an area. It is simply defined as the loss of trees' cover usually as a result of forests being cleared for other land uses.

There is increasing societal concern about the effects of deforestation especially in this 21st century because of the mixed effects; socio-economic benefits and negative effects that it produces. On the positive side, the loss of the world's forest resources has contributed to the fulfillment of households' livelihoods and provided other socio-economic, cultural and spiritual benefits. It is identified that many people live in and around forests benefitting partly from the forests for their livelihoods (Anderson, 1990). The author further noted that deforestation contributes tremendously to long-term environmental consequences like global warming, biodiversity loss and soil degradation as well as increased poverty among rural people that live around the forest areas.

Human activities thus significantly have adverse effects on the forest and the environments. Forest is one of the factors that regulate the temperature of a particular area. Therefore, its removal can cause a rise in environmental temperature and affect the people's living conditions. Laurence (1999) identified areas with highest deforestation in the world today to include Asia, Africa and the Americas where the tropics experience the highest pace of conversion at 10 million ha/year. It has been predicted that within the next fifty years, unless adequate measures are taken, most humid tropical forest land area in Africa could be transformed into unproductive land and the deterioration of the savannah into desert will be accelerated (FAO, 2001). Forests are cleared, degraded and fragmented by timber harvest, conversion to agriculture, road construction, human-caused fire, and in myriad other ways. Forests provide a wide variety of highly valuable ecological, economic and social benefits such as carbon storage, soil and water conservation, provision of employment, enrichment of systems, and improvement of urban and rural living conditions hence, where there is no forest, these benefit are greatly missed. Deforestation leads to global warming and climate change (Sumit, Ghosh, Suresh, Dey & Gopal, 2012).

Deforestation also affects economic activity and threatens the livelihood and cultural integrity of forest dependent people by reducing the supply of forest products and causes siltation, erosion, desertification, drought and flooding (Sillah, 2017). Rapid deforestation is now a major problem affecting the daily lives of rural farmers through its effects.

According to Ibrahim, Iheanacho and Bila (2015), the principal effect of deforestation on chemical and a nutritional property of soil is related to a decrease in organic content. This leads to disruption of nutrient cycling mechanism as a result of the removal of deep-rooted trees, which has a serious effect on organic and nutrient content affecting agricultural productivity. Also, agricultural plains or valleys that depend upon forest highlands for their water may suffer flooding or drought as a result of the destruction of the forests. Genetic damages and losses of plants, animals and insects can also be serious and possibly permanent. According to Nze (2012), the economic and human consequences of deforestation include loss of potential wood and paper products among others which may then need to be imported and the loss of forest may run counter to what is for many developing countries the most urgent of all needs—fuel wood for cooking and heating. This research therefore seeks to investigate the deforestation effect on the socio-economic life of rural farmers in Benue State.

Statement of the Problem

Deforestation remains a central problem in Nigeria, especially the high forest zone of Nigeria due, primarily, to both legal and illegal timber exploitation and arable crop farming. The researchers have observed that, the rate of deforestation has been remarkably high in Benue State. It is evident that there is rapid forest-cover loss in many areas in the Local Government Area. There are varied opinions on the factors accounting for forest loss in area.

The concomitant repercussions associated with deforestation cannot be overemphasized. It is also observed that, severe deforestation negatively affects the agricultural productivity and potentials of farm lands thereby affecting the quality of life especially in rural farming communities. The socio-economic life and livelihood of rural farming households depends largely on agricultural productivity. The problem of this study is therefore posed in question form thus: Does deforestation affect the socio-economic livelihood of farmers in rural communities of Benue State?

Objectives of the Study

The main objective of this study is to examine the effect of deforestation on the socio-economic livelihood of farmers in rural communities of Benue State, Nigeria. Specifically, the study sought to:

- identify the causes of deforestation in Benue State;
- examine the positive effects of deforestation on socio-economic livelihood of farmers in rural communities of Benue State;
- examine the negative effects of deforestation on the livelihood of farmers in rural communities of Benue State and
- ascertain the strategies in controlling deforestation in rural communities of Benue State.

Research Questions

The following questions were answered by the study.

- What are the causes of deforestation in Benue State, Nigeria?
- What are the positive effects of deforestation on socio-economic livelihood of farmers in rural communities of Benue State, Nigeria?
- What are the negative effects of deforestation on the livelihood of farmers in rural communities of Benue State, Nigeria?
- What are the strategies in controlling deforestation in rural communities of Benue State, Nigeria?

Methodology

Research Design

The research design adopted by this study was survey design. The design entails the collection and use of data from a given population to describe certain characteristic features of the population. The design was considered appropriate for this study since data was collected from a large sample which was a representative of the total population using questionnaire.

Area of the Study

The study was conducted in Benue State. The State has 23 local government areas and lies largely within the tropical zone and has a vegetation of low forest and grassland in the northern part. The major occupation of the people of the State is farming, fishing, hunting and lumbering at both subsistence and commercial levels.

Population of the Study

The population for this study was nine hundred and seventeen (917) respondents comprising of rural farmers who are forest users and secondary school teachers of forestry and forest related courses in Benue State.

Sample and Sampling

The sample of 319 rural forest users and teachers of forestry and forest related courses. The sample size was randomly drawn across the twenty-three (23) LGAs of Benue State. Fourteen (14) farmers and teachers were selected from 20 LGAs while thirteen (13) farmers and teachers were selected from the remaining 3 LGAs.

Instrument for Data Collection

The instrument for data collection was a 21-item structured questionnaire titled "Deforestation Impact Questionnaire (DIQ)" which was developed by the researchers. The instrument had information on the aspects of causes of deforestation, positive and negative effect of deforestation and the strategies for controlling deforestation. The items had a four-point response option of Strongly agreed (SA), Agreed (A), Disagreed (D) and Strongly disagreed (SD). The response options also had corresponding nominal values of 4, 3, 2 and 1 respectively.

Validation and Reliability of the Instrument

The instrument was validated by three experts from the Departments of Forestry, Agricultural Education and Educational Foundations and General Studies, all of the Joseph Sarwuan Tarkaa University, Makurdi. After trial testing, a reliability coefficient of .78 was obtained using Cronbach Alpha reliability method.

Method of Data Collection

The instrument was administered on the respondents by the researchers and three (3) research assistants. The research assistants were trained on how to administer and retrieve the instrument. Three hundred and seventeen (317) copies of the questionnaire were administered on the respondents in all. Out of this number, two hundred and ninety-seven (297) copies of the questionnaire were retrieved and analyze.

Method of Data Analysis

Data were analyzed using mean to answer research questions. Any item with a mean value of 2.50 and above was regarded as accepted whereas any item with a mean value less than 2.50 was regarded as not accepted.

Results and Discussion

Analysis of Research Questions

Table 1: Mean ratings and standard deviations of respondents on the causes of deforestation in Benue State, Nigeria

S/No	Item Description	\bar{x}	SD	Decision
1	Deforestation is caused by inadequate re-planting of deforested plants	2.77	0.59	Accepted
2	The high cost and scarcity of kerosene and cooking gas encourage massive consumption of fuel wood and charcoal	2.84	0.61	Accepted
3	The timber and wood consumption in paper manufacturing lead to deforestation	2.81	0.60	Accepted
4	The current economic hardship make people to involve in firewood and charcoal hawking and selling which promotes deforestation	3.10	0.72	Accepted
5	Clearing of trees for expansion of farming land lead to deforestation	2.56	0.56	Accepted

Result of the findings in Table 1 revealed that, all the items had their mean value ranging from 2.56 to 3.10 which is greater than 2.50 benchmark indicating that all the items represent the causes of deforestation in the study area. Furthermore, the standard deviation value ranging between 0.56 to 0.72 indicate that the respondents are not far from the opinion of each other in their responses. The findings of the study are in line with that of Tindan (2013) who opined that, bush fires, indiscriminate logging and conversion of forest to farmland are the causes of deforestation.

Table 2: Mean rating and standard deviations of respondents on the positive effects of deforestation on socio-economic livelihood of farmers in rural communities of Benue State, Nigeria

S/No	Item Description	\bar{x}	SD	Decision
1	Deforestation helps rural farmers to expand their farm lands	2.93	0.64	Accepted
2	Rural people deforest to create arable land for production of food crops	3.23	0.79	Accepted
3	Deforestation create healthy environment in rural communities	3.08	0.71	Accepted
4	The trade of firewood and charcoal is an obvious source of substantial income for ruler farmers	3.23	0.79	Accepted
5	Deforestation makes rural people to have access to affordable cooking energy	3.05	0.69	Accepted

Result of the findings in Table 2 indicated that, all the items had their mean value ranged between 2.93 to 3.23 which are greater than 2.50 benchmark indicating that all the 5 items represent the positive effect of deforestation on socio-economic livelihood of farmers in rural communities. Additionally, the standard deviation value ranging between 0.64 to 0.79 indicate that the respondents are not far from the opinion of each other in their responses. The findings agree with Wiyo, Fiwa and Mwase (2015) who asserted that, approximately 60 million indigenous people dependent on forests for income and agro-forestry farming systems. Similarly, Onwuka (2012) found that, income from forest activities makes up about one fifth of total household income for rural households living in or near forests.

Table 3: Mean rating and standard deviations of responses of respondents on negative effects of deforestation on the livelihood of farmers in rural communities of Benue State, Nigeria

S/No	Item Description	\bar{x}	SD	Decision
1	Deforestation increased the rate of run-off which results to flooding	3.18	0.76	Accepted
2	The destruction of wildlife habitat has drastically reduced animal populations and productivity	2.84	0.60	Accepted
3	Deforestation distort the stability of climate and brings about climate change	2.95	0.65	Accepted
4	Deforestation threatens the existence of other species and undermines the valuable services provided by biological diversity	3.22	0.79	Accepted
5	Soil degradation particularly loss of soil fertility is a known effect of the loss of forests to grasslands	3.32	0.85	Accepted

Result of the findings in Table 3 indicated that, all the items had their mean value ranged between 2.84 to 3.32 which are greater than 2.50 benchmark indicating that all the 5 items represents the negative effect of deforestation on socio-economic livelihood of farmers in rural communities. Furthermore, the standard deviation value ranging between 0.60 to 0.85 indicate that the respondents are not far from the opinion of each other in their responses. The findings as indicated in Table 3 agrees with Mohammed (2014) who identified global warming, soil degradation, erosion, climate change, habitat loss as negative effects of deforestation. Similarly, Abiola, Ademu and Medugu (2016) opined that there has been a global concern about the possible consequence of deforestation on atmospheric conditions.

Table 4: Mean rating and standard deviations of responses of respondents on the strategies in controlling deforestation in rural communities of Benue State, Nigeria

S/No	Item Description	\bar{x}	SD	Decision
1	Creation of the poverty reduction programmes for farmers in rural communities	3.05	0.69	Accepted
2	The empowerment of rural communities will help to curtail cutting down of trees as fuel wood for home consumption	2.88	0.62	Accepted
3	Governments can impose realistic prices on stumpage and forest rent	2.92	0.63	Accepted
4	Investment in improving the sustainable productivity of the forest	3.09	0.81	Accepted
5	Forest managers need to be adequately educated on appropriate forest policy formulation	3.02	0.68	Accepted
6	Forest regulatory measures should be effectively enforced in rural communities	3.39	0.91	Accepted

Findings from Table 4 indicates that, all the six (6) items had their mean value ranged between 2.88 to 3.39 which are greater than 2.50 benchmark indicating that all the items are the various strategies in controlling deforestation in rural communities. Furthermore, the standard deviation values ranging from 0.62 to 0.91 indicates that the respondents are not far from the opinion of each other in their responses. The findings corroborates Ijaiye and Joseph (2004) who observed

that, legislative and regulatory measures at Federal and State levels in Nigeria provide for an impressive array of enforcement and compliance mechanisms in forests resources management.

Conclusion and Recommendations

This study has established that, deforestation which results partly from clearing of trees for expansion of farming land, timber and wood consumption in paper manufacturing encourages massive consumption of fuelwood and charcoal selling contributes to environmental degradation especially desertification and soil erosion including loss of biodiversity. On the positive note, deforestation helps rural farmers to expand their farm lands. Furthermore, several strategies including legislative and regulatory measures are adopted to control deforestation in rural farming communities. Based on the findings of this study, the following recommendations are proffered:

- Farmers should engage in bush fallowing to allow unfertile land to regenerate after some time before putting the land into use.
- Government should provide farmers with farm inputs and extension services to educate rural peasant farmers on latest local techniques for maximum output.
- Existing forests need to be identified and protected to improve biological diversity status with appropriate sanctions on defaulters and incentives for promoters of tree planting campaigns.
- Regulatory agencies should enforce wide range of policy statements, legislative and regulatory measures to encourage local people and institutional participation in forestry management and conservation.

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