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EFFECT OF DEFORESTATION ON LIVELIHOOD PATTERN OF FOREST FRINGE COMMUNITIES IN KURMI LOCAL GOVERNMENT AREA OF TARABA STATE.

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ABSTRACT

This study deals with effect of deforestation on livelihood pattern of forest fringe communities in Kurmi Local Government Area. The study is guided by two objectives which are to; investigates the effects of deforestation on agricultural practices in Kurmi Local Government Area and examines the impact of deforestation on income levels and well-being of the communities in Kurmi Local Government Area. The study adopted a descriptive survey design where mean and standard deviation was used to analyse the data obtained from the field. The population of the study consisted of 355 people from Kurmi Local Government Area, Taraba State and the results of the study shows that climate change, windstorm, desert encroachments, extinction of plant and animal species in the area and government policies on deforestation stops people from using the forest. The study recommended that farmers should be trained in other alternative livelihood approaches such as Beekeeping, grass cutter and snail rearing, garri processing and mushroom farming, this is so because of the high demand for honey, grass cutter, snail and mushroom in urban centres across the country.

1. Introduction

Deforestation which is seen as the large-scale removal of forest cover for non-forest use, has far-reaching implications for ecological balance and human well-being. Among those most directly affected are forest fringe community groups living in close proximity to the forests who depend heavily on them for the daily sustenance, income, and cultural practices. The disruption of these communities' livelihood patterns due to deforestation is a multidimensional problem, touching upon economic, social, and ecological aspects of life. Forest fringe communities traditionally rely on forests for fuelwood, fodder, timber, non-timber forest products (NTFPs), medicinal plants, and water resources (Sharma & Sinha, 2018). These resources form the basis of their subsistence and market-based activities. With increasing deforestation due to agricultural expansion, logging, mining, and infrastructure development, the availability of these resources is declining rapidly. This has resulted in a shift from forest-based livelihoods to alternative, often insecure, income-generating activities such as wage labor or migration to urban centers (Chakravarty *et al.*, 2012). The loss of access to forest resources significantly affects food security. Many forest fringe households supplement their diets with wild edibles, bush meat, and fruits. The disappearance of forest cover leads to a decline in biodiversity and, consequently, the availability of these nutritional sources (Angelsen *et al*., 2014). In some regions, such as parts of central and eastern India, women and children bear the brunt of this shift, as they are traditionally responsible for collecting forest produce. Deforestation thus increases their workload and reduces their time for education and other activities (Kumar & Kerr, 2012). Moreover, deforestation can erode indigenous knowledge systems. Forest fringe communities have historically developed intricate ecological knowledge that guides sustainable resource use. As forests disappear, the relevance and transmission of this knowledge decline, undermining cultural identity and resilience (Posey, 1999). The weakening of community-based forest management institutions is another consequence. These institutions often lose legitimacy when communities are excluded from decision-making or displaced due to development projects (Sunderlin *et al*., 2005). The economic consequences are equally stark. NTFPs such as honey, bamboo, tendu leaves, and lac are vital for income generation, especially among the poorest households. According to a study by Ved and Goraya (2008), more than 275 million people in India alone depend on NTFPs. As deforestation reduces access to these products, household incomes shrink, pushing families into poverty. Furthermore, forest

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degradation often leads to soil erosion and reduced water availability, negatively affecting agricultural productivity in adjoining lands (FAO, 2020). There is also a notable shift in the structure of community labor. With fewer opportunities in traditional forest-based occupations, many men migrate seasonally or permanently to nearby towns for unskilled labor. This demographic shift often leaves women and the elderly in charge of both domestic and farming responsibilities, altering gender roles and family dynamics (Behera & Engel, 2006). The increased dependence on market-based livelihoods exposes these communities to economic fluctuations and environmental shocks they were previously shielded from. Deforestation disrupts the complex and deeply interwoven relationship between forest fringe communities and their natural environment. The effects are evident in changes to income patterns, food security, labor allocation, cultural knowledge, and community cohesion. Addressing these issues requires integrated forest management policies that prioritize community participation, sustainable use of forest resources, and secure land tenure. Without such interventions, the traditional livelihood systems of these vulnerable communities will continue to erode, with long-term consequences for both human and environmental well-being. Deforestation has significant impacts on the livelihood patterns of forest fringe communities, particularly in regions like Kurmi Local Government Area (LGA) of Taraba State, Nigeria. These communities are heavily dependent on forest resources for their sustenance, including food, fuelwood, medicine, and income from non-timber forest products (NTFPs). The gradual or rapid loss of forests in Kurmi LGA has altered these traditional livelihood practices, leading to various socio-economic challenges. One of the primary effects of deforestation on forest fringe communities in Kurmi LGA is the alteration of agricultural practices. Traditionally, these communities engage in subsistence farming, relying on the rich forest soils that have been sustained by the forest ecosystem. Deforestation leads to soil degradation, reduced fertility, and increased erosion, making it difficult for farmers to maintain crop yields (Bako, 2016). As the forest cover diminishes, the microclimate changes, resulting in irregular rainfall patterns, which further affect crop production. This shift forces many farmers to either abandon farming or seek alternative livelihoods, often with limited success. Deforestation in Nigeria is a significant environmental challenge that has profound socio-economic consequences, particularly for rural communities whose livelihoods and well-being are closely tied to forest ecosystems. Nigeria has one of the highest rates of deforestation in the world, losing approximately 3.7% of its forest cover annually due to agricultural expansion, logging, infrastructure development, and fuelwood harvesting (FAO, 2020). These environmental changes have deeply affected income levels and the overall well-being of forest-dependent communities. Forests in Nigeria provide a variety of products that serve as direct sources of income for rural households. These include timber, fuelwood, medicinal plants, nuts (like shea and kola), bushmeat, honey, and other non-timber forest products (NTFPs). Many communities, particularly in the middle belt and southern regions, rely heavily on these resources for daily subsistence and for selling at local markets (Adepoju & Salau, 2007). As deforestation depletes the availability of these products, households experience a decline in both subsistence resources and cash income This frightening spate of forest degradation potentially poses enormous adverse effects on forest reserves. These forest communities exert excessive pressure on forest reserves as many of those living in such communities have their livelihoods predicated on the availability, access and utilization of forest products (Appiah, 2009). The concomitant repercussions associated with this forest degradation include exposing such degraded forest communities as well as their farmlands to high risk of erosions and floods. Additionally, forest degradation risks the quality of life in forest communities and beyond, militates against the stability of climate and local weather, threaten the existence of other species and undermine the valuable services provided by biological diversity. Ultimately, these effects affect the livelihoods in such forest fringe communities. The research brought to fore the challenges and prospects that forestry in Kurmi local government area face and this would inform policy decisions to get the best out of the forests we have in Nigeria. These findings from the study may possibly assist policy makers in developing pertinent policies to protect the forests in Nigeria and also, provide better alternatives for the people to take advantage of the forest for their own development. In view of the above the study sought to investigates the effects of deforestation on agricultural practices in Kurmi Local Government Area and examines the impact of deforestation on income levels and well-being of the communities in Kurmi Local Government Area.

2. Materials and Methods

2.1 Research design

The study employed a descriptive survey method. Survey research is capable of collecting background information and hard to find data and the researcher would not have the opportunity to motivate or influence respondents "responses". The descriptive survey approach was chosen for the present study, because it seeks to gain insight into a phenomenon as a means of providing basic information in an area of study (Bless & Higgon-Smith 1995).

2.2 Population and Sampling Technique

The population of this study covered people from the Kurmi Local Government. According to National Population Commission, the local government have a total population of 91,531. The sampling size for the study was determined

using Krejcie & Morgan (1970). According to the table, for a population of 91531 a total sample size of 364 sample size was appropriate.

2.3 Method of Data Analysis

The data collected from the field was analysed using mean and standard deviation while. Correlation analysis (SPSS) was used to test hypotheses to show the relationship between the independent and dependent variables.

3.0 Results

3.1 Descriptive

Table 1: Mean and standard deviation scores on the effect of deforestation on agricultural practices

S/N	Items	No.	SA	A	D	SD	$\bar{X}$	δ	Remark
1	Climate change is as a result of deforestation in the area.	355	154	121	51	29	3.30	0.46	Agree
2	Wind storm which has effect on the buildings and plants are consequences of deforestation.	355	122	142	32	59	3.00	0.45	Agree
3	Desert encroachment is a reason for deforestation.	355	120	115	40	80	3.10	0.83	Agree
4	Extinction of plant and animal species in the area.	355	142	120	51	42	3.10	0.30	Agree
5	Government policies on deforestation which stops people from using the forest.	355	109	147	60	39	3.30	0.64	Agree
	Grand mean/Standard deviation						3.16	0.54	Agree

Criterion mean: $\bar{X} \geq 2.50 \rightarrow$ agree

$\bar{X} < 2.50 \rightarrow$ disagree

Results of Table 1 show the mean and standard deviation scores the rating items on the impact of deforestation on agricultural practices in Kurmi Local Government Area, Taraba State. The data distribution is all in favour of all the items aligning to impact of deforestation on agricultural practices. All the items have mean rating scale above 2.50, including grand mean. This shows that Climate change is as a result of deforestation in the area, Wind storm which has effect on the buildings and plants are consequences of deforestation, desert encroachment is a reason for deforestation, extinction of plant and animal species in the area and government policies on deforestation which stops people from using the forest are effect of deforestation on agricultural practices (grand mean = 3.02) in Kurmi Local Government Area.

Table 2: Mean and standard deviation of deforestation on income levels and well-being of the communities

S/N	Items	No	SA	A	D	SD	$\bar{X}$	δ	Remark
1	More than half of the land in Kurmi is deforested.	355	112	151	45	47	3.20	0.75	Agree
2	Most of the areas with fertile land in the areas is deforested.	355	131	121	32	71	2.70	0.90	Agree
3	Crops does not perform well because of the extent of deforestation in the area.	355	147	151	42	15	2.50	1.12	Agree
4	Gradual encroachment of desert is setting in the land as a result of deforestation.	355	109	171	35	40	3.20	0.75	Agree
5	Deforestation have affected rainfall and seasonal planting.	355	144	109	65	37	3.50	0.50	Agree
	Grand mean/Standard deviation						3.02	0.80	Agree

Criterion mean: $\bar{X} \geq 2.50 \rightarrow$ agree

$\bar{X} < 2.50 \rightarrow$ disagree

Results of Table 2 show the mean and standard deviation scores the rating items on effect of deforestation on income levels and well-being of the communities. The data distribution is all in favour of all the items aligning to effects of deforestation on income levels and well-being of the communities. All the items have mean rating scale above 2.50,

including grand mean. This shows that more than half of the land in Kurmi is deforested, most of the areas with fertile land in the areas is deforested, crops does not perform well because of the extent of deforestation in the area and deforestation have affected rainfall and seasonal planting (grand mean = 3.02) in Kurmi Local Government Area.

4.0 Discussion

The findings of the study show that climate change, windstorm, desert encroachments, extinction of plant and animal species in the area and government policies on deforestation which stops people from using the forest. The findings are in line with a study by Akachuku (2021) opined that forest especially those in the tropics serve as storehouses of biodiversity and consequently deforestation, fragmentation and degradation destroy the biodiversity as a whole and habitat for migratory species including the endangered ones. Tropical forests support about two thirds of all known species and contain 65% of the world's 10,000 endangered species (Myers & Mihermeier, 2000). In Nigeria and Kurmi LGA, many trees, shrubs, herbs and assorted animals have been depleted while some are endangered. Mfon *et al.* (2014) reported that several plant species have been over exploited especially those with edible seeds, nuts and kernels are now endangered. Most primates such as guenons, mangabeys, drills, chimpanzees and gorillas are now endangered (Akachuku, 2006).

Another findings of the study shows that the people in the area have loss means of livelihood as half of the land is deforested, fertility eroded, crops does not perform well because of the extent of deforestation in the area and gradual encroachment of desert is setting in the land as a result of deforestation. The findings as reported by Poku *et al*., (2003) who opined that the livelihood depends on the continued existence of suitable wildlife habitats. With the introduction of commercialisation, trading has become very popular in most rural economies. Items traded in include food, crops, local and imported products. Women and the youth used to do most of the selling; however, the trend is now changing since more men are getting involved. In some villages and towns cottage industries such as pottery, woodcarving, soap making, basket weaving, cloth making, wood industry, palm oil extraction and food processing e.g. corn or rice mill are found. Some rural dwellers that have some forms of formal training are employed in the public services such as teaching, nursing, or in providing services to the public. These people may be few due to lower levels of education in the rural areas (Aduse-Poku *et al*., 2003).

5. Conclusion

The study established that deforestation imparts the lives of respondents in many areas including affecting crop production in the areas of delayed commencement of planting seasons, pest and diseases infestation, level and quality of crop yields, access to water for irrigation farming and reduction in the income levels of farmers. Although several efforts have been initiated to mitigate these impacts the study revealed that they have been thwarted by challenges such as low institutional capacity, unavailability of funds, unfavorable farming methods and low educational background of farmers. Given the critical role crop production in the livelihood of the residents as well as economy of the region, it is imperative that pragmatic measures are adopted to mitigate the negative impacts that deforestation is having on it. In this regard the study recommended continuous education and sensitization of farmers, strengthening of the public institutional stakeholders and promotion of active research as some of the ways for mitigating the impacts of climate change on crop production.

6. Recommendations

i. **Education and Sensitization of Farmers**: The respondents should be seriously educated about the rules governing the forest reserve, methods of tree production, sustainable forest management practices, conservation and livelihood-based approaches. There is the need to introduce the extension services which is undertaken by the Ministry of Food and Agriculture to educate the farmers. These extension officers will educate the respondents about forest conservation practices, how to sustain the forest reserve, good practices in handling of tree crops and the rules governing the use of forest reserve. The extension should be stationed in each of the communities in order for the person to easily accessible to the respondents.

ii. **Diversify the Local Economy through Training of the Respondents in Alternative Livelihood Ventures**: The farmers should be trained in other alternative livelihood approaches such as Beekeeping, grass cutter and snail rearing, garri processing and mushroom farming. This is so because of the high demand for honey, grass cutter, snail and mushroom in urban centres across the country. That is there is easy market for these products. For a start, five people each from the fringe communities should be selected, they should be giving training about bee-keeping, grass cutter rearing, garri processing and mushroom farming. The members who are willing to be trained are grouped in batches of fifteen and they are giving the necessary training. This should be a partnership between the community and the

forestry commission. After that the trainees are helped to set up a business of their own through the revenues that are accruing from timber. The progresses of the trainees are monitored at least twice a month to see how they are faring. When this is done the respondents will become less dependent on the forest reserve for their survival and this will diversify the local economy.

iii. **Strengthening of the Public Institutional Stakeholders**: There is the need to promote active private sector participation in the mitigation of the impacts of climate change on crop production. This will help expedite the development of innovative and cost-effective approaches to reduce deforestation. In this regard, it is imperative to enhance this role and ensure that partnerships are directed toward the most mutually beneficial outcomes. This will go a long way to contribute in addressing the negative impacts of changing forest cover on livelihood patterns.

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