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Effect of Deforestation on Livelihoods of Rural Households in Ejigbo Local Government Area, Osun State

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Abstract

This study investigated the effects of deforestation on the livelihoods of rural households in Ejigbo Local Government Area, Osun State. A multistage sampling technique was employed to select 120 respondents, of whom 80 completed questionnaires were retrieved and analyzed, resulting in a response rate of 66.7%. Data were collected through interview schedules and analyzed using descriptive statistics, while Chi-square and Pearson Product-Moment Correlation (PPMC) were used to test the hypotheses. Findings revealed that charcoal production and sales ($\bar{x} = 3.09$) were the most prominent livelihood activities among respondents, reflecting households' dependence on forest resources. The leading causes of deforestation were fire outbreaks (87.5%), livestock grazing (73.8%), and land clearing for crop production (73.8%). The most critical effects of deforestation identified were soil erosion ($\bar{x} = 1.78$), food shortages and hunger ($\bar{x} = 1.70$), and rural poverty due to job losses ($\bar{x} = 1.68$). Households adopted measures such as planting and replanting economic trees ($\bar{x} = 1.53$), financial empowerment of indigenous communities ($\bar{x} = 1.23$), and promotion of sustainable agricultural practices ($\bar{x} = 1.11$). Results further showed that socio-economic variables such as sex, marital status, cooperative membership, access to credit, age, education, household size, years of experience, and income from livelihood activities were not statistically significant in influencing contributions toward mitigating deforestation. However, secondary occupation ($X^2 = 22.281, p = 0.004$) was significant, indicating that households with diversified income sources were more actively engaged in conservation efforts. The study concludes that deforestation poses serious ecological and socio-economic challenges to rural households. It is therefore recommended that regular sensitization campaigns and training should be conducted to raise awareness of the ecological and socio-economic impacts of deforestation.

Keywords: Deforestation, rural livelihoods, charcoal production, forest conservation.

Introduction

Forests play an indispensable role in sustaining rural livelihoods globally. They provide necessities, serve as habitats for diverse wildlife species, regulate and moderate the climate, and help prevent soil erosion and flooding. Currently, forests cover about 31% of the Earth's land surface, store approximately 296 gigatons of carbon, and harbor the majority of the world's terrestrial biodiversity. According to the UN FAO (2014), as cited in Miller and Hajjar (2020), an estimated 1.3 billion people depend directly on forests and forest products for their livelihoods. Newton *et*

al. (2016), also cited in Miller and Hajjar (2020), observed that around 1.6 billion people live within 5 km of a forest and rely heavily on forest resources, underscoring the growing global dependence on forest ecosystems. Beyond subsistence, forests safeguard genetic diversity, offering sources of medicinal plants, high-yield foods, and other essential products (Sambe *et al.*, 2018). In many rural communities, forests remain central to livelihood support, benefiting an estimated 20 million rural inhabitants (Jatto *et al.*, 2021).

Regrettably, the contribution of forests to livelihoods is diminishing as a result of

deforestation, a challenge that has become a global concern. According to the 2018 Sustainable Development Report, the Earth lost about 100 million hectares of forest between 2000 and 2015. Similarly, the UN Food and Agriculture Organization (FAO) Forest Resource Assessment indicates that since 2010, the world has experienced an average net forest loss of 4.7 million hectares annually, with actual deforestation rates projected to be even higher. Between 2015 and 2020 alone, forests were lost at an alarming rate of 10 million hectares per year, while the extent of primary forests worldwide declined by more than 80 million hectares since 1990 (FAO, 2021).

Deforestation remains a major environmental challenge that significantly undermines the resilience and spatial distribution of forests across regions. Forest degradation is largely driven by human activities, which are in turn influenced by macroeconomic, demographic, technological, institutional, and political dynamics. Unlike sudden disturbances, it unfolds gradually, often taking years before its impacts become visible, thereby reflecting the progressive deterioration of forest ecosystems over time (Vasquez-Grandón, et al., 2018). In Nigeria, this trend is ongoing and has become increasingly pronounced with rising population growth and rapid urbanization (Sambe et al., 2018; Fasona *et al.*, 2018). Its consequences are far-reaching, with desertification being one of the most critical outcomes (Omofonmwan and Osa-Edoh, 2008). Derouin (2019), observed the current trends of rapid deforestation occurring in the tropics as a result of access made possible by the construction of new roads through the dense forests.

Despite the invaluable goods and services provided by forest ecosystems, the persistent clearing of forests has resulted in a steady decline of forest resources across Africa, with Nigeria being among the most affected. The country loses an estimated 285,000 hectares of forest annually (Sims, 2021), and if this trajectory continues, nearly half of its forest cover could disappear within

the next decade. As such, deforestation is widely acknowledged as the most urgent threat to Nigeria's forest ecosystems (Sims, 2021; Fasona, et al., 2018). It is therefore imperative for this study to investigate the effects of deforestation on rural livelihoods in Ejigbo Local Government Area of Osun State.

Objectives of the Study

The overall objective of this study is to assess the effect of deforestation on the livelihoods of rural households in Ejigbo Local Government Area of Osun State.

The specific objectives are to:

- i. examine the livelihood activities of rural households in the study area;
- ii. investigate the underlying causes of deforestation in the area;
- iii. analyze the effects of deforestation on household livelihoods; and
- iv. explore the strategies adopted to mitigate the impacts of deforestation.

Hypothesis of the Study

H₀₁: There is no significant relationship between the socio-economic characteristics of respondents and their livelihood activities.

Methodology

This study was conducted in Ejigbo, an ancient Yoruba town that serves as the headquarters of the Ejigbo Local Government Area, one of the oldest in Osun State, Nigeria. The town lies about 35 km northeast of Iwo, 30 km south of Ogbomoso, 24 km southeast of Ede, 40 km northwest of Osogbo (the state capital), and 95 km northeast of Ibadan within Latitude, 7° 53' 56.01"N and Longitude, 4° 19' 15.49"E. It falls within the Ede North/Ede South/Egbedore/Ejigbo federal constituency. The study area experiences an average annual rainfall of 52.35 inches (1,330 mm), though significant variations occur from year to year. The rainy season typically spans from April to October. Farming and drumming are the people's major occupations, with maize, cassava, and vegetables being the most commonly cultivated crops. The study area is known for dependence on forest resources.

The population of the study comprises all rural households in Ejigbo Local Government Area of Osun State. A multistage sampling procedure was employed for this study. At the first stage, a simple random sampling technique was used to select two districts (Ife-Odan and Ejigbo) out of the four existing districts (Olla, Ilawo, Ejigbo, and Ife-Odan). At the second stage, three villages were randomly selected from each of the chosen districts. Finally, at the third stage, twenty (20) household heads were randomly selected from the household lists in each selected village. This resulted in a total sample size of one hundred and twenty (120) respondents. Primary data were obtained through a well-structured interview guide designed to elicit information relevant to the objectives of the study. A list of livelihood sources was presented to the respondents, and their responses were measured using a three-point scale scored as: always = 2, occasionally = 1, and not at all = 0. Mean scores were then computed for each livelihood source. The causes of deforestation were assessed using a dichotomous scale scored as Yes = 1 and No = 0. The effects of deforestation on livelihoods were determined using a three-point scale scored as very serious = 2, serious = 1, and not serious = 0. Descriptive statistics such as frequency count, percentage, and mean were used to analyze objectives of the study, while chi-square and correlation were used to test the hypotheses. Livelihood source was measured using a three-point scale of always, rarely and not at all. Mean index was calculated for each item.

Result and Discussion

Sources of livelihood among rural households

Results in Table 1 indicate that the most prominent livelihood activity among respondents was charcoal production and sales ($\bar{x} = 3.09$), followed by the collection of wild foods ($\bar{x} = 2.93$), and fishing or harvesting wild honey ($\bar{x} = 2.89$ each). These findings underscore the heavy dependence of households on forest-based activities for both

subsistence and income generation. Charcoal production reflects the persistent challenge of energy poverty, as many rural and urban households continue to rely on forest biomass for cooking and heating. This observation is consistent with FAO (2020), which reported that fuelwood and charcoal remain critical to sustaining livelihoods in sub-Saharan Africa. Similarly, the collection of wild foods and honey highlights the role of forests as direct sources of household nutrition and supplementary cash income. In contrast, the least prioritized livelihood activities were tie-and-dye ($\bar{x} = 2.34$), sales of fruits and nuts ($\bar{x} = 2.29$), and sales of medicinal plants ($\bar{x} = 2.21$). These activities appear to be marginal or occasional, undertaken by relatively few respondents. Their low ranking may be linked to limited local markets, the erosion of traditional practices, or declining availability of these resources. As Olabode *et al.* (2021) observed, while non-timber forest products can contribute to income diversification, they typically serve as supplementary rather than primary livelihood options. Overall, the prominence of charcoal production, wild food collection, and honey harvesting reflects households' strong dependence on forest resources. This pattern also signals vulnerability, given the reliance on extractive practices that may accelerate forest degradation.

Causes of deforestation

Findings in Table 2 identified fire outbreaks (87.5%), livestock grazing (73.8%), and land clearing for crop production (73.8%) as the leading causes of deforestation in the study area. Fire outbreaks largely stem from bush burning for farmland preparation and hunting, which often escalate into uncontrolled wildfires that destroy forest resources. This finding corroborates Ajibade *et al.* (2020), who reported recurrent bush fires as a major driver of forest degradation in southwestern Nigeria. Similarly, livestock grazing and land clearing underscore the central role of agriculture in driving deforestation, consistent with Adeyemi *et al.* (2019) observation that agricultural

expansion remains the leading cause of forest loss in Nigeria. By contrast, the least-cited drivers were flooding of forest areas (47.5%), digging of holes by telecommunication companies (47.5%), and oil extraction (47.5%). These were mentioned by less than half of respondents, suggesting that less serious causes of deforestation. Natural flooding plays only a minor role compared to human-driven

pressures, while oil extraction and telecommunication-related disturbances reflect emerging but limited threats in this largely rural context. However, as Olabode *et al.* (2021) caution, infrastructure development and extractive industries are expanding across Nigeria and may intensify forest loss in the future.

Table 1: Sources of livelihood for rural households

Sources of livelihoods	Mean	Rank
Tie-and-dye	2.34	15
Firewood collection	2.51	13
Palm kernel cracking	2.71	8
Gathering of forest products	2.36	10
Weaving of cloths and mats	2.54	11
Local soap making	2.54	11
Farming	2.50	14
Hunting	2.84	6
Charcoal production and sales	3.09	1
Fishing	2.89	3
Beekeeping	2.88	5
Wild honey collection	2.89	3
Wild food collection	2.93	2
Craft making	2.71	8
Lumbering and mining	2.79	7
Sales of fruits and nuts	2.29	16
Sales of medicinal plants	2.21	17

Source: Field survey, 2025

Table 2: Causes of deforestation

Causes of deforestation	Yes	%
Livestock grazing	59	73.8
Mining activities	45	56.2
Tree felling	57	71.2
Fire outbreaks	70	87.5
Unsustainable forest management practices	51	63.8
Population pressure/overpopulation	53	66.2
Flooding of forest areas	38	47.5
Excavation by telecommunication companies	38	47.5
Oil extraction in forested areas	38	47.5
Land clearing for crop production	59	73.8
Dam construction	39	48.8
Road construction	42	52.5

Source: Field survey, 2025

Effects of deforestation

Findings revealed that the most critical effects of deforestation (Table 3) in the study area were soil erosion ($\bar{x} = 1.78$), food shortages and hunger ($\bar{x} = 1.70$), and rural poverty resulting from job losses ($\bar{x} = 1.68$). These high mean scores indicate that respondents perceive deforestation as having immediate and severe consequences for land quality, agricultural productivity, and household incomes. This aligns with Adeyemi *et al.* (2019) and Ajibade *et al.* (2020), who observed that deforestation in rural Nigeria produces both environmental and socio-economic impacts. In contrast, effects such as increased greenhouse gas emissions ($\bar{x} = 1.00$), global warming ($\bar{x} = 1.01$), and disruption of the water cycle ($\bar{x} = 1.08$) were ranked lower.

The relatively low mean scores suggest that long-term ecological consequences are viewed as less urgent compared to short-term threats to livelihoods. This pattern supports Olabode *et al.* (2021), who found that local communities often prioritize immediate impacts like soil degradation and food insecurity over broader climate-related issues. Overall, deforestation poses the greatest risk to household livelihoods and food security, while its long-term environmental effects are less immediately acknowledged. Mitigation efforts should therefore emphasize soil conservation, sustainable farming practices, and poverty reduction, alongside awareness campaigns on the broader ecological consequences to ensure comprehensive forest management.

Table 3: Effects of deforestation

Effects of deforestation	Mean	Rank
Erosion	1.78	1
Outbreak of disease	1.50	6
Displacement of wild animal	1.20	13
Depletion of forest cover	1.13	15
Reduced availability of medicinal plant	1.54	5
Loss of natural specie and biodiversity	1.38	8
Global warming	1.01	17
Rural poverty as a result of job losses	1.68	3
Disruption of water cycle	1.08	16
Disruption of the ecosystem	1.24	11
Food shortage and hunger	1.70	2
Climate change	1.29	9
Land degradation	1.50	6
Unemployment	1.68	3
Water pollution	1.24	11
Economic consequences	1.29	9
Increased greenhouse gas emission	1.00	18
Loss of habitat and wildlife extinction	1.18	14

Source: Field survey, 2025

Figures in parentheses are in percentage

Mitigation strategies of rural household towards deforestation

The study revealed that rural households adopt several strategies to mitigate the impact of deforestation (Table 4). The most prominent approach was planting and replanting of economic trees ($\bar{x} = 1.53$),

financial empowerment of indigenous communities ($\bar{x} = 1.23$) and promotion of sustainable agricultural practices ($\bar{x} = 1.11$). These indicate that households place greater emphasis on practical and livelihood-oriented interventions. Tree planting not only restores degraded forest areas but also provides long-

term economic and ecological benefits. Similarly, financial empowerment helps households diversify income sources, thereby reducing dependence on forest exploitation, while sustainable agriculture ensures continued food production without further encroachment into forest lands. The findings align with Ajibade et al. (2020) and Adeyemi et al. (2019), who highlighted community-based participation and livelihood-focused strategies as effective tools for addressing deforestation. In contrast, methods such as social empowerment of indigenous communities ($\bar{x} = 0.83$), sensitization on forest protection ($\bar{x} = 0.88$), campaigns against deforestation ($\bar{x} = 0.89$), and raising awareness on the effects of deforestation ($\bar{x} = 0.86$) were less frequently practiced. The relatively low mean scores suggest limited engagement in advocacy and

educational initiatives, as households prioritize immediate, hands-on interventions, such as tree planting, over awareness-raising campaigns. This pattern is consistent with Olabode et al. (2021), who observed that rural communities often give precedence to direct, tangible strategies over long-term educational approaches in forest management. Rural households contributed most effectively to forest conservation through tree planting, sustainable agriculture, and financial empowerment initiatives, while awareness and advocacy measures remain underutilized. Strengthening community education and campaigns could complement these practical actions, providing a more holistic and sustainable approach to mitigating deforestation.

Table 4: Mitigation strategies of rural household towards deforestation

Contribution of rural household towards overcoming deforestation	Always	Rarely	Not at all	Mean	Rank
Planting and replanting of economic trees	49(61.2)	29(30.0)	7(8.8)	1.53	1
Sensitization of members on need to protect the forest	21(26.2)	28(35.0)	31(38.8)	0.88	9
Campaign against deforestation	22(27.5)	27(33.8)	31(38.8)	0.89	8
Reduced overdependence on forest	21(26.2)	30(37.5)	29(36.2)	0.90	7
Setting up appropriate institution against deforestation	24(30.0)	37(46.2)	19(23.8)	1.06	4
Raising awareness on effects of deforestation	21(26.2)	27(33.8)	32(40.0)	0.86	10
Empowering community financially	31(38.8)	28(35.0)	21(26.2)	1.23	2
Promote sustainable agriculture	27(38.8)	35(43.8)	18(22.5)	1.11	3
Encourage urban planning that respect forest	22(27.5)	25(31.2)	33(41.2)	0.86	10
Establish and effectively manage protected to safe guide forest	20(25.0)	29(36.2)	31(38.8)	0.86	10
Strengthen enforcement of environmental laws	27(33.8)	22(27.5)	31(38.8)	0.95	6

Source: Field survey, 2025

Figures in parentheses are in percentage

Test of relationship between socio-economic characteristics and sources of livelihood on rural households

Table 5 presents the result of influence of socio-economic characteristics on rural households' contributions to mitigating deforestation. The results show that most variables, including sex ($\chi^2 = 3.182$, $p = 0.53$), marital status ($\chi^2 = 7.919$, $p = 0.44$), membership in cooperatives ($\chi^2 = 4.957$, $p = 0.29$), access to credit facilities ($\chi^2 = 3.397$, $p =$

0.49), age ($r = 0.063$, $p = 0.58$), years of education ($r = -0.052$, $p = 0.65$), household size ($r = 0.105$, $p = 0.35$), years of experience ($r = 0.168$, $p = 0.14$), and income derived from livelihood activities ($r = 0.044$, $p = 0.70$), were not statistically significant. This implies that demographic and socio-economic characteristics have a limited influence on households' engagement in forest conservation. Similar patterns were observed by Olabode et al. (2021) and Adeyemi et al. (2019), who reported that variables such as

age, sex, and household size often have little effect on rural community participation in environmental initiatives in Nigeria. In contrast, secondary occupation ($X^2 = 22.281$, $p = 0.004$) was statistically significant, indicating that households with diversified income sources are more actively engaged in combating deforestation. This finding corroborates Ajibade et al. (2020), who noted that households engaged in alternative income-generating activities, such as petty trading or

artisanal work, are less dependent on forest resources and more inclined to participate in sustainable agriculture, tree planting, and forest protection efforts. Income diversification thus emerges as a critical factor in strengthening community-based forest conservation. Overall, while demographic characteristics and primary livelihood sources do not significantly determine participation in forest conservation, the presence of a secondary occupation plays an important role.

Table 5: Chi square analysis showing no significant relationship between the socio-economic characteristic on sources of livelihood on rural households

Variables	X^2	df	r-value	p-value	Decision
Sex	3.182	4		0.53	Not significant
Marital status	7.919	8		0.44	Not significant
Secondary occupation	22.281	8		0.004	Significant
Membership of a cooperative	4.957	4		0.29	Not significant
Access to credit facilities	3.397	4		0.49	Not significant
Age			0.063	0.58	Not significant
Years spent on education			-0.052	0.65	Not significant
Household size			0.105	0.35	Not significant
Years of experience in occupation			0.168	0.14	Not significant
Income derived from livelihood activities			0.044	0.70	Not significant

Source: Field survey, 2025

Conclusion and Recommendation

The study concludes that deforestation poses substantial ecological and socio-economic challenges for rural households in Ejigbo Local Government Area. While forest resources remain central to household livelihoods, this dependence accelerates forest depletion and reinforces community vulnerability. Although local efforts such as tree planting and the adoption of sustainable practices are being implemented, these measures remain insufficient without stronger institutional support. The findings underscore the importance of livelihood diversification and environmental education as essential strategies for promoting sustainable forest management in rural communities.

Based on these findings, the study recommends that government agencies and development organizations intensify efforts to

promote alternative income-generating activities that can reduce households' reliance on forest resources. Regular awareness campaigns and training programmes should be conducted to educate communities about the ecological and socio-economic consequences of deforestation. Furthermore, extension services should be strengthened to enhance information dissemination on sustainable practices such as agroforestry, conservation farming, and other environmentally friendly land-use systems.

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