



EFFECT OF FOREST RESOURCES EXPLOITATION ON THE ECONOMIC PROSPERITY OF FARMING HOUSEHOLDS IN AYETORO, YEWA NORTH LOCAL GOVERNMENT AREA OF OGUN STATE, NIGERIA



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Abstract:

This study examines forest resources exploitation and its implications for rural households in Ayetoro, Yewa North Local Government Area of Ogun State, Nigeria. This study involved a sample size of 100 rural households selected from Yewa North Local Government Area of Ogun State. Purposive sampling was employed to choose five communities viz; Ayetoro, Ijoun, Sawonjo, Ibooro, and Igan-Okoto. Data obtained were analyzed using descriptive statistics, Z-test, and students T- test for inferential statistics at $\alpha_{0.05}$. Findings reveal that forest resources exploitation positively impacts rural household socio-economic well-being by providing essential resources like food and fuel. However, it also leads to adverse consequences such as decreased incomes and increased poverty. Challenges include deforestation for agriculture and urbanization, as well as construction activities for residential, recreational, and industrial development.

Keywords:

forest resources exploitation, rural households, socio-economic well-being, challenges, deforestation

Introduction

Forests, covering nearly 25% of the world's land area, play a pivotal role in meeting diverse human needs, including water, food, shelter, medicine, and timber. Additionally, they provide essential environmental services such as biodiversity conservation, watershed protection, and carbon sequestration (Hirakuri, 2013). Forest resources are foundational to the natural resource base of communities worldwide, exerting significant influence on socio-economic prosperity (Sheil, 2013). This dependency is particularly pronounced in sub-Saharan Africa, where rural farming households rely extensively on forest resources for sustenance (Amulya, 2014). Despite the vital importance of forests, global trends indicate alarming rates of deforestation. According to the Food and Agriculture Organization (FAO) (2012), approximately 7.3 million hectares of forest are lost annually, primarily driven by factors such as urbanization, agricultural expansion, timber extraction, and unsustainable land-use practices (Ajake and Enang, 2012). The repercussions of this loss are disproportionately felt in tropical regions, where over 2.5 billion people depend on forests for various services (Ebong *et al.*, 2019). Notably, the demand for timber, exacerbated by housing needs, infrastructure development, and export markets, contributes significantly to forest degradation (Putz, 2011).

Forest resources serve as a cornerstone of socio-economic prosperity offering a spectrum of benefits ranging from tangible utilities like food and timber to intangible ecological services such as carbon sequestration and soil conservation (Ancha *et al.*, 2021). The economic significance of forests is explored by their contribution to national incomes, with the forest sector accounting for approximately \$468 billion globally in 2006 (Adeniyi,

2015). Moreover, forests play a crucial role in supporting the financial prosperity of households, enabling them to meet immediate needs and navigate unforeseen expenses (CFPB, 2017; Michael and Urban, 2020).

In the context of Nigeria, tropical forests constitute a lifeline for rural communities, serving as sources of food, shelter, and income. The significance of forest resources extends beyond meeting subsistence needs to encompass industrial wood products, fuelwood, and non-timber forest products (NTFPs) (Borokini *et al.*, 2010). It is estimated that more than 15 million people in Sub-Saharan Africa derive their livelihoods from forest-related activities, including firewood sales, small-scale sawmilling, and handicraft production (Kaimowitz, 2003). Notably, fuelwood, a primary energy source in rural Nigeria, explore the indispensable role of forests in household economies (Mohammed *et al.*, 2019). While timber extraction garners considerable attention, the economic significance of NTFPs remains underexplored. NTFPs encompass a diverse array of biological resources, including edible and medicinal plants, mushrooms, and wild game, which contribute to rural livelihoods and dietary diversity (Jimoh, 2006; Iheke and Eziuche, 2016). Additionally, forests serve as repositories of traditional knowledge and cultural practices, further enriching the socio-economic fabric of communities (Fonta *et al.*, 2010).

Despite the economic importance of forests, their sustainable management remains a pressing challenge. Common property institutions, tasked with governing forest resources, often fail to address broader socio-economic and distributional concerns, perpetuating inequalities in resource access and utilization (Inoni, 2009). Moreover, the absence of specialized forest management institutions in

many Nigerian communities exacerbates resource depletion and livelihood vulnerabilities (Timko *et al.*, 2010). In light of these challenges, this study seeks to investigate the effects of forest resources exploitation on the economic prosperity of farming households in Ayetoro, Yewa North Local Government Area of Ogun State, Nigeria. By examining the nexus between resource extraction, household livelihoods, and environmental sustainability, this research aims to inform evidence-based policy interventions for fostering inclusive and sustainable forest management practices.

Methodology

Study Area

Ayetoro, situated at latitude 7°15'N and longitude 3°30'E, occupies a prominent position in the deciduous derived savannah zone of Ogun State, Nigeria. Characterized by a sub-humid tropical climate, Ayetoro experiences an average annual rainfall of 1,909.30mm. Positioned approximately 35 km northwest of Abeokuta, the capital of Ogun State, Ayetoro serves as the administrative center of Yewa North Local Government Area, formerly known as Egbado North.

Sample Size and Sampling Technique

This study involved a sample size of 100 rural households selected from Yewa North Local Government Area of Ogun State. Purposive sampling was employed to choose five communities: Ayetoro, Ijoun, Sawonjo, Ibooro, and Igan-Okoto. From each of these communities, 20 respondents were selected, resulting in a total of 100 respondents for the study. Structured questionnaires were administered to gather data from the selected households. This sampling approach allowed for a diverse representation of rural households within the study area, facilitating a comprehensive understanding of the impact of forest resources exploitation on economic prosperity across different communities.

Method of Data Analysis

The data collected from the field underwent sorting and analysis using various statistical techniques. Tables were utilized to organize and present descriptive statistics summarizing the characteristics of the study sample. Additionally, inferential statistics were employed to test the research hypotheses formulated for the study. Specifically, Z-test statistics and independent Student's T-test were conducted at a significance level of 0.05.

Results and Discussion

Socioeconomic Characteristics

Table 1 provides an overview of the socio-economic characteristics of rural households within the study area, along with their implications for agricultural livelihoods and community development. The results reveals that the majority of participants, comprising 61%, were male, suggesting a predominant involvement of men in agricultural activities compared to their female counterparts, who accounted for 39% of the sample. This gender disparity may have implications for gender equity in access to resources and decision-making within farming

households, highlighting the need for targeted interventions to promote women's participation and empowerment in agriculture. Age distribution among respondents varied, with the largest proportion, constituting 40%, falling within the age bracket of 30 to 40 years. Notably, a significant portion, totaling 70%, belonged to the economically active age group of 31 to 60 years, indicating the prevalence of physically capable individuals engaging in farming activities within the community. This demographic composition suggests that the community's agricultural workforce is predominantly composed of individuals in their prime working years, which may contribute to the productivity and sustainability of agricultural operations. However, marital status was another pertinent aspect observed, with approximately 70% of respondents being married. The result indicates the importance of family units in agricultural production and household decision-making processes. However, it also raises considerations regarding the allocation of labor and resources within farming households, as well as the potential role of gender dynamics in shaping agricultural practices and outcomes.

Regarding religious affiliation, 55% identified as Christians, while 40% practiced Islam, and a smaller proportion of 5% adhered to traditional beliefs. This diversity explains the religious plurality within the community and may have implications for social cohesion and cultural practices related to agriculture. Understanding the religious beliefs and practices of rural households can inform the design and implementation of agricultural interventions that are sensitive to local customs and traditions. Experience-wise, the majority of participants, accounting for 70%, reported having 1 to 5 years of experience in farming. This suggests a considerable proportion of relatively novice farmers within the study area, which may pose challenges in terms of access to agricultural knowledge and skills. Efforts to support capacity-building and extension services for smallholder farmers could enhance their ability to adopt improved agricultural practices and technologies, thereby enhancing productivity and resilience.

Education levels varied among respondents, with 43% indicating no formal education, 37% having completed primary education, 14% possessing secondary education qualifications, and 6% attaining tertiary-level education. The prevalence of limited formal education indicates potential challenges in accessing higher agricultural knowledge and modern farming techniques within the community. Addressing barriers to education and promoting lifelong learning opportunities could empower rural households to enhance their agricultural productivity and livelihoods. Household size ranged predominantly from 3 to 6 members, comprising 60% of the sample, reflecting the typical family structure prevalent in the area. This demographic characteristic may have implications for labor availability and division of tasks within farming households, as well as resource allocation and decision-making processes. Understanding household dynamics can inform strategies to optimize agricultural production and promote household food security and resilience.

Furthermore, the majority of respondents, totaling 75%, were solely engaged in farming activities as their primary occupation, with a smaller proportion supplementing their income through civil service (20%) or trade (5%). This dependence on agriculture as a primary source of livelihood highlights the importance of supporting smallholder farmers and promoting diversified livelihood strategies to enhance household income and resilience to economic shocks. Strengthening value chains and market linkages can create opportunities for rural households to increase their income and improve their overall well-being. Land ownership patterns indicated that a significant portion of farming activities, accounting for 52%, occurred on extended family land, highlighting the importance of communal land tenure systems in supporting agricultural livelihoods. However, challenges related to land tenure security and access to land for marginalized groups may

hinder agricultural development and rural poverty reduction efforts. Strengthening land governance and promoting equitable land rights can foster sustainable land use and inclusive agricultural growth. The monthly income distribution revealed that the majority of respondents (60%) earned between #101,000 and #150,000, with 78% falling within the income bracket of #51,000 to #150,000 per month. This distribution reveals the prevalence of moderate-income households within the rural community. While moderate incomes may indicate relative economic stability, they may also reflect limited opportunities for income diversification and upward mobility. Enhancing access to financial services, market opportunities, and social protection programs can help rural households build assets, manage risks, and improve their overall economic well-being.

Table 1: Socio-economic characteristics of respondents

Variables	Frequency N = 100	Percentage (%)	Mode
Sex			
Male	61	61	Male
Female	39	39	
Age			
Less than 30 Years	22	22	30 - 40 Years
30 - 40 Years	40	40	
41 - 50 Years	30	30	
51 - 60 Years	8	8	
Above 60 Years	0	0	
Marital Status			
Single	8	8	Married
Married	70	70	
Divorced	12	12	
Widow(er)	10	10	
Separated	0	0	
Educational Status			
No formal education	43	43	No formal education
Primary education	37	37	
Secondary education	14	14	
Tertiary education	6	6	
Major Occupation			
Farming	75	75	Farming
Trading	5	5	
Civil servants	20	20	
Others	0	0	
Farming Experience			
1-5 Years	70	70	1-5 Years
6-10 Years	10	10	
11-20 Years	15	15	
21-30 Years	5	5	
Above 30 Years	0	0	
Religion			
Christianity	55	55	Christianity
Islam	40	40	
Traditional	5	5	

Household Size

Less than 3 persons	10	10	
3 - 6 persons	60	60	3-5
7 - 9 persons	22	22	
Above 9 persons	8	8	

Forest Ownership

Individual	23	23	
Community	15	15	
Government	10	10	Extended family
Extended family	52	52	

Income (Monthly)

#10,000-50,000	5	5	
#51,000-100,000	18	18	
#101,000-150,000	60	60	#101,000-150,000
#151,000-200,000	10	10	
Above #200,000	7	7	

Source: Research's Field work, 2022

Utilization patterns of Non-Timber Forest Products (NTFPs)

The utilization patterns of Non-Timber Forest Products (NTFPs) among participants in the study area are presented in Table 2, providing the significant reliance on forest resources for various purposes. The data reveals that all participants engaged in the use of NTFPs, with differing frequencies of utilization observed across different products. For instance, twigs and branches were utilized frequently by 50% of participants, while 38% used them regularly, and 12% used them seldom. Similarly, leaves were utilized frequently by 45% of participants, regularly by 40%, and seldom by 15%. Moreover, bark, roots, tree stems, wild fruits, and firewood were also utilized with varying frequencies. This utilization pattern indicates the vital role of NTFPs in meeting the diverse needs of rural households. However, they also highlight potential implications for both the local community and forest

management practices. The heavy reliance on NTFPs for fuel, construction, and medicinal purposes emphasizes the importance of sustainable forest management to ensure the continued availability of these resources. Additionally, variations in utilization frequencies suggest differential patterns of resource dependency within the community, calling for targeted interventions to promote sustainable resource use and enhance the resilience of vulnerable households. Furthermore, the utilization of NTFPs reflects the rich biodiversity and ecosystem services provided by the local forest ecosystem. However, unsustainable harvesting practices may lead to ecological degradation, emphasizing the need for conservation measures to maintain the ecological integrity of forest ecosystems. Overall, understanding the implications of NTFP utilization is crucial for informing strategies aimed at balancing human needs with environmental conservation goals and enhancing the well-being of forest-dependent communities.

Table 2: NTFPs exploited and used in the study area

Non-Timber Forest Products (NTFPs)	Utilization		Level of Utilization				Total
	Yes	No	Frequently	Regularly	Seldom	Never	
Twigs and Branch	100	-	50	38	12	-	100
Leaves	100	-	45	40	15	-	100
Bark	100	-	30	59	11	-	100
Roots	100	-	24	33	43	-	100
Tree stem	100	-	62	28	10	-	100
Wild fruits	100	-	78	22	-	-	100
Firewood	100	-	80	15	5	-	100

Source: Research's Field work, 2022

Effects of forest resources exploitation on the well-being of rural households

The benefits derived from forest resources exploitation in the study area is presented in Table 3, highlighting its multifaceted contributions to rural household well-being and livelihoods. The result indicates that forest exploitation significantly improves socio-economic well-being, as

evidenced by a mean score of 3.88 and a standard deviation of 0.7185. Moreover, forests play a crucial role in providing food security for rural households, as indicated by a mean score of 3.91 and a standard deviation of 0.7958, exploring their importance in meeting nutritional needs and enhancing overall health outcomes. Additionally, the exploitation of forest resources serves as a vital source of primary and additional incomes for households, with a mean score of 3.93 and a standard deviation of 0.8551,

highlighting its role in poverty alleviation and income diversification strategies. Furthermore, forests serve as a significant source of employment opportunities, with a mean score of 3.67 and a standard deviation of 0.8597, demonstrating their contribution to local livelihoods and economic development. These findings explain the

multifaceted benefits of forest resources exploitation and emphasize the importance of sustainable forest management practices to ensure the continued provision of these valuable ecosystem services for rural communities.

Table 3: Effects Forest resources exploitation on the well-being of rural households

S/no	Statements	Sample Size	Mean score	St. Deviation	Remarks
1	Forest resources exploitation improves farming household's economic well-being in the study area.	100	3.88	0.7185	Agreed
2	It provides food for the rural households in the study area.	100	3.91	0.7958	Agreed
3	It provides nutritional and health values.	100	3.75	0.8492	Agreed
4	NTFPs assist in earning primary and additional incomes.	100	3.93	0.8551	Agreed
5	It serves as a source of employment.	100	3.67	0.8597	Agreed

Source: Research's Field work, 2022

However, the positive effects of forest resources exploitation on the well-being of rural households in the study area were evident, as indicated by a Z-test statistic of 19.21 (significant at 0.002 level) at a 0.05 level of significance (Table 4). Acheampong and Marfo (2011) explained that the integral role of forests and agriculture in rural farming systems, where farmers rely on these resources for their livelihoods. Indeed, forests serve as crucial providers of livelihoods and act as essential safety nets for poverty alleviation, a notion that has gained increasing recognition in recent decades. The reliance on forest resources for livestock farming, agricultural inputs, and timber and non-timber forest products reveals their significance in sustaining rural livelihoods. This finding resonates with the observations of Olawoye (1996), who

noted that income generated from non-timber forest products is often utilized by rural households to procure food and ensure the well-being of their families, thereby supplementing their economic status. Furthermore, the study's findings are consistent with the research by Quang and Anh, 2006; Reta *et al.*, 2022 which highlights the role of non-timber forest products in expanding livelihood options and facilitating the accumulation of wealth and assets necessary to address livelihood challenges in rural areas, such as food insecurity and income instability. Overall, the positive impact of forest resources exploitation on rural household well-being explore the importance of sustainable forest management practices and the need to recognize and support the vital role of forests in rural livelihood systems.

Table 4: Summary of Z-test statistics on forest resources exploitation and positive effects

Variables	N	Mean score	St. Dev.	df	Z-cal	Z-crit	Sig	Decision
Sample Population	100	3.88	0.7185	99	19.21	1.96	0.002	Reject Ho

Source: Research's Field work, 2022; Significant at P < 0.05

Consequences of forest resources exploitation

A comprehensive overview of the consequences associated with forest resources exploitation in the study area is presented in Table 5, the result indicates that forest resources exploitation leads to the loss of biodiversity, with a mean score of 2.92 and a standard deviation of 1.0824, exploring the detrimental effects on ecological integrity and species diversity within forest ecosystems. Furthermore, forest resources exploitation contributes to the depletion of soil and water resources, as evidenced by a mean score of 3.81 and a standard deviation of 0.8995, posing serious threats to agricultural productivity and water availability for local communities. Additionally, forest resources exploitation results in atmospheric pollution, with a mean score of 3.49 and a standard deviation of 1.0023, exacerbating air quality issues and contributing to climate change. Moreover, the study highlights the occurrence of

environmental calamities such as acid rain, desertification, and floods, with a mean score of 3.17 and a standard deviation of 1.0601, further exacerbating vulnerability to natural disasters and environmental hazards. Furthermore, forest resources exploitation leads to decreased rural household incomes, with a mean score of 3.79 and a standard deviation of 0.8867, highlighting the adverse economic consequences for forest-dependent communities. Lastly, forest resources exploitation exacerbates rural poverty among villagers, as indicated by a mean score of 3.53 and a standard deviation of 1.1090, emphasizing the urgent need for sustainable forest management practices and conservation efforts to mitigate the negative impacts of forest resources exploitation and promote the well-being of local communities.

Table 5: Consequences of forest resources exploitation

S/no	Consequences	Sample Size	Mean score	St. Deviation	Remarks
1	Loss of bio-diversity.	100	2.92	1.0824	Agreed
2	Depletion of soil and water resources.	100	3.81	0.8995	Agreed
3	Atmospheric pollution.	100	3.49	1.0023	Agreed
4	Environmental Calamities (Acid rain, Desertification and Flood).	100	3.17	1.0601	Agreed
5	Decreased rural household incomes.	100	3.81	0.9878	Agreed
6	Rural poverty among the villagers.	100	3.53	1.1090	Agreed

Source: Research's Field work, 2022

The consequences of forest resources exploitation on rural households in the study area were significant, as evidenced by a T-test computed absolute value of 13.26 (significant at 0.002) at a 0.05 level of significance (Table 6). This indicates that forest resources exploitation had substantial implications for the well-being of rural households in the study area. This finding resonates with previous research by Acheampong and Marfo (2011), who highlighted the detrimental effects of forest loss on the contributions of forest communities to national economic growth and the livelihoods of rural and forest-dwelling people. Similarly, Boafo (2013) emphasized the challenges faced by forest communities as the availability of non-timber forest products diminishes, leading to increased travel distances to

access essential products for food security and socio-economic well-being. Moreover, the impacts of forest resources exploitation on rural communities, such as experiencing natural disasters, loss of domestic animals, and food insecurity, align with findings by Iheke and Eziuche (2016); Mohammed *et al.*, (2019); Chomini *et al.*, (2022); Additionally, Owonubi (2014) and Olujimi and Adekunle (2015). explained the depletion and endangerment of various plant and animal species due to deforestation, highlighting the loss of biodiversity and ecological balance. Furthermore, Oso (2020) reported on the adverse effects of deforestation on aquatic ecosystems, including the reduction in fish breeding habitats and soil erosion, leading to reduced food production and forced migration.

Table 6: Summary of T-Test statistics on forest resources exploitation and consequences

Variables	N	Mean score	St. Dev.	df	T-cal	T-crit	Sig	Decision
Sample Population	100	3.81	0.9878	99	13.26	1.96	0.002	Reject Ho

Source: Research's Field work, 2022; Significant at P < 0.05

Challenges of forest resources exploitation

The challenges hindering forest resources exploitation in the study area is reveal in Table 7. The result indicates that forest resources exploitation is primarily driven by various human activities and socio-economic factors. Forest clearance for farming purposes emerges as a significant challenge, with a mean score of 2.87 and a standard deviation of 1.1030, highlighting the competing demands for land between agricultural expansion and forest conservation. Additionally, logging for fuelwood is heavily practiced in the forest, as indicated by a mean score of 3.27 and a standard deviation of 0.9821, exploring the unsustainable exploitation of forest resources for energy needs. Moreover, mining operations pose a significant threat to forest ecosystems, with a mean score of 3.86 and a standard deviation of 0.8344, highlighting the destructive impacts of extractive industries on biodiversity and landscape integrity. Furthermore, setting forests ablaze for hunting purposes is highly intensive, with a mean score of

3.93 and a standard deviation of 0.8175, exacerbating fire risks and habitat destruction. Urbanization also emerges as a key driver of forest resources exploitation, with a mean score of 3.55 and a standard deviation of 0.9138, reflecting the pressures of urban expansion on forested areas. Additionally, poverty and low literacy levels among the populace contribute to forest resources exploitation, with mean scores of 3.18 and 3.26, respectively, underscoring the socio-economic dimensions of deforestation. Moreover, the expanding global market for timber incentivizes forest clearing, with a mean score of 3.86 and a standard deviation of 0.9375, highlighting the role of international demand in driving land use change. Natural causes such as floods and erosions exacerbate forest resources exploitation challenges, with a mean score of 3.78 and a standard deviation of 0.7912, emphasizing the compounding impacts of climate variability and environmental hazards on forest ecosystems.

Table 7: Challenges of forest resources exploitation

S/no	Challenges	Sample Size	Mean score	St. Deviation	Remarks
1	Forest is being cleared for farming purpose (agriculture).	100	2.87	1.1030	Agreed
2	Logging for fuel wood is heavily practiced in the forest.	100	3.27	0.9821	Agreed
3	Mining operation is very destructive to the forest.	100	3.86	0.8344	Agreed
4	Setting forest ablaze using wildfire to hunt animals is highly intensive.	100	3.93	0.8175	Agreed
5	Urbanization to create more cities and towns is done by clearing the forest.	100	3.55	0.9138	Agreed
6	Poverty caused most houses to rely on the resources obtained from the forest.	100	3.18	1.0184	Agreed
7	Low illiteracy level among the populace will lead to removal of the forest.	100	3.26	1.0157	Agreed
8	Expanding global market for timber has encouraged forest clearing.	100	3.86	0.9375	Agreed
9	Natural causes such as floods and erosions destroying the forest.	100	3.78	0.7912	Agreed

Source: Research's Field work, 2022

Conclusion

This study reveals various aspects of forest resources exploitation in the study area. It reveals that forest resources operators are actively involved in the collection, processing, packaging, and marketing of a variety of forest resources, including twigs, branches, leaves, bark, roots, tree stems, wild fruits, and firewood. Empirical evidence suggests that forest resources exploitation positively impacts the socio-economic well-being of rural households by providing food and contributing to economic prosperity. However, it also brings about adverse consequences such as decreased household incomes and increased rural poverty. Challenges faced by forest resources exploitation include deforestation for agricultural purposes and urbanization, which leads to the creation of new cities and towns by clearing forests. Moreover, construction activities for residential, recreational, and industrial development pose significant obstacles to sustainable forest management in the area. In conclusion, while forest resources exploitation offers benefits to rural communities, it also poses challenges and consequences that must be addressed. This study emphasizes the need for sustainable practices and policy interventions to ensure the long-term viability of forest ecosystems and the well-being of rural populations.

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