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Socio-Economic Contribution of Selected Non-Timber Forest Products to Rural Livelihoods of Ipetu Ikeji Forest Reserve, Osun State

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ABSTRACT
Forest is a land area covered with trees which serves as habitant for flora and faunas. It is a vital component of ecosystem that provides a wide range of goods and services for support, human well-being and livelihoods. This study examined the socio-economic contribution of selected Non-Timber Forest Products (NTFPs) to the rural livelihoods of communities surrounding Ipetu-Ikeji Forest Reserve in Osun State, Nigeria. It specifically identified the major NTFPs utilized in the area and assessed their contributions to household welfare and livelihood sustainability. A two-stage sampling technique was adopted in selecting respondents from the study area. A total of 125 questionnaires were administered, and 99 were retrieved and analyzed using descriptive statistics such as frequency and percentage. The findings revealed that the majority of respondents were female (77.8%), married (70.7%), and within the economically active age range of 31–40 years (65.7%). Bitter kola (*Garcinia kola)* was identified as the most common and most utilized NTFP. The study further showed that NTFPs contribute significantly to household livelihoods through income generation, food supply, medicinal uses, and payment of school fees. Most respondents (81.8%) considered NTFPs very important to their livelihoods, while 80.8% affirmed that income from NTFPs improved household welfare. The study concluded that NTFPs play a vital role in supporting rural livelihoods and reducing poverty among forest-dependent households around Ipetu-Ikeji Forest Reserve. The study therefore recommends sustainable forest management practices, improved access to training, and support for cooperative societies to enhance the long-term benefits of NTFPs to rural communities.

Keywords: NTFPs, Livelihood, Ipetu-Ikeji, Forest Reserve

INTRODUCTION

Forest is a land cover area which serves as habitant for both vegetation and animals. It is a vital component of ecosystem that provides a wide range of goods and services and support human well-being as well as livelihoods. Forest plays an important role in promoting the financial development of people as it is recognized as a true means of alleviating poverty in the broader definition, pertaining to capabilities, empowerment and rights among rural communities. Its roles in livelihood sustenance, food and environmental safety is of crucial to human existence as it is being said that forest is the major source of income for large number of people in developing countries such as urban and rural environment, providing abundant benefits to human beings either directly or indirectly since forestry sector is one of the main pivots on which the nation's well-being is built (Olujobi and Olajuyigbe, 2020). According to (Bore, 2014), Forests currently comprise approximately 4 billion hectares or 30 per cent of the global land base and is capable of providing the basic human needs such as food, shelter, fuel, and other goods and services to a large portion of the world's population. Nigeria forests have numerous forests products apart from timbers derived from the forest which are food, medicine, aesthetics through which income is generated to sustain the livelihood of people living around the forest communities (Chidebere *et al*., 2016). The resources or products and services apart from timber obtained from any form of forest be natural vegetation or artificial forest are referred to as non-timber forest products (NTFPs) (Kolade,2021) and the non-timber forest products (NTFPs) is categories as edible (foods, fruits, honey, nuts, vegetables, mushroom, medicinal plants or herbs and so on) and non-edibles products (timber, seed, gum, latex, resins, bamboo, fuelwood, rattan and palms, chemicals, craft materials and so on) (Agbogidi, 2010; Aiyeloja *et al.*, 2012; Chidebere-Market *et al*., 2016).

The Non-Timber Forest Products (NTFPs) contribute massively to the daily life survival, and welfare of people all over the world especially in rural economies of the developing world (Mahaptara and Mitchell, 2011; Farinola *et al*., 2014). Also, when extracted from forest, they sustain the basic necessities (especially food) of people living in the communities around the forest reserve and help rural economic growth in so many ways like domestic provision, subsistence and consumption needs, increase household income, acting as assurance quality throughout economic hardships, contributing to financial need of the household through the sales from these products (Anoh *et al.*, 2019). Large number of people classified low income people (poor) in the rural communities have earned subsistence level of income from gathering NTFPS and marketing them in both rural or local and urban markets. These trends of extraction and marketing have grown-up fast and progressively over the previous year's (Wilkinson and Elivitch, 2000) as NTFPs do not only meet the socio-economic needs of the people living around the forest reserve, but also form an essential part of their way of life and traditional belief. Therefore, connection of NTFPs to rural resident livelihood as the gathering, utilization and sales of extracted products is a requirement for survival of people among rural community settlement in and around forested areas that may not have another source of income (Chilalo and Wiersum, 2011). Despite the important contribution of NTFPs to rural livelihoods, there is limited information on the identification and socio-economic contribution of these products around Ipetu-Ikeji forest reserve. Lack of data on the utilization and importance of NTFPs can affects effective policy formulation and

sustainable forest management, and rural development planning. This study aims to address the knowledge gap by investigating socio-economic contribution of selected non-timber forest products to rural livelihoods around Ipetu-Ikeji forest reserve as well as identifying the major non-timber forest products (NTFPs) utilized in the study area with a view of promoting sustainable forest management practices and policy decisions.

MATERIALS AND METHODS

The study was carried out in Ipetu- Ikeji forest reserve located between Ikeji - Arakeji and Ipetu – Ijesa in Osun State, Nigeria. It covers 4849 hectares of land with latitude 7.400000N and longitude 4.933333E and an elevation of 342 m above sea level. Communities located very near to the reserve include Orita Reserve, Ayetoro, Adura, powerline, Oniga, Alonge, Temidire Majaro, Fajuike, Lofinnika, Orisumbare, Apoti, among many others, with a population range of 70 to 3,700. The major occupation of the people in the study area include farming, trading, sawmilling, civil service, etc. Agricultural activities in the area involve cultivation of tree crops such as cocoa, kola nuts, and oil palm trees as well as food crops including yam, cassava, rice, cocoyam, bananas, and plantains. The climate of the area is humid tropical, featuring well-defined dry and wet seasons, which favours both cash and food crop farming. The rainy season is from March to late October, with peaks in July and September. The soils are moderately too strongly leached, with low to medium humus content, weak to neutral surface layers, and moderately to strongly acidic sub-soils (Smyth and Montgomery, 1962). The vegetation is predominantly evergreen, consisting of woody species such as Teak (*Tectona grandis* L.f.), Gmelina (*Gmelina arborea* (Benth.) Staff), Oganwo (*Khaya ivorensis* A.Chev.), Ayunre (*Albizia zygia* (DC.) J.F. Macbride), and Iroko (*Milicia excelsa* (Welw.) C.C.Berg), among others.

Sampling Techniques and Data Collection

A two Stage sampling was used for the study. In the first stage, five communities such as Orita Reserve, Ayetoro, Oniga, Adura and Power line around the forest reserves in oriade local government were purposively selected due to their active involvement in the extraction and utilization of selected non -timber forest products. In the Second stage, simple random sampling was used to select respondents from each of the selected five communities using projected population figures obtained from the national population commission of Osun state. Hence, a projection population sizes of the selected communities were computed as follow, Orita Reserve, Ayetoro, Oniga, Adura and Power line having projected population size of 1,000; 500; 600; 200 and 1,000. Furthermore, 10%, 5% and 2.5% sampling intensity according to Diaw *et al.*, 2002 was adopted to select the respondents from communities with population less than 500 people, 500-1000 and more than 1000 people. In view of this, 25, 25, 30, 20, and 25 questionnaires was administered to Orita Reserve, Ayetoro, Oniga, Adura and Power line respectively making a total of 125 respondents.

Data Analysis

A total of 125 questionnaires were administered, while 99 were retrieved due to the unavailability of the respondent during collection periods. The retrieved questionnaires were analyzed using the Statistical Package for the Social Science (SPSS) software. Descriptive statistics such as frequency count, simple percentage was used to analysis the data.

RESULTS AND DISCUSSION

Socio-Demographic Characteristics of Respondents

Table 1 shows the distribution of respondents across villages and this indicates that the majority were concentrated in Orita Reserve (29.3%), Oniga (24.2%), and Aiyetoro (21.2%), indicating that these locations are the primary hubs of settlement and likely centres of socio-economic activities within the study area. The relatively low representation in other villages such as aba Adura (14.1%) and Orita Reserve (11.1%) suggests spatial disparities in population density, which may influence access to forest resources and livelihood opportunities. This uneven distribution aligns with findings that proximity to forest reserves often shapes settlement patterns and dependence on natural resources (Angelsen *et al*., 2014).

The years of residency reveal that most respondents (74.7%) have lived in the area for 11–20 years, indicating a relatively stable population with substantial local knowledge. Long-term residency is often associated with deeper understanding of environmental resources and stronger reliance on forest-based livelihoods (Vedeld *et al*., 2007). This stability suggests that respondents are well integrated into the socio-ecological system and are likely to have developed adaptive livelihood strategies over time.

Gender distribution indicates a strong female dominance (77.8%), suggesting that women play a central role in the socio-economic activities of the area. This finding is consistent with studies in rural African contexts where women are heavily involved in small-scale trading and non-timber forest product (NTFP) activities (Shackleton *et al*., 2011). It also implies that interventions targeting livelihood improvement or forest management should be gender-sensitive, recognizing women as key stakeholders.

Age distribution shows that the majority of respondents fall within the economically active age group of 31–40 years (65.7%). This indicates a workforce that is physically capable of engaging in both trading and forest-related activities. The relatively low proportion of younger (<30 years) and older (>60 years) individuals suggests that livelihood activities in the area may require a certain level of experience, physical strength, or capital, limiting participation at the extremes of the age spectrum.

Educational attainment is generally low, with 68.7% having only primary education and just 13.1% attaining tertiary education. Low education levels are typical of rural communities and often limit access to formal employment, thereby increasing dependence on natural resources for livelihoods (World Bank, 2016). This may also affect the adoption of improved technologies and sustainable practices, as education is a key determinant of innovation uptake.

In terms of occupation, a large majority (76.8%) are engaged in trading, while 19.2% are forest product collectors. This suggests that trading—likely including forest products—is the dominant livelihood activity. The prominence of trading indicates a market-oriented economy where forest resources may be commodified. This aligns with studies showing that rural households often combine resource extraction with petty trading to diversify income sources (Ellis, 2000).

Marital status reveals that most respondents are married (70.7%), which has implications for household labour availability and economic responsibilities. Married individuals often have larger household obligations, which can drive increased participation in income-generating activities, including forest exploitation (Fisher, 2004).

Household size data shows that the majority (70.7%) have 4–6 members, indicating moderate household sizes. Larger households can provide labour for livelihood activities but

may also increase pressure on available resources. This dual role of household size—as both a labour asset and consumption burden—is well documented in rural livelihood studies (*Angelsen et al*., 2014).

Finally, years of experience indicate that most respondents (64.6%) have 1–10 years of experience, suggesting that while many are relatively new entrants into their current occupations, a significant proportion also possesses longer-term experience. This mix of experience levels may influence productivity and knowledge transfer within the community. Experience is often positively correlated with efficiency and sustainable resource use (Vedeld *et al*., 2007).

Table 1: Socio-Demographic Characteristics of Respondents

Variables	Frequency	Percent
Aba adua	14	14.1
Aiyetoro	21	21.2
Oniga	24	24.2
Orita Reserve	29	29.3
Power line	11	11.1
Total	99	100
Years of Residency		
1 to 10yrs	8	8.1
11 to 20yrs	74	74.7
21 to 30yrs	12	12.1
31 to 40yrs	2	2
41 to 50yrs	3	3
Total	99	100
Gender		
Male	22	22.2
Female	77	77.8
Total	99	100
Age		
Less Than 30yrs	14	14.1
31 to 40yrs	65	65.7
41 to 50yrs	9	9.1
51 to 60yrs	4	4
Above 60yrs	7	7.1
Total	99	100
Education Level		
No Formal Education	8	8.1
Primary	68	68.7
Secondary	10	10.1
Tertiary	13	13.1
Total	99	100
Primary Occupation		
Trading	76	76.8
Forest Product Collector	19	19.2
Others	4	4
Total	99	100
Marital Status		
Single	12	12.1
Married	70	70.7
Widowed	8	8.1
Separated	9	9.1
Total	99	100
Household Size		
Less Than 4	11	11.1
4 to 6	70	70.7
7 to 9	8	8.1
Above 9	10	10.1
Total	99	100
Years of Experience		
1 to 10yrs	64	64.6
11 to 20yrs	17	17.2
21 to 30yrs	11	11.1
31 to 40yrs	2	2

Variables	Frequency	Percent
41 to 50yrs	5	5.1
Total	99	100

Source: Field Survey, 2025

Identification of the Major NTFPs Utilized in the Study Area

The results in table 2 indicate a high level of awareness of non-timber forest products (NTFPs), with 82.8% of respondents reporting familiarity. This suggests that NTFPs are well integrated into local livelihoods and cultural practices. High awareness levels are typical in forest-dependent communities where NTFPs contribute significantly to subsistence and income (Food and Agriculture Organization, 2011). The minority (17.2%) who are not familiar may represent newer residents or individuals less engaged in forest-based activities.

The primary source of knowledge about NTFPs is family (62.6%), followed by villagers and marketers (14.1% each), and friends (9.1%). This highlights that knowledge transfer is largely informal and intergenerational. Such patterns are consistent with indigenous knowledge systems, where ecological knowledge is passed down within households and communities (Berkes, 2012). The role of marketers also suggests some degree of commercialization and information exchange linked to market participation.

Regarding the types of NTFPs, bitter kola (*Garcinia kola*) is the most common (66.7%) and most used (65.7%), followed by local pear (16.2%) and fuelwood (10.1% common; 7.1% used). The dominance of bitter kola reflects its high economic and medicinal value in West Africa. Studies have shown that bitter kola is widely traded and used for traditional medicine, making it a key livelihood resource (World Agroforestry Centre, 2006). The relatively low occurrence of African walnut (1%) suggests limited availability or lower demand. The similarity between "most common" and "most used" categories indicates that availability strongly influences utilization patterns.

In terms of purpose, the majority of respondents (69.7%) collect NTFPs for both household use and sale, while 23.2% collect primarily for sale. This demonstrates the dual role of NTFPs as both subsistence and income-generating resources. Such multifunctionality is widely reported in rural economies, where households depend on forest products for food security while also generating cash income (Angelsen *et al.*, 2014). The small proportion (7.1%) collecting solely for household use suggests increasing commercialization of NTFPs in the study area.

Collection frequency shows that most respondents (62.6%) collect NTFPs weekly, followed by daily (18.2%). This indicates regular engagement with forest resources, reinforcing their importance in livelihood strategies. Frequent collection may also imply sustained pressure on forest resources, raising concerns about sustainability if not properly managed (Shackleton *et al*., 2011).

Seasonal availability reveals that NTFPs are predominantly available during the rainy season (75.8%), compared to the dry season (24.2%). This pattern reflects the ecological cycles of most forest products, particularly fruits and seeds, which are typically abundant during periods of higher rainfall. Seasonal dependence can influence income stability and food availability, often requiring households to diversify livelihoods during off-seasons (Arnold & Pérez, 2001).

Access rights to forest resources show that 69.7% of respondents fall under category "1" (likely indicating permitted access), while 30.3% fall into other categories. This suggests that a majority have some form of legal or customary access to forest resources. Secure access rights are crucial for sustainable resource use, as they encourage stewardship and long-term investment in forest management (Ostrom, 1990). However, the presence of respondents without clear access rights may lead to conflicts or unsustainable exploitation.

Table 2: Identification of Major Non-Timber Forest Products Utilized in the Study Area

	Frequency	Percent
Are You Familiar With NTFP?		
Yes	82	82.8
No	17	17.2
Total	99	100
How Did You Learn About NTFP?		
Family	62	62.6
Friends	9	9.1
Villagers	14	14.1
Marketers	14	14.1
Total	98	99
Which NTFPs are Most Common in Your Area?		
Bitter Kola	66	66.7
Fuelwood	10	10.1
African Walnut	1	1
Local Pear	16	16.2
Irvingia spp	6	6.1
Total	99	100
Which NTFPs are Most Used in Your Area?		
Bitter Kola	65	65.7

	Frequency	Percent
Fuelwood	7	7.1
African Walnut	5	5.1
Local Pear	16	16.2
Irvingia spp	6	6.1
Total	99	100
What is Your Purpose for Collecting NTFPs?		
Household Use	7	7.1
Sale	23	23.2
Both	69	69.7
Total	99	100
How Often Do You Collect NTFPs		
Daily	18	18.2
Weekly	62	62.6
Monthly	4	4
Occasionally	15	15.2
Total	99	100
Which Seasons/Months Are NTFPs Available?		
Dry season	24	24.2
Rainy season	75	75.8
Total	99	100
Do You Have Access Rights or Permission to Collect NTFPs from Forest Reserve?		
1	69	69.7
2	12	12.1
3	18	18.2
Total	99	100

Source: Field Survey, 2025.

Contribution of NTFPs to Household and Livelihood Sustainability

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Table 3: Contribution of Non-Timber Forest Products

	Frequency	Percent
How Important Are NTFPs To Your Livelihood?		
Very	81	81.8
Fairly	16	16.2
Not	2	2
Total	99	100
How Has NTFP Collection Contributed to Your Family's Welfare?		
Increased Income	67	67.7
Food Supply	5	5.1
Medicine	8	8.1
School Fees	7	7.1
Household Materials	12	12.1
Total	99	100
What Other Benefits Do You Get from NTFPs?		
Daily income	25	25.3
Marketing Value	74	74.7
Total	99	100
Do NTFPs Help Your Household Cope During Difficult Times?		
Yes	73	73.7
No	26	26.3
Total	99	100
If Yes, Specify		
By Selling the Product	51	51.5
Income Generation	1	1
Total	52	52.5
Does the Income from NTFPs Improve Household Welfare?		
Yes	80	80.8
No	19	19.2
Total	99	100
If Yes, Specify		
By the Money Collected When sold	50	50.5
School Fees	1	1
Total	51	51.5
Have You Ever Received Any Training on Sustainable Forest Use?		
Yes	64	64.6
No	35	35.4
Total	99	100
Do You Belong to A Cooperative/Group Related to NTFPs		
Yes	10	10
No	89	89.9
Total	99	100
Have You Noticed Any Decline in NTFP Availability Over the Years?		
Yes	7	8.1
No	92	92.9
Total	99	100

Source: Field Survey, 2025.

CONCLUSION

The study established that Non-Timber Forest Products (NTFPs) constitute an important source of livelihood for residents around Ipetu-Ikeji Forest Reserve in Osun State. The findings revealed that the majority of rural households depend on NTFPs for both subsistence and income generation. Bitter kola, local pear, fuelwood, and Irvingia species were identified as the major NTFPs commonly utilized in the study area. The study also showed that most respondents engage in the collection and trading of NTFPs on a regular basis, particularly during the rainy season when availability is highest. Furthermore, NTFPs were found to contribute significantly to household welfare through increased income, food provision, medicinal purposes, and support for educational expenses. The high level of awareness and familiarity with NTFPs among respondents indicates the importance of forest resources in sustaining rural economies. Despite the economic and social benefits derived from NTFPs, there is still limited participation in cooperative societies and inadequate formal support for sustainable harvesting practices. It is however concluded that NTFPs remain essential to poverty reduction, livelihood diversification, and socio-economic sustainability among rural households in the study area. The study recommends strengthening forest conservation, providing training on sustainable harvesting and value addition, improving community participation in forest management, enhancing rural infrastructure and market access, and promoting policies that ensure the long-term sustainability and profitability of NTFPs.

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