**CONTRIBUTION OF NON-TIMBER FOREST PRODUCTS TO RURAL LIVELIHOODS IN GBOKO LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA**

**Abstract**

The study was designed to assess the contribution of forest resources to the rural livelihoods of the communities in Gboko Local Government Area of Benue State, Nigeria. Pre-tested semi-structured questionnaires were administered based on the respondents' proximity to forest areas and utilization of NTFPs. Thus, applying multi-stage and simple random sampling, two hundred and fifty (250) respondents were sampled. Data collected were analyzed using descriptive statistics such as frequency, percentages, and mean and Likert scale rating. The result revealed that fuelwood (14.9%) had the highest proportion of NTFPs collection, this was followed by Bush meat (12.1%), fruits (10.6%), medicinal plants (9.6%), and charcoal (9.3%). In comparison, the lowest proportions were recorded in mushrooms (3.3%), fodder (2.8%), Bush mango, honey, essential oil, (1.9% each), and forest insects (1.3%). Based on the level of contribution of NTFPs, the Likert scale result indicated a high level of contribution for food (WMS,4.6), fuel (WMS, 3.9%), medicine (WMS, 3.6%), trade (WMS, 3.3) and recreation (WMS, 3.2). The collections and contributions of NTFPs were high and served as a safety net for rural livelihoods. Hence, deliberate policy measures need to be implemented to ensure sustainable harvesting practices and establish community-led conservation initiatives on sustainable forest management.

Keywords: NTFP, Rural Livelihoods, Utilization, SDG 1: No Poverty, SDG 3: Good health and well-being

**Introduction**

Forests make essential contributions to rural livelihoods and well-being through the provision of ecosystem services and products. They play important roles in supporting rural livelihoods directly or indirectly in terms of food security, healthcare, and income, especially in developing countries of the world (Solomon, 2016). This is because the majority of the rural livelihoods in developing countries are primarily dependent on land and forests as their primary means of livelihood. Forests are sources of food, medicine, shelter, building materials, fuels, and cash income and they serve as reservoirs of economic plants and animal species that provide livelihood for forest-based communities around the world (Ibeagwa, 2020). According to Maske *et al*., (2011) and Ochi, and Zaman, (2019), an estimated 2 billion people representing eighty percent of the developing world rely on NTFPs as their primary source of income, food, nutrition, and medicine.  Their uses vary from place to place because of the heterogeneity of the community and different traditional practices by ethnic groups and it is generally recognized that they play an important role for local communities in and around forests (Angelsen and Wunder 2003, Fisher et al. 2010, Liswanti *et al*., 2011; Wunder et al. 2014). Kaimowitz (2003), reported that over than 15 million people in Sub-Saharan Africa earn their income from forest-related enterprises such as firewood and charcoal sales, small-scale saw-milling, commercial hunting, and handicraft production.

FAO (2010) classified NTFPs broadly into plant and animal products/raw materials based on sources and uses. They include fruits, nuts, honey, insects, animals, etc. bark, tubers, roots, leaves, fruits, flowers, seeds, fodder, fibre, honey, mushrooms, fertilizers, medicinal extracts, construction materials, firewood, cosmetic and cultural products, natural dyes, tannin, gums, resins, latex and other exudates, essential oils, spices, edible oils, decorative articles, horns, tusks, bones, pelts, plumes, hides and skins, non-wood lignocellulosic products, phytochemicals and aroma chemicals (Sunderland, *et al*.,2003; Aiyeloja and Ajewole 2006; NTFP-EP, 2019).

The extraction of non-timber forest products has multiplier effects on the economy by generating employment and income in processing and trading activities. While NTFPs may not be the primary source of income for locals who live near the forests, they make a substantial contribution to household income, food security, and household health care in addition to providing a variety of social and cultural values (Endamana et al., 2016 and Ojea, *et al*., 2016). They also constitute sources of income for poor households and serve as a common safety net for rural households to augment shortfalls in agricultural production in times of economic and agricultural stress (Shackleton and Shackleton 2004; Paumgarten 2005; Angelsen *et al*., 2014).

Theoretically, forest resource dependence has been conceptualized as a multifaceted construct with multiple temporal and spatial dimensions (Beckley 1998; Munanura *et al*., 2014). For example, forest resource utilization can be of different forms such as subsistence, commercial extraction of timber and NTFPs, tourism, education and research, etc. These different levels of utilization and dependence operate and react differently at the individual, community, national, and or international levels (Munanura *et al*., 2014). Therefore, site-specific analyses of the NTFP dependence of the community are required to modify the interaction between people and forests to conserve biodiversity and promote sustainable rural development. Due to Nigeria's high population density and limited off-farm income-generating opportunities in rural areas, households frequently depend on the resources found in nearby forests to augment their income (Jimoh *et al*., 2013).

The poverty of marginalized groups is often associated with rural and forest settlements or those people living in proximity to such locations. In Nigeria, poverty and inequality levels rates are on the increase. Consequently, people living in rural areas and around forests largely depend on natural resources found in such environments, such as the collection of non-timber forest products (NTFPs) to serve as sources of income, food, nutrition, energy security, etc. However, while attempting to solve the problem of poverty by relying on NTFPs, short-term poverty can be traded off for long rung-run environmental problems such as biodiversity loss if NTFPs collection is not properly managed. (Fagbemi et *al*., 2015).

 Although Studies by Shackleton and Shackleton, (2006) reported in a study of household use of natural resources in the Kat River Valley of South Africa, that the NTFPs' share of total household incomes is small and about 20% of cash incomes from NTFPs trade, other studies have reported huge incomes generated for NTFPs. Jimoh et al., (2013) observed that observed that rural households in Nigeria derived up to 80% of their incomes from the sales of NTFPs. According to studies by Ogunsawa and Ajala (2002) and Zaku *et al*., (2013), fuelwood is the primary energy source for more than 70% of the nation's households, with a daily consumption estimate of 27.5 million kg. Also, Onuche (2011) reported that in the high forest zones of Eastern and Western Nigeria, harvesting of game meat and snails for sale is now a major income-generating activity almost all year round. Jimoh and Haruna (2007), Jimoh *et al*., (2013), and Suleiman, (2017) reported that in the Savannah zone of Central and Northern Nigeria, honey, fuelwood, fodder, medicinal herbs, fruit nuts, locust bean seeds, gum arabic, and charcoal production generate substantial incomes for the rural households. Studies by Campbell 1991; Schaafsma et al., 2014 and Mbuvi and Boon 2009 have reported similar contributions of NTFPs to rural well-being in other African countries including Kenya and Tanzania. while CIFOR's global comparative study characterized the NTFP case studies in Africa as predominantly part of a ‘coping strategy’ (Sunderland *et al*., 2004).

The increasing demand for forest products in developing countries has enhanced rural livelihoods and enabled the expansion of domestic markets, particularly in urban areas where wood fuels and other forest resources are scarce (Arnold *et al*., 2006).

According to CARPE, (2001), Richardson, (2010), Adam *et al*., (2013), Malleson *et al*., (2014), and Adedayo, (2018), non-timber forest products (NTFPs) offer sources of income generation and opportunities for poverty alleviation in both rural and urban areas and contribute to poverty alleviation through two important avenues. First, the market for forest products offers opportunities to generate revenue through the collection, trade, and sale of NTFPs in rural and urban locations, and second, the market for NTFPs provides urban households with a convenient and reliable source of energy for cooking, as well as affordable food at relatively stable prices. NTFP activities characteristically require low entry requirements, and provide accessible means of buffering against risks and shocks and reducing livelihood vulnerability through the provision of cash in times of need (Arnold *et al*., 2011, Marshall et al. 2006, Neumann and Hirsch 2000). Therefore, while NTFPs are not a panacea for eradicating poverty and conserving forests, they do significantly contribute to rural livelihoods in a variety of unique ways (Agrawal *et al*., 2013). NTFP activities characteristically require low entry requirements, and provide accessible means of buffering against risks and shocks and reducing livelihood vulnerability through the provision of cash in times of need (Marshall et al., 2006; Arnold et al., 2011). Although typically less than 50% of household income came from NTFPs, the importance of this contribution was linked to its accessibility during times of need, or when agricultural labour needs were low (ibid, Kusters *et* *al*., 2006). The income contribution of NTFPs and the role they play in providing a safety net will remain important both to the poorest rural households without to access new economic opportunities and employment options in NTFP income.

According to Adedayo, (2018) despite the significant roles of NTFPs to rural livelihoods, its contributions have been largely neglected by policymakers and development planners, and its management has been neglected over the years by foresters and economic planners and therefore undeveloped while restricting its management to the local people and urban poor.

Therefore, understanding the role and potential of NTFPs to contribute to livelihood improvement and conservation objectives is critical to ensuring its sustainable management in Nigeria (Belcher *et al*., 2005). Hence, the need for clear a policy directed at NTFPs in promoting and harnessing their potential to alleviate poverty and contribute to economic development (Oyun, 2009). This paper therefore identifies NTFPs collected and the level of their contribution to rural livelihood in the study area to provide a clear understanding of NTFPs and their contribution to rural livelihood.

**Methodology**

S**tudy Area**

The study was conducted in Gboko Local Government Area (LGA) of Benue State, Nigeria. Gboko LGA is headquartered in Gboko town, situated in the central part of the state. A map of Gboko Local Government Area is presented in Figure 1, illustrating its boundaries, major settlements, and geographical features. LGA is located on latitude 70 190300 North and longitude 90 000 180 East. The LGA is one of the twenty-three local Governments in Benue and it is bounded by Tarka LGA on the north, Ushongo Local LGA to the south, Buruku LGA on the east, Gwer LGA on the west, Konshisha LGA on the south-west. The LGA is composed of the following districts: Yandev, Ipav, Mbayion, Mbatyav and Mbatyerev. Furthermore, it has eighteen (18) council wards with an estimated population of 358,936 people according to the 2006 Nigeria Population Census also with a landmass of 2,264 km2. The vegetation of the area is the Guinea savanna. It is characterized by moderate grasses and trees that grow rapidly during the rainy season. The primary occupation of the inhabitants is Agriculture (farming), trading, and civil service and their major produce is yam and rice.

.

**Source**: Ministry of land and survey Benue State 2018

**Figur**e 1:Map of Benue State Showing Gboko Local Government Area

**Population, Sample Size and Sampling Techniques.**

The population of the study consisted of rural people in the study area. Multistage and simple random sampling techniques were adapted for the study. Five (5) council wards were purposively selected out of eighteen (18) based on their closeness to the forest. One (1) community was selected from each of the council wards. Two (2) villages were selected from each of the communities, making a total of ten (10) villages. 22 persons were randomly selected from each of the villages. Therefore, the sample size for the study was 220 respondents. However, only 215 questionnaires with complete data were used for data extraction and analysis.

 **Data collection**

This study employed a multi-method approach, utilizing semi-structured questionnaires, oral interviews, and personal observations to collect primary data.

**3.5 Data Analysis**

Descriptive statistics such as frequencies and percentages were used. A five-point Likert scale rating was used to measure the contribution of NTFPs to poverty reduction. The weighted scale was derived based on the following values for specific questions to the respondents. Very High (VH) = 5, High (H) = 4, Medium (M) = 3, Low (L) = 2, Very Low (VL) = 1

The mean score of respondents is expressed as $MS = \frac{\sum\_{}^{}f}{n}$

Where:

f = summation of five-point rating scale and

n = number of points

MS = 1+2+3+4+5

 5

MS = 3.0

The Likert weighted score (WS) is expressed as: $Ws= \sum\_{i=1}^{n}fixi$

The Likert weighted mean score (WSC) is expressed as: $WMS= \frac{\sum\_{i=1}^{n}fixi}{N}$

Where:

F = frequency of respondent

X = Likert scale point

N = total number of respondents

Using the interval scale of 0.05, the Upper Limit (UL) cut-off is MS+0.05 (3.0+0.05). The Lower Limit (LL) cut-off is MS-0.05 (3.0-0.05 = 2.95). Based on these two extreme limits variables with WMS below 2.95 (WMS<2.95) is considered disagree. Variables with WMS between 2.95 to 3.05. undecided any variable WMS greater than 3.05 (WMS>3.05) Agree, (Dagba *et al*..,2017)

**Results**

**Socio-economic Characteristics of NTFPs Users**

As presented in Table 1, the age bracket range of 36-45 years had the highest proportion (40%), this was followed by the age bracket of 26-35(25.1%), 46-55(16.1%), 56-65(8.4%), 15-25(7.9%), 66-75(1.4%) while the least age bracket of 76-85 years recorded 0.5%.

In terms of gender, the majority of the respondents were females with 60% while only 40% were males. The marital distribution shows that married persons had the highest proportion (62.8%), this was followed by singles (31.2%), and separated marriages (3.7%), while divorcees were only 0.5%. On the educational status of respondents, the majority (34%) had tertiary education, this was followed by secondary education (31.6%), and primary education (20.5%) while only 14% had no formal education. Based on occupation, farmers (41.4%) were the majority, followed by civil servants (34.9%), students (14%), traders (7.4%), and hunters (2.3%) were the least among the occupations. The household size of 6-10 (47.0%) members had the highest proportion, this was followed by that of 11-15 (14.8%), 16-20 (3.3%), 21-25 (2.8%) while those of 1-5 and 26-30 had 1.1% and 1.0% respectively. Result on religion show that Christians were the majority (97.7%) while only 2.3% were Islam.

Based on the period of residence of respondents, the majority (28.8%) had settled between 31-40 years, 14.2% between 21-30 years, 13.2% between 11to 20 years, 9.3% had settled up to 10 years, while 3.2% and 1.3% had settled between 41-50 years and 51-60 years respectively.

Table 1: Socio-Economic Characteristics of Non-Timber Forest Products Users in Gboko Local Government Area.

|  |  |  |  |
| --- | --- | --- | --- |
| Characteristics  | Category | Frequency(n:215)  | Percentage |
| Gender | MaleFemale | 86129 | 40.060.0 |
| Age | 15-2526-3536-4546-5556-6566-7576-85 |  175486361831 | 7.925.140.016.78.41.45 |
| Marital status | SingleMarriedDivorcedWidowSeparated | 67135148 | 31.262.80.51.93.7 |
| Level of education | Non-formalPrimarySecondaryTertiary | 30446873 | 14.020.531.634.0 |
| Occupation | Civil servantFarmerHunting TraderStudent | 758951630 | 34.941.42.37.414.0 |
| Household size | 1-56-1011-1516-2021-2526-30 | 6710132762 | 31.147.014.83.32.81.0 |
| Years of residency | 1-1011-2021-3031-4041-5051-60 | 2028956273 | 9.313.214.228.83.21.1 |
| Religion | ChristianityIslam | 2105 | 97.72.3 |

**Types of Non-Timber Forest Products in Gboko Local Government.**

The result in Table 2 indicates that fuel wood (14.9%) had the highest utilization proportion, followed by bush meat (12.1%), fruits (10.6%), medicinal plants (9.8%), charcoal (9.3%), herbs (6.5%), condiments (5.6%), cricket (5.1%), leaves for soup (5.1%), and caterpillar (4.2%). while honey (1.9%), Oils (91.9%), and forest insects (1.3%) were the least utilized in the study area.

**Table 2: The Utilization of Non-Timber Forest Products in Gboko LGA**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S/No.** | **NTFPs** | **Frequency**  | **Percentage**  | **Ranking**  | **Uses** |
| 1 | Fuelwood | 32 | 14.9 | 1 | Fuel |
| 2 | Bush meat | 26 | 12.1 | 2 | Food |
| 3 | Fruits | 23 | 10.6 | 3 | Food |
| 4 | Medicinal plants | 21 | 9.8 | 4 | Medicines |
| 5 | Charcoal | 20 | 9.3 | 5 | Fuel |
| 6 | Herbs | 14 | 6.5 | 6 | Medicines |
| 7 | Condiments | 12 | 5.6 | 7 | Food |
| 8 | Cricket | 11 | 5.1 | 8 | Food |
| 9 | Leaves for soup | 11 | 5.1 | 9 | Food |
| 10 | Caterpillar | 9 | 4.2 | 10 | Food |
| 11 | Climbers | 8 | 3.7 | 11 | Food |
| 12 | Mushroom | 7 | 3.3 | 12 | Food |
| 13 | Fodder | 6 | 2.8 | 13 | Feed |
| 14 | Bush mango (*Irvingia gabonensis)* | 4 | 1.9 | 14 | Food |
| 15 | Honey(wild) | 4 | 1.9 | 15 | Food |
| 16 | Essential oil | 4 | 1.9 | 16 | Gream |
|  17 | Forest insects | 3 | 1.3 | 17 | Food |
|  |  | 215 | 100 |  |  |

**Contribution of Non-Timber Forest Products to Improve Livelihoods**

Table 3 shows the extent of the contribution of non-timber forest products to poverty reduction and livelihood enhancement. The Weighted Means Score (WMS), indicates that food (WMS =4.6>3.05), the highest mean, followed by fuel (WMS =3.9>3.05), medicine (WMS =3.6>3.05), trade (WMS =3.3>3.05) while recreation (WMS =3.2>3.05) indicated the least mean score. The result in Table 3 indicates that the non-timber forest products are mostly used for food, medicines, fuel and cream in the study area.

Table 3: Extent of Contribution of Non-Timber Forest Products to Livelihood Enhancement.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | VL | L | M | H | VH | N | WS | WMS | Decision |
| Food  | 1(1)  | 1(2)  | 18(54)  | 38(152)  | 157(785)  | 215  | 994  | 4.6  | high  |
| Fuel  | 3(3)  | 16(32)  | 59(177)  | 63(252)  | 74(370)  | 215  | 835  | 3.9  | high  |
| Medicine  | 2(2)  | 10(20)  | 74(222)  | 124(496)  | 5(25)  | 215  | 835  | 3.6  | high  |
| Trade  | 2(2)  | 9(18)  | 152(456)  | 35(140)  | 17(85)  | 215  | 701  | 3.3  | high  |
| Recreation  | 3(3)  | 34(68)  | 129(384)  | 21(84)  | 28(140)  | 215  | 679  | 3.2  | high  |

VL= Very Low, L- Low, M= Moderates, H=High, VH= Very high

Number of respondents (N) =240, Mean Score (MS)= 3.0, Upper Limit (UL) =3.05 and Lower Limit (LL)= 2.95, WMS =Weighted mean score.

**Note:** Values in brackets are products of Likert scale values and values outside the brackets are the frequency of respondents

**Discussion**

**Socio-Economic Characteristics of the Respondents**

The socio-economic characteristics of the respondents show that those in their active ages were the majority over the elderly. This is because the collection of NTFPs is labour intensive, hence younger people possess the strength required to go through the rigours of collection, harvesting, and processing of NTFPs and may be more dependent on forest products than elderly people (Mamo et al.,2007). This finding is corroborated by McElwee, (2008) who found that elderly people are less likely to collect NTFPs from the forest, hence they rely more on their farms because they may not have the strength to carry out forest-related activities.

The higher proportion of females gender over males shows that women rely more on NTFPs for their roles in the family. By division of labour, women are primarily responsible for the gathering of fuel, fodder, and wild foods, whereas men are mainly responsible for the growing of cash crops for profit, this is supported by the findings of Malhotra et al., (1993). Studies by Shackleton et al, (2003) and Paumgarten, (2005) reported that in 85% of South African rural households’ collection of NTFPs for consumption purposes, women collect 73% of the total NTFPs collection while only 27% of men are involved in the gathering of NTFPs.

The fact that married people are more the those who are single implies that they are more actively involved in the usage and supply of non-timber forest products and are conferred with the responsibility of providing nutritional, health, and other needs of their immediate households. This is in line with the findings of Ojo and Jibowo, (2008) who reported that married people are responsible individuals saddled with the responsibility of their families in rural communities in Africa. Maurice et al, (2015) in his research asserted that being married connotes a higher level of social responsibility.

The higher proportion of respondents being literate (86%) while only 14% having non-formal education implies that the majority of the people were knowledgeable and would also be more amenable to development policies required to be implementable. Also, they would be more disposed to cultivate sustainable practices on non-timber forest products.

The dominance of farming occupations among others implies that farmers are the major users of non-timber forest products. The collection of NTFPs by households is a traditional activity of households for their livelihoods.

The greater proportion of household sizes between 6-10 could be a blessing in terms of labour needed for NTFP activities. Adikhari, (2014), maintained that larger households have a greater demand for NTFPs and hence are more likely to collect NTFPs. In a similar vein, Rodrigez's (2007) study on the factors determining NTFP collection in India and Tassou, (2017) study on factors affecting household participation in the Non-Timber Forest Products market in Eastern Uganda found that having a second person in the home increases the likelihood that the household will collect more NTFPs. The labour provided by the household members could aid in the NTFP collection.

The fact that the majority of the respondents settled in the study area over 20 years suggests that the people in the study area maintain a land tenure system that is permanently dependent on the forest land for NTFPs and other income-generating activities as access to NTFPs is governed by a myriad of rules and tenure arrangements.

**Contribution of Non-Timber Forest Product to Improve Livelihood in Gboko LGA**

A good number of NTFPs extracted were utilized for fuel, food medicines and oil.  This finding is in line with those of Talukdar et al., (2021) who reported that these NTFPs are used by rural households for consumption and also traded for incomes. They stressed that the rural populace derives important benefits in terms of food and nutrition from these products because they serve as safety nets for poor and vulnerable agricultural communities in times of economic or agricultural stress. Products like medicinal products, wild fruits, leafy vegetables, bush meat, fresh and dried nuts, wild honey, and wild mushrooms. Jumbe, et al., (2008) estimated that 68% of total forest products harvested by rural households were consumed within the household and the remainder (32%) is sold for cash or exchanged for household goods.

They are used to meet the food requirement of households who remain food insecure due to soil infertility and traditional agronomic practices depend on alternative sources and primarily on forest resources for sustenance (Mohammed et al. 2010).

The high extent of NTFP collections is an indication that the majority of the rural livelihoods are largely dependent on these products to cater to their daily household needs. The extent of collections of NTfPs is in line with the findings of Ochi and Zaman (2019). The study found that firewood, medicinal products, wild fruits and vegetables had the highest collections and that nearly all the households in the communities, accounting for 93% living around Afaka Forest Reserve, Kaduna State, Nigeria collect NTFPs, and noted that firewood, wild fruits, and vegetables collection exceeded 70% mark of the collections.

The reasons for the high level of collections may be attributed to several factors including; being obtained freely of charge from the forest, lack of other sources of energy in the area, and cost of other sources of energy.

Ancha, et al., (2019), study on the contribution of Odoba forest reserve of the rural people in Ogbadibo LGA of Benue State, Nigeria also found that firewood, water supply, edible vegetables, fodder, and medicinal plants were mostly collected while food, income, medicine, employment and trade contributed more to the livelihoods of the rural people.

The findings of Suleiman, et al., (2017) indicated that fuelwood (99%) and medicinal herbs (84%), fruit nuts (80%), and fodder (67%) were the most commonly collected NTFPs by households in Fagore game reserve.

The contribution of non-timber forest products was high in all the areas investigated in terms of food, fuel, medicine, trade, and recreation. These findings are consistent with the study of Talukdar et al., (2021) in Northeast India, that NTFPs are used for a variety of purposes like food, fodder, fiber traditional medicine, and trade for cash incomes. They observed that the majority of the people who used these products were for food. Among plants, herbs were dominantly used (64.28%) followed by shrubs (14.28%) and trees (21.43%) while among the various plant parts, mostly the stem was used (50%), followed by leaves (15%) and fruits (14% while one-fourth of the villagers were found to be dependent on NTFPs for sustaining livelihood to various degrees. Suleiman, et al., (2017).

Aiyeloja and Ajewole, (2006) study on Non-Timber Forest Products marketing in Nigeria: A case study of Osun state reported that bushmeat and medicinal plants contribute to the nutritional and medicinal needs of people and are viable business ventures.  They found that 98% of the respondents prefer bushmeat to other meat though almost half of them (48%) consume bushmeat occasionally while most of the medicinal plants competed favuorably with orthodox medicine in the past and the present. They have been incorporated into the therapy which has proved successful and it is common to see drugs made from NTFPs in patent stores after they have been certified by registered pharmacists.

This is also corroborated by the World Health Organisation (WHO) report which estimated that up to 80% of the population rely on traditional medicines, mostly plant-based drugs, for their primary health care. in many developing countries with limited access to modern medicines, plant medicines which in many cases serve as prime sources of health care available to the poor, and many people use these remedies (Pandey et al., 2016).

According to Azeke (2002), Plant medicines are generally the first recourse for rural households. and can only turn either to traditional healers or Western-type medicines when they fail. Generally, a large number of forest plants have medicinal value hence, the forest is the richest drugstore (World Bank, 2016).

Similarly, Barirega et al., [39] in Uganda maintained that the importance of wild plants as valuable source of food and medicines is increasing for many households which are also traded for household incomes. Many NTFPs collected are sources of cash income for many rural households and this has been reported by many studies. Jimoh et al., (2013) reported that rural households in Nigeria derived up to 80% of their incomes from the sales of NTFPs.

This finding is also in line with the research study reported by Brian, et al. [5] [[L6]](#_msocom_6) that non-timber forest products contribute about 33% to household income for participating households, on average, while that of Suleiman et al., (2017) reported that NTFPs accounts for one- third of the total rural household’s economy in their study. In terms of market profitability, Ibeagwa, et al., (2020) reported a profitability index of 0.43% while the findings of Ojomah et al., (2020) indicated that the majority of the rural households generated an income of ₦61,000 and above monthly in their study. Ochi and Zaman (2019) estimated that firewood accounted for the highest gross earnings of N4,661,440 while poles accounted for N2,698,800 as gross income realized from the Afaka forest reserve in Kaduna State in 2015. Akinta, et al., (2013), reported that NTFPs could serve as a source of wealth creation and consequently aid poverty alleviation, considering the socio-economic level of most inhabitants of rural areas who earn meager income, gathering and sales of NTFPs is one of the ways by which they can generate additional revenue. However, this could have implications for the high rate of extraction, which may predispose the forest tree species to extinction and loss of carbon sink which would result in trade-off of public good for private short-term satisfaction.

**Conclusion**

The people Gboko LGA of Benue State actively collects and utilizes non-timber forest products and was also able to discover that fuel wood, bush meat, fruits, and medicinal plants are the most collected and utilized NTFPs in the study area.

**Recommendations**

More research should be conducted in the study area to provide adequate information to enable policies and strategies that will enhance the sustainable utilization of these resources.

More research should be conducted to enable the prioritization of the highly utilized products in the study area.

Long-term goals aimed at improving opportunities for inclusive growth, human capital development, equity, and social stability should be adopted.

**References**

1. Adedayo, A. G. (2012). Non-timber Forest Products Governance for Improved Rural Livelihood in Nigeria. *American Journal of Agriculture and Forestry*. 6(1):12-17.
2. Adhikari, B. (2004). Analysis Household characteristics and forest dependency: evidence from common property forest management in Nepal Salvatore Di Falco1, Jon Center for Ecology, Law and Policy, Environment Department, University of York, Heslington, York YO10 5DD, UK. *Ecological Economics* 48 (2004): 245– 257.
3. Akinta, C.I., Gbadebo, J.O., Oseke, J.I., Akinbi, O.J., Akintan, A.O*.* (2013).Potentials of Non-Timber Forest Products (NTFPs) for poverty alleviation in Odigbo L.G.A of Ondo State. *Journal of Forestry Research and Management*. 10(2013):29-39.
4. Agrawal, A., Cashore, B., Hardin, R., Shepherd, G., Benson, C. and Miller, D. (2013). Economic Contributions of Forests. Background Paper 1, United Nations Forum on Forests (UNFF), 10th Session, Istanbul, Turkey. Available at: [http://www.un.org/esa/forests/pdf/session\_ documents/unff10/EcoContrForests.pdf](http://www.un.org/esa/forests/pdf/session_%20documents/unff10/EcoContrForests.pdf)
5. Aiyeloja, A.A. and Ajewole, O.I. (2006). Non-timber forest products’ marketing in Nigeria. A case study of Osun State. *Educational Research and Reviews* 1(2):52-58.
6. Angelsen, A., Jagger, P., Babigumira, R., Belcher, B., Hogarth, N.J. and Bauch, S. (2014). Environmental Income and Rural Livelihoods: A Global-Comparative Analysis. *World Dev*. 64:12–28
7. Angelsen, A. and Wunder, S. (2003). Exploring the Forestry-Poverty Link: Key Concepts, Issues and Research Implications. CIFOR Occasional Paper No. 40. Center for International Forestry Research, Bogor, Indonesia.
8. Arnold, J.E.M., Powell, B., Shanley, P. and Sunderland, T.C.H. (2011). Editorial: Forests, Biodiversity and food security. *International Forestry Review*, 13(3): 259–264.
9. Arnold, J.E.M., Köhlin, G. and Persson, R. (2006). Woodfuels, Livelihoods, and Policy Interventions: Changing Perspectives. *World Development* 34(3): 596-611.
10. Barirega, A., Agea, J.G., and Van Damme, P. (2012). Prioritizing wild medicinal and food plants with potential for commercialization and value chain improvement for livelihood enhancement and poverty reduction in Uganda*. Res. J. Environ. Earth Sci*. 4(6):668-673.
11. Beckley, T.M. (1998). The Nestedness of Forest Dependence: A Conceptual Framework And Empirical Exploration. *Soc Nat Resour*, 11:101–120
12. Belcher. B., M. Ruiz Pérez and R. Achdiawan (2005) ‘Global Patterns and Trends in The Use and Management of Commercial NTFPs: Implications for Livelihoods and Conservation.’ *World Dev*, 33 (9): 1435-1452.
13. Brian, P. Mulenga, R., Richardson, B. and Tembo, G. (2012). Non-timber forest products and rural poverty alleviation in Zambia. Indaba Agricultural Policy Research Institute 26A Middleway, Kabulonga, Lusaka, Zambia. 2012;12-13
14. Dagba, B. I., Azeez, I. O., Ancha, P. U. (2017). Assessment of Community-Based Forest Management Practices in Benue State, Nigeria. *Journal of Environmental Science, Toxicology and Food Technology,* (91):1-8.
15. Endamana, D., Angu, K.A., Akwah, G.N., Shepherd, G., and Ntumwel, B.C. (2016). Contribution of Non-Timber Forest Products to Cash and Non-Cash Income of Remote Forest Communities in Central Africa. *International Forestry Review,* 18(3):280–295
16. FAO (2010). Global Forestry Resources Assessment, 2010. Food and Agricultural Organization. (FAO). Forestry paper163, Rome, Italy, pp. 340.
17. Jimoh, S.O., Amusa, T.O. and Azeez, I.O. (2013). Population distribution and threats to sustainable management of selected non-timber forest products in tropical lowland rainforests of Southwestern Nigeria. *Journal of Forest Resources* 24(1):75–82
18. Kusters, K., Achdiawan, R., Belcher, B. and Ruiz Pérez, M. (2006). Balancing development and conservation? An assessment of livelihood and environmental outcomes of non-timber forest product trade in Asia, Africa and Latin America. *Ecology and Society*, 11(2): 20.
19. Malhotra, K., Deb, D., Dutta, M., Vasulu, T., Yadav, G., Adhikari, M., (1993). “Role of Non- Timber Forest Produce in Village Economies in South West Bengal, India”, Rural development Forestry Network, Network Paper. 15p.
20. Malleson, R., S. Asaha, M., Egot, M., Kshatriya, E., Marshall, K., Obeng-Okrah and Sunderland, T. (2014). Non-Timber Forest Products Income from Forest Landscapes of Cameroon, Ghana and Nigeria – An Incidental or Integral Contribution to Sustaining Rural Livelihoods? *International Forestry Review*, 16(3):261-277.
21. Mamo, G., Sjaastad, E., and Vedeld, P. (2007). Economic dependence on forest resources: a case from Dendi District, Ethiopia. *Forest Policy and Economics*. 9 (8):916–927.
22. Marshall, E., Schreckenberg, K. and Newton, A.C. (eds.) (2006). Commercialization of non-timber forest products: factors influencing success: lessons Learned from Mexico and Bolivia and policy implications for decision-makers. UNEP-World Conservation Monitoring Centre. Cambridge.
23. Maske, M., Mungole, A., Kamble, R., Chaturvedi, A. and Chaturvedi, A. 2011. Impact of nontimber forest produces (NTFPs) on rural tribes’ economy in Gondia district of Maharashtra, India. *Achieves of Applied Science Research* 3(30): 109-114
24. Maurice, D. C., Umar, Y. and Zubairu, E. (2015). Analysis of Factors Influencing Fuelwood Consumption in Some Selected Local Government Areas of Taraba State, Nigeria. *Journal of Agricultural Economics,*
25. McElwee, P.D. (2008). Forest Environmental Income in Vietnam: household Socioeconomic Factors Influencing Forest use. *Environment Conservation*. 35:147–159.
26. Mohammed, S.O., Gajere, E.N., Eguaroje, E.O., Shaba, H., Ogbole, J.O., Mangut, Y.S. and Kolawole, I.S. (2010). Spatio-Temporal Analysis of The National Parks in Nigeria Using Geographic Information System. *IFE Journal of Science,* 15(1):159–166
27. Munanura, I.E., Backman, K.F., Moore, D.D., Hallo, J.C. and Powell, R.B. (2014). Household Poverty Dimensions Influencing Forest Dependence at Volcanoes National Park, Rwanda: An Application of the Sustainable Livelihoods Framework. *Natural Resource* 5(16):10-31.
28. Neumann and Eric Hirsch, (2000). Commercialization of Non-Timber Forest Products: Review and Analysis of Research Center for International Forestry Research CIFOR, Indonesia.
29. Neumann, R.P. And Hirsch, E. 2000. Commercialization of non-timber forest products: review and analysis of research. CIFOR, Bogor, Indonesia.
30. Ochi, J.E. and Zaman, E.Y. (2019). Non-timber forest products services and social protection: to what extent is environmental trade-off permissible in Afaka Forest Reserve, Kaduna State, Nigeria? Paper presented at African Association of Agricultural Economists, held at Sheraton Hotel & Towers, Abuja, Nigeria, 23-26 September, 2019.
31. Ogunsawa, O.Y. and Ajala, O.O. (2002). Firewood crises in Lagos- implication on the suburban and rural ecosystem management, Proceeding of the 28th annual conference of Forestry Association of Nigeria at Akure, Ondo State. Nov. 4th – 8th., pp 257–264.
32. Ojea, E., Loureiro, M.L., Alló, M., and Barrio, M. (2016). Ecosystem services and REDD: estimating the benefits of non-carbon services in worldwide forests. *World Development*, 78:246–261.
33. Ojo, and Jibowo, (2008). “Impact of Microfinance on Entrepreneurial Development: the case of Nigeria”. Proceedings of the International Conference on Economics and Administration Organized by Faculty of Administration and Business, University of Bucharest, Romania, 14 - 15 Nov. 2009. Accessed 16 /04/2018.pp 536 – 545.
34. Ojomah, B.C., Ibe, A.E., Ezenwenyi, J.U., Chukwu, O. and Adum, N.N. (2020). Assessment of Income Generation from Non-timber Forest Products in Awka-North Local Government Area of Anambra State, Nigeria. *Asian Journal of Research in Agriculture and Forestry,* 5(2): 16-21.
35. Oyun, M. B. (2009): The Role of Non-timber Forest Products on the Livelihoods of Fringe Communities of Idanre Forest Reserve, Nigeria. *Forests and Forest Products Journal*, 2(2009):6-75.
36. Pandey, A.K. Tripathi, Y.C. and Kumar, A. (2016). Non-timber Forest Products (NTFPs) for Sustained Livelihood: Challenges and Strategies. *Rescores Journal of Forestry*., 10(1):1-7.
37. Paumgarten, F. (2005). The Role of Non-timber Forest Products as Safety-nets: A review of evidence with a focus on South Africa. *Geography Journal* 64(3):189–197
38. Richardson, R.B. (2010). Ecosystem Services and Food Security: Economic Perspectives on Environmental Sustainability. *Sustainability,* 2(35):20-48.
39. Rodrigez, F.Z. (2007). Socio -economic determinants of Non-Timber Forest Products Collection. A case study among indigenous people in Karnataka, India. Universitat Autònoma de Barcelona, Spain.
40. Shackleton, C.M. and Shackleton, S.E. (2004). The importance of non-timber forest products in rural livelihood security and as safety nets: A review of evidence from South Africa. *South African. Journal of Science*., 100(12): 658-664
41. Shackleton, C., Shackleton, S. (2003). Value of Non-timber forest products and rural safety nets in South Africa, Paper presented at the International Conference on Rural Livelihoods, Forests and Biodiversity 19-23 May, 2003, Germany
42. Shackleton, C.M. and Shackleton, E.S. (2006). Household Wealth Status and Natural Resource Use in the Kat River Valley, South Africa. *Ecological Economics,* 57.2: 306-17.
43. Solomon, M. M. (2016). Importance of Non-Timber Forest Production in Sustainable Forest Management and Its Implication on Carbon Storage and Biodiversity Conservation in Case of Ethiopia*. Journal of Biodiversity and Endangered Species* 4(1):1-8.
44. Suleiman, M.S., Wasonga, V.O., Mbau, J.S., Suleiman, A. and Elhadi, Y.A. (2017). Non-timber Products and their Contribution to Households’ Income around Fagore Game Reserve in Kano, Nigeria. *Ecological Processes.*, 6(23):1-14.
45. Sunderland, T., Besong, S. and Ayeni. J. (2003). Takamanda: The Biodiversity of an African Rainforest. In SI/MAB Series #8, ed. J.A. Comiskey, T.C.H. Sunderland, and J. L. Sunderland-Groves. Washington, D.C.: Smithsonian Institution.
46. Talukdar, N.R., Choudhury, P., Barbhuiya, R.A., Singh, B. (2021). The Importance of Non-Timber Forest Products
	1. (NTFPs) in rural livelihood: A study in Patharia Hills Reserve Forest, northeast India. Trees, Forest and People. 3(3):100042.
47. Tassou, M. (2017). Factors Affecting Household Participation in Non-Timber Forest Products Market in Eastern
48. Uganda. An MSc. thesis submitted to the Department of Agricultural Economics, University of Nairobi. 113pp.
49. The World Bank. (2016). “Who are the poor in the developing world?” Policy Research Working Paper 7844, Background Paper. Poverty and Shared Prosperity Report 2016: Taking on Inequality.
50. Zaku, S.G., Tukur, A.A., Kabir A., Jimento, I.G. (2013). Wood fuel consumption in Nigeria and the Energy Ladder: a Review of Fuelwood Use in Kaduna State. *Journal of Petroleum Technology and Alternative Fuels* 4(5):85–89.