Journal of Research in Forestry, Wildlife & Environment Vol. 15(2) June, 2023
***E-mail:** jrfwe2019@gmail.com; jfewr@yahoo.com*
http://www.ajol.info/index.php/jrfwe

jfewr ©2023 - jfewr Publications
ISBN: 2141 – 1778
Maiguru, 2023

ASSESSMENT OF INCOME GENERATION ON NON-TIMBER FOREST PRODUCTS IN ENEME COMMUNITY FOREST TARABA STATE, NIGERIA

Maiguru A. A.

Department of Forestry and Wildlife Management, Federal University Wukari –Taraba State, Nigeria
***Corresponding author:** *ngamuabel@gmail.com;* 08032762008

ABSTRACT

The study assessed income generation on non-timber forest products in Eneme Community Forest Reserve in Taraba State, Nigeria. Multi-stage random sampling technique was adopted in selection of the communities that were used in the study. A total of 127 copies of structured questionnaire for information collection were administered to respondents who are involved in Non-Timber Forest Products (NTFPs) collection and income generation activities. Data collected were analyzed by descriptive statistics and logistic regression analysis. The study showed that there is variety of non-timber forest products in the area. Most (69.2%) of the respondents earned between ₦11,000.00 and above monthly (₦132,000.00 yearly) from the sale of NTFPs. The findings revealed that the respondents are involved in collection of Irvingia gaboneensis (76%), bush meat (55%) as hunters, honey harvesting (44.8%), harvesting of piper quineensis (39.4%) of the respondents. Firewood has a major share in NTFPs income generation with (99%) of respondents engaging in its collection. Other NTFPs which constitute less than 5% include Luffa cylindrical (sponge), Massuleria accuminata (chewing sticks), worms, and insects. The major problem confronting respondents in the collection and sale of NTFPs is scarcity of the NTFPs in the reserve (90%). Others include bad road network (75%), lack of market (55%), lack of transport (54%) and insecurity (31%). The income generation from NTFPs was significantly influenced by age and family size. It is therefore recommended that in order to sustain this important forest reserve, government and the inhabitants should embark on enrichment planting in the forest with fast growing exotic and indigenous tree species.

Key words: Non-timber forest products; Income generation; Socio-economic characteristics; Enrichment planting; Eneme Community Forest Reserve.

Correct Citation of this Publication
Maiguru A. A. (2023). Assessment of income Generation on Non-Timber Forest Products in Eneme Community Forest Taraba State, Nigeria. *Journal of Research in Forestry, Wildlife & Environment* Vol. 15(2): 200 – 207.

INTRODUCTION

The role of Non-Timber Forest Products (NTFPs) varies from one place to another depending on the economic and cultural contexts. In developed countries, for instance, NTFPs are usually used for cultural and recreational purposes, biodiversity conservation, and rural economic development. In developing countries, especially in Africa and Asia, they are mostly utilized for subsistence and income generation (Endamana *et al*. 2016). In the developing nations, NTFPs are therefore considered a safety net that fills the gaps due to a shortfall in agricultural production or other forms of emergencies (Shackleton and Shackleton 2004; Paumgarten 2005; Angelsen *et al*., 2014). As indicated by Agrawal *et al.*, (2013), the NTFPs-based activities, if prioritized by the government and other stakeholders can be used to

enhance the economic and social wellbeing of communities living in and around forestlands. Economic estimates of approximately USD 90 billion per annum have been set for NTFPs worldwide, and approximately one-third of the same is consumed in the local economy without entering the market (Pimentel *et al.*, 1997; Mahapatra and Tewari 2005). Most importantly, the NTFPs contribution to rural households' income is significant in many countries globally. For example, Shackleton *et al.*, (2007) concluded that the shares of households' income from NTFPs revenue are sometimes equal to or more than the school teachers' minimum wages in Central and West Africa. They further reported that the NTFPs traders from the Democratic Republic of Congo earned between USD 16 and160 per week while producers earned about 50–75% of that amount per week. Previous workers have observed that rural households in Nigeria derived up to 80% of their incomes from the sales of NTFPs (Jimoh *et al.*, 2013). In addition, Ogunsawa and Ajala (2002) reported that over 70% of the country's households depend directly on fuel wood as their main sources of energy, with daily consumption estimated at 27.5 million kg/day. Thus, harvesting and processing of NTFPs in many areas in the country have shifted from subsistence exploitation and sales at the local markets to international cross-boundary trade. For example, in the high forest zones of Eastern and Western Nigeria, harvesting of game meat and snails for sales are now major income generating activities almost all year round (Onuche, 2011).

While in the Savannah zone of Central and Northern Nigeria, honey, fuel wood, locust bean seeds, gum arabic, and charcoal production generate lots of incomes for the rural households (Jimoh and Haruna 2007; Jimoh *et al*., 2013). Similar contributions of NTFPs to rural wellbeing have been reported in other African countries including Kenya and Tanzania (Campbell 1991; Schaafsma *et al.* 2014 and Mbuvi and Boon 2009). The world is grappling with a myriad of problems, including deepening poverty situations in many countries; especially the forest-dependent communities. These communities are mostly located in remote areas where most of the services and provisions are limited. Consequently, these communities find themselves heavily reliant on the natural resources within their proximity often times. Therefore, forest resources, particularly the Non-Timber Forest Products (NTFPs) have been established as an essential source of livelihood for the majority of forest dependent communities among others. This study aimed at assessing the forest-people relationship in terms of the contributions of NTFPs to household's livelihoods and incomes; an important parameter that may guide policy formulation, practice, and management. This research work was embarked upon to assess income generation from non-timber forest products in Eneme Community Forest of Taraba State, Nigeria. Eneme Community Forest is one of the biodiversity hotspots in Kurmi Local Government area. It has many adjacent communities that depend so much on the forest for their livelihoods. Despite the significance of the forest to the locals and the entire state in general, there has not been any study conducted to assess the level of interaction between the inhabitants and the forest. The objective of this study therefore is to evaluate the socio-economic characteristics of the settlers living around the reserve, determine the inhabitant's income generation from non-timber forest products, the current status of the forest, and provide baseline information about the forest.

MATERIALS AND METHODS

Study area

The Study was conducted in Eneme Community Forest in Kurmi LGA of Taraba State, Nigeria. The area is located roughly between Latitudes 5^0 31' and 7^0 18' North, Longitudes 10^0 18' and 11^0 37' East (Taraba State Govt., 2014). The LGA is bounded in the South by the Republic of Cameroon, in the South-east and North-east by Sardauna and Donga LGA respectively. It is also bounded in the North by LGA, in the North-west and South-west by Donga and Ussa LGA respectively (Taraba State Govt., 2014). The LGA lies on the south border with Cameroon and the vegetation of these areas are richly blessed with fertile soil which grows a number of cash crops and food crops such as bananas, plantains, rice, groundnuts, oranges, palm trees, cocoyam and cocoa (Terkula, 2013). The local is also a producer of high quality timber and the only local

government with the state that owned Timber Company which was called Baissa Timber Development Corporation (Terkula, 2013). The LGA is also endowed with various natural resources including precious stones, like gemstones, waterfalls, and mountains. The main occupations of the people are farming, hunting and trading. Eneme Community Forest is bounded by Eneme, Abombia, Ndu-Eshito.Akpang, Amran and Mbethe communities all in Kurmi LGA.

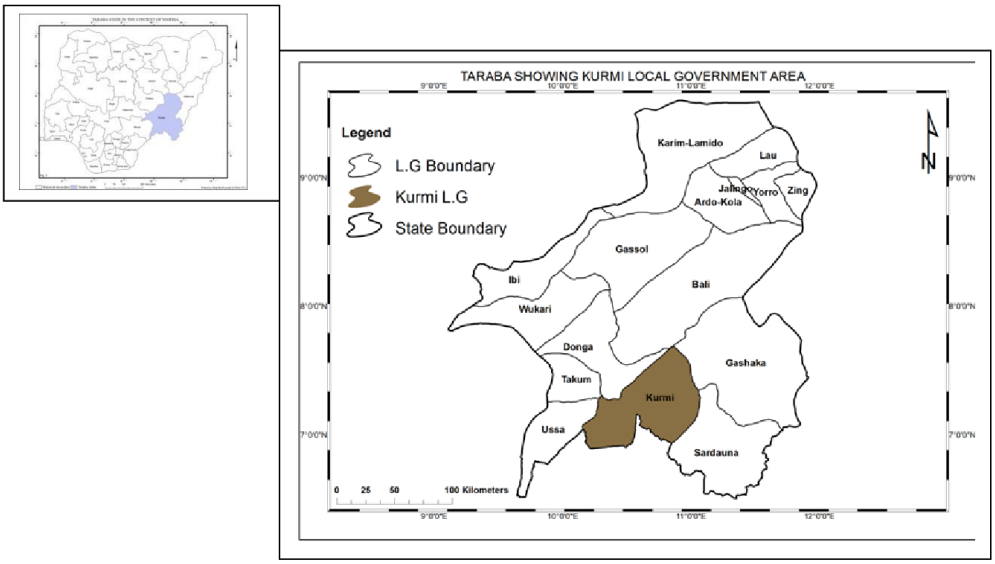

Figure 1: Map of Taraba State showing Kurmi Local Government Area.

Data collection

Multi-stage random sampling technique was used to select six communities to assess income generation from non-timber forest products in Eneme Community Forest Reserve. The communities selected include Eneme, Abombia, Ndu-Eshito.Akpang, Amran and Mbethe. A total of 127 copies of structured questionnaires were administered among the selected communities to respondents who are involved in Non-Timber Forest Products (NTFPs) collection and income generation activities. Thirty (30) respondents were randomly selected from Eneme the largest community and the Headquarters of the ward, followed by Abombia with 27 respondents, Mbethe 20 respondents, Ndu-Eshito 18 respondents, Akpang 17 respondents and Amran 15 respondents. The information collected on the socio-economic characteristics of the respondents were age, gender, marital status, education, family size, primary occupation, farm size, and years of farming experience. Those collected on the non-timber forest products include NTFPs availability in the area, problems faced by respondents in the collection and marketing of NTFPs and income generated by the respondents monthly from the sale of NTFPs in the study area.

Data analysis

Data collected were analyzed by descriptive statistics including frequency, Tables, percentages, and bar chart. Multiple regression analysis was used to determine socio-economic factors that influenced collection of NTFPs by respondents from the forest. The linear function form that was used and gave the best fit is explicitly stated as;

Regression $Y= f (x^1, x^2, x^3, x^4, x^5, x^6, x^7 \ldots\ldots\ldots\ldots u^t)$ …. (1)

$Yij = b_0+b_1x_1+ b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5\ldots\ldots+\mu$ …… (2)

Where:

b_0=Intercept,

μ= errors term.

$y=f(x_1\ldots\ldots\ldots\ldots\mu$

Where:

y=amount generated in the forest (₦)

x_1=Gender

x_2= Age
x_3= Marital status
x_4= Family size
x_5=Education
x_6=Farm size
x_7=Years of farming experience

RESULTS

Socio-economy characteristics of respondents in the study area.

Table 1 shows the results of demographic characteristics of respondents in the six communities selected living around Eneme community forest. The age of respondents in the study area was predominately (57.4%) young people between the ages of 28–40, those between the ages of 41-54 was (26.7%), while those from 55years and above were (15.7%). Majorities (76.4%) of the sampled population were males and majority (64.8%) was married. The respondents' educational level showed that (63.8%) had primary, secondary and tertiary education, while only (36.2%) had no formal education. The predominant family size was (49.6%) 6-10 persons, (32.3%) 1-5 persons and (18.1%) 11 persons and above persons. The major occupation (96.0%) of the respondents is farming.

Table1: Socio–economic characteristics of respondents in the study area

Socio-economic factors	Eneme (f)	Abombia (f)	Ndu-Eshito (f)	Akpanh (f)	Amran (f)	Mbethe (f)	Total
Age:							
28-40	18	19	9	11	6	10	73
41-54	7	5	5	4	7	6	34
>55	5	3	4	2	2	4	20
Total	30	27	18	17	15	20	127
Gender							
Male	20	24	15	15	9	14	97
Female	10	3	3	2	6	6	30
Total	30	27	18	17	15	20	127
Marital Status							
Married	17	21	15	14	4	10	81
Single	5	-	3	1	3	3	15
Widow/Divorce	8	6	-	2	8	7	31
Total	30	27	18	17	15	20	127
Education							
Primary	5	5	2	3	2	10	27
Secondary	13	12	6	7	-	2	40
Tertiary	7	6	-	1	-	-	14
No Formal	5	4	10	6	13	8	46
Total	30	27	18	17	15	20	127
Family size							
1-5	7	7	5	5	9	8	41
6-10	20	19	5	8	4	7	63
>11	3	1	8	4	2	5	23
Total	30	27	18	17	15	20	127
Major Occupation							
Farming	22	20	18	15	13	8	96
Civil service	4	-	-		2	3	9
Trading	-	5	-	-	-	4	9
Hunting	4	2	-	2	-	5	13
Total	30	27	18	17	15	20	127

Non-timber forest products available in the study area

The study identified a total of 19 related plants and animal species used as NTFPs in the study area (Table 2). The result revealed that 76% of the respondents reported they are involved in the collection of *Irvingia gaboneensis*, 55% were engaged in bush meat business as most households have one or two person(s) that hunt. Other respondents (44.8%) were engaged in harvesting honey and 39.4% of the respondents harvest *Piper quineensis*. Firewood is a major share in NTFPs in income generation with (99%) of respondents engaged in its collection, while the least share in NTFPs income generation are from *Luffa cylindrical* (sponge), *Massuleria accuminata* (chewing sticks), worms, and insects. These NTFPs are mostly utilized for cash income in the study area. The 1% of respondents who are not engage in the collection of the NTFPs reported that they buy the products from the collectors for their households use. The study has showed that about 99% of the respondents were engaged in the collection of NTFPs for their livelihoods from the forest.

Table 2: Non-timber forest products available in the study area

S/No.	Name of non-timber forest products	Local name	No of respondents	Ppercentage (%)
1	*Irvingia gaboneensis*	ogbono	97	76
2	*Piper guineensis*	Masoro	50	39.4
3	*Bambusa vulgaris*	Gwangwala	10	7.8
4	*Ancistrophyllum opacum*	Gwagiri	15	11.8
5	*Zingiber officinale*	Citafo	15	11.8
6	*Aframomum latifolium*	Borkunu daji	10	7.8
7	*Honey*	Zuma	57	44.8
8	Bushmeat	Nama daji	70	55.1
9	Mushroom	Nama itace	10	7.8
10	Luffa cylindrical	Soso	5	3.9
11	Wrapping leaves	Gayen goro	20	15.7
12	Landophia fruits	-	15	11.8
13	Vitex doniana	Dinya	5	3.9
14	Mammals	-	18	14.1
15	Reptiles	-	16	12.5
16	Fish	Kifi	13	10.2
17	Insects	Susa	6	4.7
18	Thatch	-	17	13.3
19	Fire wood	Itace wuta	124	97.4

Table 3: Problem mitigating against the collection and sale of NTFPs in the study area

S/NO	Factors affecting collection and sales of NTFPs	Number of respondents	Percentage (%)
1	Scarcity of NTFPs	114	90
2	Bad rural road network	95	75
3	Lack of good market	70	55
4	Lack of transport	69	54
5	Insecurity	39	31

As shown in Table 3, scarcity of NTFPs is the major problem the households are facing in the study area (90%). Other difficulties faced in the collection and sales of NTFPs include bad rural road network (75%), lack of market (55%), lack of transport (54%) and insecurity (31%). These

difficulties have caused the respondents to sale their products at a giveaway prices to the middle men who transport the produce to urban areas where they are higher prices.

Table 4 showed the monthly income generation from non-timber forest products among the respondents in the study area. The result revealed that majority (69.2%) of the respondents earned ₦11, 000.00 and above) monthly from the sale of NTFPs, (18.1%) of the respondents earned between ₦6,000.00- ₦10,000.00 monthly, and (12.5%) of the respondents earned between ₦1,000.00 and ₦5,000.00 from the sale of non-timber forest products.

Table 4: Monthly income generation from non-timber forest products by the respondents

Community	N1,000-5,000:00	N6,000-10,000:00	>N11,000:00	Total
Eneme	3 (10)	5 (16.7)	22 (73.3)	30
Abombiya	5 (18.5)	6 (22.2)	16 (59.3)	27
Ndu- Eshito	2 (11.1)	2 (11.1)	14 (77.8)	18
Akpanh	2 (11.8)	4 (23.5)	11 (64.7)	17
Amran	3 (20,0)	2 (13.3)	10 (66.7)	15
Mbethe	1 (5.0)	4 (20.0)	15 (75.0)	20
Total	16	23	88	127

The values in parenthesis are percentages

Table 5 showed the socio- economic characteristics variables that were tested to determine the level of their influenced in income generation from non- timber forest products in the study area. The variables include age, gender, marital status, education, family size and major occupation of respondents. The result revealed that income generation from non-timber forest products were highly influenced by age and family size of the respondents. Age was positively significant at $p< 0.05$, meaning that the population was dominated by younger people who are strong and vibrant than the older people. The quality of strength associated to the age class and the ability to take risks in the collection of NTFPs for income generation contributed to their involvement. Family size was also positive and significant at $p< 0.05$. The more the number of people in a family indicates availability of labour.

Table 5: Regression Analysis for the Socio– economic variables

Model	Unstandardized B	Coefficients Std Error	T	P-value
Constant	2110.960	4062.022	0.520	0.604
Gender	-202.800	1344.137	-0.151	0.880
Age	140.081	60.113	2.330	0.021*
Marital Status	696.219	438.983	1.586	0.114
Family Size	-8.590	157.747	-0.054	0.957
Education	143.890	132.539	-1.086	0.279
Farm Size	106.548	106.548	2.545	0.012*
Years of Farming	-88.879	56.647	-1.569	

**Significant at 5%*

DISCUSSION

Findings from this study shows dependence of communities around Eneme forest on the NTFPs from the forest. This is in agreement with the report of Ojo (2004) and Shackleton *et al.*, (2007) who indicated that communities proximate to forest lands in Africa extract NTFPs from the forest irrespective of management regime or

property right. The result also corroborate with those of Onuche (2011) who reported that NTFPs and farm incomes were the major components of households incomes in Nigeria and Cameroon. It was found that the challenges with NTFPs collection and sales in the study area include scarcity of NTFPs, poor road netwoorks, and lack of market. This is in agreement with the findings of Onuche (2011) and Openshaw (2010), who reported that many factors including transportation, unfavorable government policies, scarcity of NTFPs, over exploitation, poor feeder roads, and lack of market are some the problems associated with NTFPs collection and sale. The scarcity may be due to the fact that NTFPs providing plants have been overexploited and are disappearing or have gone extinct. There is therefore the need to sustain the forest and its resources through effective forest management practices.

Incomes from NTFPs in the study area complimented other means of income and serves as a means of livelihood to poor families. Although, this study did not compare income generated from other sources by the respondents, a study from the central Himalaya foot hills by Schaafsma *et al.,* (2014) estimated that NTFPs provided the poorer households with a cash income share of (44-7%). A case study from northern Benin, West Africa by Heubach (2011) found that income from NTFPs accounted to 39% of total household income which is second largest after crop production of 44%. Angelsen *et al.,* (2014) reported that poor families in Kenya were not able to produce enough food for their households and income needs, hence, largely depend on the forest products to complement their livelihoods.

Determination of the level of influence of family size on the level of income generation from non-timber forest products in the study area was positive and significant at $p< 0.05$. The number of people in a family indicates availability of labor. The finding from the study is in line with the conclusion drawn by Angelsen *et al.,* (2014) who reported that families with large households who lived adjacent to forest lands in Kenya derived more resources from the common resources due to labor availability that can be spread across various collection activities.

CONCLUSION

From the study, it was obvious that the forest reserve is rich in non-timber forest products which provide food and resources that earned income generation to the rural households. The respondent's major problem currently is the scarcity of NTFPs in the Forest Reserve. The study revealed that income generation from NTFPs was significantly influenced by age and family size. The continue depletion and degradation of the Eneme Community Forest Reserve could be attributed to the fact that the adjacent communities do not have any other means of income generation apart from forest products which are being collected continually from the Forest Reserve. In order to sustain the forest and the income derived from it, government and the inhabitants should embark on enrichment planting program in the forest with fast growing indigenous and exotic species, and the inhabitants should be empowered with soft loans and be provided with agricultural implements such as herbicides and fertilizers to enhance their agricultural production which may lead to income diversification and reduction of pressure on forest resources.

REFERENCES

Agawal, A., Cashore, B., Hardin, R., Shepherd, G., Benson, C., and Miller, D. (2013). *Economic contributions of forests*. Retrieved December 5, 2022, from United Nations Forum on Forests: http//www.un.org/esa/forests/pdf/session_documents/unff10/EcoContrForests

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 Development Journal*, 64, 12-28.

Campbell, J. Y. (1991). *Case studies in forest-based small-scale enterprises in Asia: Rattanmach-making-handicrafts, Community Forestry Case Study*. Bangkok: FAO.

Endamana, D., Angu, K. A., Akwah, N, G., 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 Reviews, 18* (3), 280-295.

Heubach, K. (2011). The economic importance of non-timber forest products (NTFPs) For livelihood maintenance of rural West Africa communities: a case study from Northern Benin. *Ecological Economics , 70*, 91-99.

Jimoh, O, S., and Haruna, E. A. (2007). Contributions of non-timber forest products to households Food security and income around Onigambari forest reserve, Oyo State. *Journal of Enironmental Studies , 6* (1), 28-33.

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 Forestry Research , 24* (1), 75-82.

Mahapatra, A. k., and Tewari, D. D. (2005). Importance of non-timber forest products in the economic valuation of dry deciduous forests of India . *Forest Policy and Economics , 7* (3), 455-467.

Mbuvi, D., and Boon, E. (2009). The livelihood potential of non-timber forest products: the case of Mbooni Division in Makueni District, Kenya . *Environmental Development Sustainance , 11* (5), 989-1004.

Ogunsawa, O. Y., and Ajala, O. O. (2002). Firewood crisses in Lagos-Implication on the Suburban and rural ecosystem management. *Proceeding of the 28th annual conference of Forestry Association of Nigeria* (pp. 257-264). Akure: Forestry Association of Nigeria.

Ojo, L. O. (2004). The fate of a tropical forest in Nigeria: Abeokuta Sector of Omo Forest Reserve. *Global Nest Journal , 6* (2), 116-130.

Onuche, P. (2011). Non-timber forest products: a pathway for rural poverty reduction in Nigeria. *International JOurnal of Economic Development , 2*(2), 28-37.

Openshaw, K. (2010). Biomass energy: Employment generation and its contribution to poverty alleviation . *Biomass Bioenergy , 34*, 365-378.

Paumganten, F. (2005). The role of non-timber forest products as safety-net: a review of eviden with a focus on South Africa. *Geo Journal , 64* (3), 189-197.

Pimentel, D., McNair, M., Buck, L., Pimentel, M., and Kamji, J. (1997). The value of forests to world food security. *Human Ecology , 25* (1), 91-120.

Schaafsma, M., Morse-Jones, S., Posen, P., Swetnam, R. D., Balmford, A., Batema, U., et al. (2014). The importance of local forest benefits: economic valuation of non-timber forest products in the Eastern Arc Mountains in Tanzania. *Global Environment Change , 24*, 295-305.

Shackleton, C. M., Shackleton, S. E., Bulten, E., and Bird, N. (2007). The importance of dry woodlands and forests in rural livelihoods and poverty alleviation in South Africa. *Forest Policy and Economics , 5*, 558-577.

Shackleton, C., and Shackleton, S. (2004). The importance of non-timber forest products in rural livelihood security and safety nets:a review of evidence from South Africa. *South African Journal of Science , 11* (12), 685-664.

Terkula, I. I. (2013). *The Poor Cocoa Farmers of Taraba*. Retrieved September 16, 2015, from Dailytrust News Papers: http://dailytrust.com.ng/sunday/ index.php/feature/2879-the-poor-cocoa-farmers-of taraba

Taraba State Government. (2014). *Local Government Area*. Retrieved September 16, 2015, from Taraba State Government: http:www.tarabastate.gov.ng/taraba/local-government-area/