



PRIORITIZATION OF NON TIMBER FOREST PRODUCTS AND POVERTY REDUCTION IN IDO LOCAL GOVERNMENT AREA OF OYO STATE, NIGERIA

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ABSTRACT: Non -Timber Forest Products (NTFPs) gathered for food, medicine, craft, spiritual and aesthetic purposes make substantial contributions to the economic viability and cultural vitality of communities. This study examined the prioritization of Non- Timber Forest Products (NTFPs) and poverty reduction in Ido local government area of Oyo State. Primary data were collected using a structured questionnaire administered to ninety respondents Multistage sampling technique was used. The rural settlement consists of 7 zones out of which 3 zones were selected. Three villages were selected from the 3 zones and 10 respondents were randomly selected from each. The villages include Erinwusi, Lagbin, Bakatari, Oderemi, Mowunni ,Abata, Ido, Akerele and Baale-Sango. Data collected were analyzed with descriptive and inferential statistics. Econometric tool of Income Level Approach and Gini index were used to determine poverty line and the significance of NTFPs in the welfare of the respondents respectively. Smith's saliency (S) was used to identify the prioritized NTFPs. Respondents perception was measured with Likert scale rating. The results revealed that majority, (61.1%) were male and (38.9%) were female. This implies gender sensitive activities. Educationally, most of the respondents have no formal education (46.7%). On income, 26% have major income of ₦15,100 - ₦25,000, also 53.1% have a minor income of ≤ ₦10,000. Poverty line of ₦19,630 was determined, poverty incidence (P_0) estimated was 24.4% which means 22 respondents fell below the poverty line while 75.6% were above the poverty line, Also, poverty depth (P_1) showed that an average person requires 5.24% of ₦ 19,630 to reach the poverty line. Poverty severity (P_2), 0.2 indicates that the people were not severely poor. The Smith saliency (S) also showed Dongoyaro (*Azadirachta indica*) as the most prioritized plant species and Snail *Archachatina marginata* for animals in the study area. The Gini-index revealed that the major income (0.003) had effect on income inequality than minor income (0.005) among the respondents. The total Gini index of the respondents was (0.004). Suggestions include forest policy should promote sustainable exploitation of NTFPs among rural and forest dependent communities through eco -incentives and appropriate conservation measures.

Keywords: Prioritization, Communities, Poverty reduction, Gini index and Welfare

1. INTRODUCTION

Non-timber Forest Products (NTFPs) are important tools for addressing poverty issues for the marginalized, forest dependent communities, by contributing to livelihoods, including food security, income, health and sustainable human development (FAO 1995; Falconer 1997; Ahenkan and Boon 2008). Globally, an estimated 350 million people mostly in developing countries depend on NTFPs as their primary source of income, food, nutrition, and medicine (Chandrasekharan 1996; Olsen 1998; UNDP 2004; FAO 2005). These products play a vital role in sustaining the lives of local gatherers, who must increasingly adapt to diminishing resources to stay alive.

Non-Timber Forest Products (NTFPs) consist of naturally grown stocks of forest resources which could be processed either for household consumption or for local and external trade by the forest users. They include a wide range of edibles and non-edibles such as fruits, seeds, leaves, nuts, bush meat, roots, tubers, fibres, resins, latex, sticks, ropes, and construction materials like bamboo, rattan and a host of others. All these and others are sourced directly from the forest ecosystem for the use of man. According to Roderick and Eric (2000), NTFPs encompass a wide range of disparate and varied natural resources. It was noted that the concept is inexact and cumbersome since it is defined not by what it is, but by what it is not. Literarily speaking,

NTFPs comprise any and every natural resource from the forest except timbers. This is corroborated by Wickens (1991) who noted that NTFPs are all the biological materials (other than industrial round wood and derived sawn timbers, wood chips, wood-based panels and pulp) that may be extracted from the natural ecosystem, managed plantations, etc and be utilized within the household. These products could be marketed or have socio-cultural or religious significance (FAO 1990). They may be gathered or harvested from a variety of life forms for subsistence as well as for local and external trade (Falconer, 1995 and Lawes *et al.*, 2004). NTFPs are also described as parts of the plant that have perceived economic or consumption value sufficient to encourage their collection and removal from the forest. Non-Timber Forest Products (NTFPs) are components of the forests system that exist in nature.

The contributions of Non-Timber Forest Products to reduction of rural poverty in Nigeria are in two forms (direct and indirect contributions). The direct contribution includes the supply of products such as fruits, vegetables, resins, fibers, charcoal, bush meat and medicinal plants which could be marketed for money or consumed at the household level. Over 75% of the country's population lives in the rural areas and more than 80% of the rural inhabitants depend directly on wood energy for cooking and preservation of foods and food accessories such as bush-meat. Many households subsist either wholly or partially on income derived from sale of firewood in Nigeria.

Bush-meat marketing is another forest-based activity, which generates a lot of income for rural dwellers. Plants such as *Chrysophyllum albidum* (white straw apple), *Dacryodes edulis* (native pear), *Treculia africana* (African bread fruit), *Parkia biglobosa* (Locust bean), *Vitellaria paradoxum*, (Shear butter), *Annona mauricata* (sour sop), *Phoenix reticulata* (Date palm), *Tetrapleura tetraptera*, *Xylopia aetiopica* and *Irvingia gabonensis* and *I. wombulu* (bush mango), and various species of chewing stick and wrapping leaves constitute valuable sources of income particularly for rural women. Species such as *Gentium africanum*, *Carpolobia spp.* (Shepherd sticks), *Irvingia spp* and various species of bush meat are already involved in international trade along the west coast of Africa. Income is generated from their sales to supplement the farm income. In fact, there are individuals who derive up to 80% of total income from the sales of these products (Jimoh 2002). Other forest products such as honey, *Acacia senegal* (gum Arabic), chewing stick and medicinal plants of various kinds are major sources of income to both rural and urban dwellers. Forest-based activities such as mat-making and charcoal production also contribute significantly to rural income. The ability of

Non-Timber Forest Products to directly enhance people's income is a significant contribution to poverty reduction in Nigeria.

There are also indirect contributions of Non-Timber Forest Products to poverty reduction. These include various roles in the ecosystem such as pollination of useful plant by insects, dispersal of seeds by frugivorous birds and animals; contribution to soil fertility by soil micro and macro-organisms, watershed protection, climate amelioration and the various roles of plants and animals in succession and ecosystem renewal.

These various contributions ensure that the ecosystem can continue to supply the various goods and services upon which the livelihood of the people depends. Though these indirect uses are often not easily quantifiable, yet their contributions to human welfare are no doubt enormous. Accordingly, Ransome-Kuti (1991) reported that 80% of total households particularly in the rural areas depend on natural herbs for medication. Recent trends have confirmed this observation, as the number of people depending on herbs for their health needs keeps increasing. This is due to the worsening poverty situation in the country which makes orthodox medicine unaffordable to the rural poor. These underscore the objectives of this study which are: To describe the socio-economic characteristics of the respondents, the poverty level, incidence and severity among the respondents, identify the prioritized NTFPs and to determine the perception and contribution of NTFPs to the welfare of the respondents.

2. METHODOLOGY

2.1 The Study Area

The study was carried out in Ido local government area (LGA) of Oyo State (Figure 1). The local government headquarters is at Ido, situated along Ibadan-Eruwa Road. It has an area of 986km². According to 1991 population census, Ido LGA had total population of 53,582 people while it was 61,847 by 1996 (NBS 2006). Ido LGA covers the area spanning Apata, Ijokodo, Omi-Adio, Akufo and Apete. It lies within latitude 7° 22'N and longitude 3° 58'. The major occupation in the area is farming. There are large hectares of grassland which are suitable for animal rearing, vast forest reserves and rivers. People in the area grow varieties of cash crops such as cocoa, kolanut, oil palm, timber and food crops such as maize, rice etc. The area is suitable for a wide range of edible fruits. A large proportion of the farmers engage in secondary occupation such as hunting, trading, artisan, civil service jobs etc.

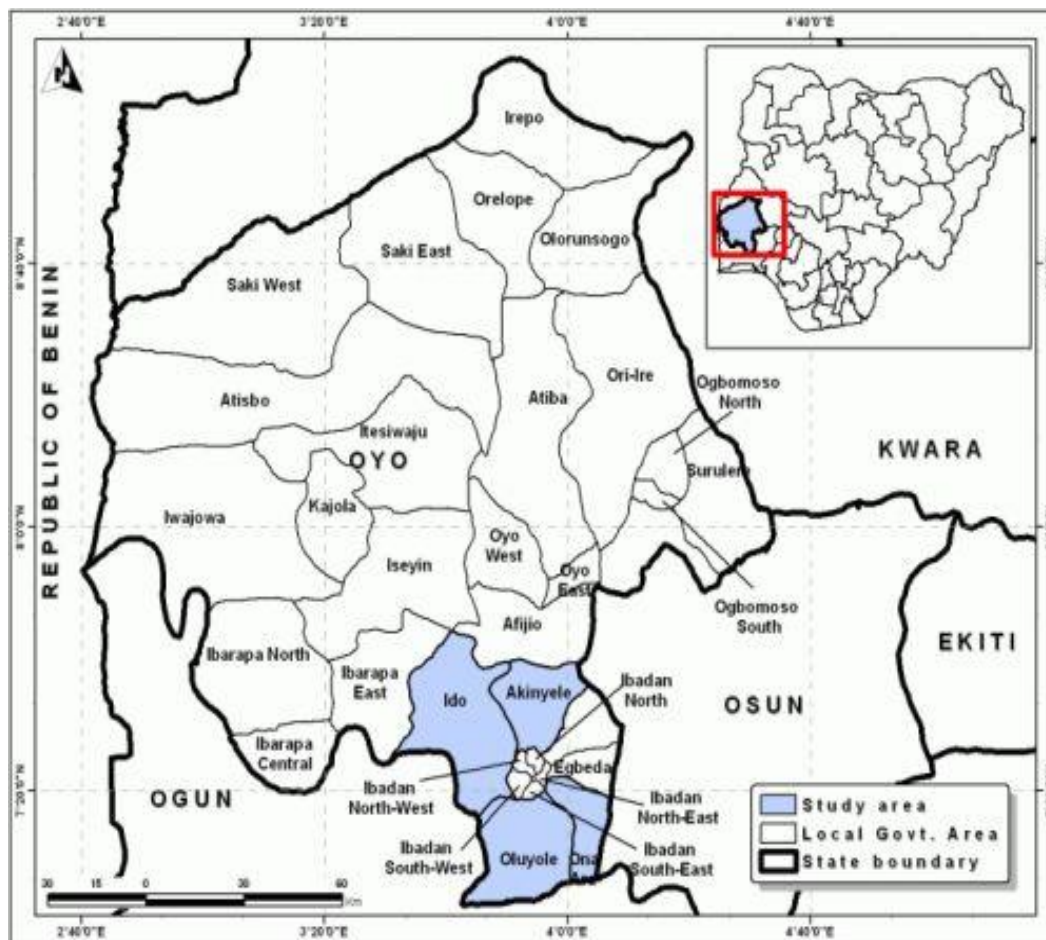


Fig 1: Map of Oyo State showing Ido Local Government, the study area.

2.2 Sampling Technique

Multistage sampling technique was used to select 90 respondents with a four stage design. Stage 1 was the division of settlements in Ido local government area into 2 strata which are rural and urban settlements, the stage 2 was purposive selection of three (3) zones from the rural settlements consisting of seven (7) zones, stage 3 was purposive selection of three (3) villages from each of the three (3) zones and stage 4 ten (10) respondents were randomly selected from each of the three (3) villages.

2.3 Data collection

Data were collected from respondents that relied on non-timber forest products as a source of livelihood and subsistence utilization in the study area. Primary and secondary sources were used for data collection. Primary data were obtained through the use of structured questionnaire and interview guide. The questionnaire was distributed and administered to people involved in NTFPs marketing, utilization and

collection. Secondary data sources were from previous studies.

2.4 Data analysis

Descriptive statistical methods such as mean, mode, frequency distribution and percentages were used to analyze data for the socio-economic characteristics of the respondents. Econometrics method was adopted by using Foster, Greer and Thorbecke (1984) method.

Smith's Saliency (S)

Smith's saliency (S) analysis was adopted for identification of the prioritized NTFPs. Saliency = Inverted rank / Total rank

Inverted rank = Number of time a species is mentioned; Total rank = Total species mentioned

Gini index was adopted to determine the contribution of NTFPs to respondents' welfare.

$$G = \sum_{k=1}^m \frac{2}{y} COV [Y_{k1}, F\{y\}]$$

$$COV = \sum XY - \frac{(x-\bar{x})(y-\bar{y})}{N}$$

Where G = Gini index; M = total number of income sources ;K = an income source; Cov = covariance; Y = income

Likert scale rating

In order to determine the perception of the respondents on the contribution of NTFPs, 5 perceptual statements were presented to the respondents to respond against a 5- point likert scale rating ranging from strongly agreed (5), agreed (4), undecided (3), disagreed (2), strongly disagreed (1).

For inferences, Class boundaries are; $1.0 < 1.5$ = Strongly disagreed; $\geq 1.5 < 2.5$ = Disagreed; $\geq 2.5 < 3.5$ = Undecided; $\geq 3.5 < 4.5$ = Agreed; $\geq 4.0 \leq 5.0$ = Strongly agreed

3. RESULTS AND DISCUSSION

3.1 Socio-economic Characteristics of the Respondents

The socio-economic characteristics of the respondents are present in Table 1. Age distribution of the respondents showed age 51-60 years recorded the highest percentage of 28.9% with mean age of 53 years. Therefore, NTFPs respondents cut across all age groups. This indicates matured respondents within working age that require regular and reliable source of income from the forestry activities (FAO 2015) for poverty alleviation. Furthermore, the mean age indicates the transfer of knowledge to younger ones for sustainability. The gender distribution showed that 61.1% were male and 38.9% were female, showing gender sensitive situation. This is in line with previous studies on gender distribution in forestry that reported on long history of male domination in forestry activities (Engel 1984, FAO 1990, Sunderland *et al.* 2004). Also, majority, 73.3% of the respondents were married and 26.7% single. This indicates tolerable wage employment for the respondents due to high preponderance of married adults.

This is in line with Sen (1980) that reported on labour absorbing activities in informal sector. On education, most of the respondents (46.7 %) had no formal education, 35.6% with primary education and 17.8% had secondary education. This indicates low literacy level in the study area but this did not constitute a barrier in utilizing NTFPs. This is logically true since the survey took place in the rural settings of the local government where the largest population of the community resides. This was identified as the source of poor information flow. Schumacher (1973) noted that education is one of the greatest resources of man since man and not nature provides the primary resource for economic development as initiative, invention and constructive activity comes out of the mind of man. Formal education can improve sustainable management of resources as NTFPs exploitation and utilization can form an integral part of conservation and development strategies. Ogle (1996) reported that such strategies could only be operational with full knowledge of a range of interlinked issues that require multidisciplinary approach which incorporates social, economic, cultural, ecological and policy context. The distribution by family size shows that majority (58.9%) had family size of 1-5 and (41.1%) had family size of 6 –10. Large family size contributes to family labour utilized in the forestry activities but unpaid for by the respondents. Majority, (26%) of the respondents had a major income of ₦15,100- ₦25,000 monthly with mean income estimated at ₦32,717. The mean income is contrary to economic theory that maintains that higher income enables availability of fund for other investments. Thus, despite the assertion that NTFPs have commercial significance (FAO 1995) over short and long distances for financial returns, the mean income signifies low income and therefore little or no fund for further investment. However, data on income generation by respondents were poor due to absence of record keeping. This implies that majority of the respondents were within the low income class. For minor income, majority of the respondent (53.1%) had less than or equal to ₦10,000, a condition further showing the social status of the respondents.

Table 1: Socio- economic characteristics of the respondents

Variables	Frequency	Percentage	Mean / Mode
Age			
≤ 20	1	1.1	
21 – 30	3	3.3	
31 – 40	14	15.6	
41- 50	21	23.3	
51 – 60	26	28.9	53yrs
61 – 70	25	27.8	
Total	90	100.0	
Gender			
Male	55	61.1	Male
Female	35	38.9	
Total	90	100.0	
Educational background			
Primary	32	35.6	
Secondary	16	17.8	
No formal education	42	46.7	No formal edu
Total	90	100.0	
Family size			
1 - 5	53	58.9	5
6 – 10	37	41.1	
Total	90	100.0	
Marital status			
Single	4	4.4	
Married	66	73.3	Married
Divorced	6	6.7	
Widow	10	11.1	
Widower	4	4.4	
Total	90	100.0	
Major income (₦)			
≤ 15,000	16	16.7	
15,100 – 25,000	25	26.0	
25,100 – 35,000	13	13.5	32,717
35,100 – 45,000	18	18.8	
55,100 – 65,000	11	11.5	
≥ 65,000	2	2.1	
Total	90	100.0	

Source: Field survey, 2015.

3.2 Prioritization of NTFPs

The NTFPs mentioned by respondents in the study area is showed in Table 2. Dogonyaro (*Azadirachta indica*) was the most prioritized plant species in the study area used by respondents and this is because majority of the respondents used the bark of (*Azadirachta indica*) in the treatment of malaria mostly. The prioritized animal species was grasscutter (*Thryonomys swinderianus*), this is because the vegetation of the study area is rainforest and this species was in abundance in such vegetation.

3.3 Plant species distribution

Table 2 presents a detailed summary of 21 plant species from 19 families. The number of species present in the families varies from one to two (2 species in 2 families, 1 species in 17 families). Furthermore, three animal species from three families with one species per family was recorded.

3.4 Poverty line, incidence and severity among the respondents

According to the results in table 3, it was observed that poverty incidence (P_0) estimated was 24.4. This means 24.4% (22 respondents) fell below the poverty line of ₦19,630, while 5.6% were above the poverty line. Also the poverty depth (P_1) showed that an average person requires 5.24% (₦1,028.6) to reach the poverty line. The poverty severity (P_2) 0.24 indicates that the people were not severely poor because the value is far from 1.

3.5 Gini Index

Table 4 shows the distribution of the respondents income and NTFPs contribution to welfare. Major income (0.003) has effect on income inequality than minor income (0.005). The total gini index of the respondents gave 0.004 which means there is equality in income distribution of the respondents, the income generated using the major income has a greater gini

index of 0.003 which implies there is maximum inequality among the respondents.

Table 2: Summary of NTFPS in Ido Local Government Area

S/n	Species	Family	Local Name	Frequency Of Mention	Salience Value	Part of plant used	Uses
1	<i>Chrysophyllum Albidum</i>	Sapotaceae	Agbalumo	31	1.30	Fruit	Food
2	<i>Irvingia gabonensis</i>	Irvingiaceae	Oro	11	0.46	Fruit	Food
3	<i>Ficus exasperate</i>	Moraceae	Ewe Eepin	9	0.38	Leaf	Washing
4	<i>Thaumatococcus Daniella</i>	Marantaceae	Ewe Eran	4	0.17	Leaf	Wrapping food
5	<i>Terminalia catappa</i>	Combretaceae	Igi fruit	15	0.63	Fruit	Snack
6	<i>Carica papaya</i>	Caricaceae	Ibepe	19	0.79	Leaf, fruit	Medicinal, food
7	<i>Theobroma cacao</i>	Sterculiaceae	Koko	16	0.67	Fruit	Food (beverage)
8	<i>Bambusa vulgaris</i>	Poaceae	Oparun	44	1.83	Stem, leaf	Construction, food
9	<i>Elaeis guineensis</i>	Palmae	Ope	25	1.04	Leaf, fruit	medicinal Broom, food, raw material
10	<i>Oscimum gratissimum</i>	Lamiaceae	Efirin	21	0.88	Leaf	Spices (food)
11	<i>Azadirachta indica</i>	Meliaceae	Dongoyaro	50	2.08	Leaf bark fruit	Medicinal, insect repellent
12	<i>Calamus deeratus</i>	Palmae	Pankere	22	0.92	Stem	Basket weaving
13	<i>Apis mellifera</i>	Apidae	Oyin	2	0.08		Food
14	<i>Jathropha carcass</i>	Euphorbiaceae	Lapalapa	14	0.58	Leaf stem seed	Medicinal, chewing stick
15	<i>Piper guineensis</i>	Piperaceae	Ata	7	0.29	Leaf	Spices, Food
16	<i>Tectona grandis</i>	Verbeanaceae	Teak leaf	3	0.13	Leaf	Wrapping leaf for food
17	<i>Morinda lucida</i>	Rubiaceae	Oruwo	8	0.33	Root	Medicinal
18	<i>Anarcadium occidentale</i>	Anarcardiaceae	Kaju	28	1.17	Leaf bark	Snack, medicinal
19	<i>Psidium guajava</i>	Myrtaceae	Gorova	13	0.54	Fruit stem	Snack, medicinal
20	<i>Magnifera indica</i>	Anacardiaceae	Mongoro	19	0.79	Fruit, bark	Snack, medicinal
21	<i>Vernonia amylgadina</i>	Asteraceae	Ewuro	22	0.92	Leaf, stem	Food, medicinal
22	<i>Erythrocebus patas</i>	Cercopithecidae	Obo	14	0.58	Skin	Food, medicinal
23	<i>Archachatina maginata</i>	Achatinidae	Igbin	45	1.88	Shell, meat	Food, medicinal
24	<i>Thryonomys swinderianus</i>	Thryonomyidae	Oya	38	1.58	Skin, meat	Food, Hide & skin

Table 3: Poverty incidence, depth and severity

Category	Bakatari	Mowunmi	Lagbin	Abata	Oderemi	Erinwusi	Ido	Akerele	Baale-sango	Pooled
Poverty incidence(P ₀)	2	2	2	3	2	0	3	1	5	22.4
20%	20%	20%	20%	30%	20%	0%	30%	1%	5%	24.4%
Poverty depth (P ₁)	0.04%	0.52%	0.42%	0.90%	0.14%	0	0.71%	0.69%	0.91%	5.24%
Poverty severity (P ₂)	0.02	0.26	0.21	0.30	0.07	0	0.24	0.69	0.18	0.24

Source: Field survey, 2015.

Table 4: Decomposition of income by income source

Description	Major	Minor	Total
Gini index	0.003	0.005	0.004
Mean income from source	32550	11922	44472
Share in total income	0.732	0.268	1

Source: Field survey 2015.

4. CONCLUSION

This study assessed the prioritization of Non Timber Forest Products (NTFPs) and poverty reduction in rural livelihoods in the study area. Therefore, based on the findings of this study, the study concluded as follows:

1. NTFPs exploitation and utilization cut across all ages, male dominated with most respondents having no formal education and the NTFPs were medicinal.
2. Respondents were not severely poor as NTFPs served as source of income. The poverty line was N19,630 with over 24% of the respondents categorized as poor and each respondent requires N1,028.61 (5.24%) to reach poverty line. Therefore, the poverty depth was not severe, an indication that NTFPs contributes to rural livelihoods.
3. Prioritized NTFPs showed *Azadirachta indica* (Dongoyara) along with *Archachatina marginata* (Snail) as highly prioritized with higher Smith's Saliency value
4. The perception of the respondents showed that the people were aware of the importance of NTFPs in the study area as source of income and employment due to the medicinal value of NTFPs.

REFERENCES

- Ahenkan A and Boon E (2008). Enhancing food security, poverty reduction and sustainable forest management in Ghanathrough Non-Timber Forest Products farming: Case study of SefwiWiawso District. www.grin.com/de/preview/.html Retrieved August,8, 2015
- Chandrasekharan D (1996). NTFPs, Institutions, and Income Generation in Nepal: Lessons for Community Forestry. Kathmandu: International Centre for Integrated Mountain Development.
- Engle A (1984). Promoting small holder cropping systems in Sierra-Leone: An assessment of traditional cropping systems and recommendations for the Bo-Peyehum rural development project. Institute of Socio-economics of Agricultural Development. Technical University of Berlin, Germany. In: FAO CFN6 25p.
- Falconer J (1997). Developing Research Frames for Non-Timber Forest Products: Experience from Ghana: In: M Ruiz Pérez, JEM Arnold (eds.): Current Issues in Non-timber Forest Products Research. Bogor, Indonesia: Centre for International Forestry Research, Pp. 143-160.
- FAO (1990). Survey of Tropical Forest cover and study of change processes. FAO Forestry Paper No. 130, Rome, Italy
- FAO (1995). Non wood Forest Products in Forestry. Forestry education, new trends and prospects. FAO Forestry paper No123, Rome, Italy
- FAO (1995). Non wood Forest Products for Rural Income and Sustainable Forestry. Food Agriculture Organisation. United Nations, Rome 7:4-9.
- FAO (2005). The State of Food Insecurity in the World: Eradicating World Hunger Key to Achieving the Millennium Development Goals. Food and Agriculture Organisation, Rome, Italy.
- FAO (2015). Global Forest Resources Assessment 2015: How are the world's forests changing? FAO Forestry Paper No, Rome, Italy.
- FOS (1996). Annual Abstract of Statistics. Federal Office of Statistics, Lagos, Nigeria. 1996 edition, 462p
- Foster J, Greer J, and Thorbecke E (1984). A class of decomposable poverty measures. *Econometrica* 52 (3): 761-766
- Jimoh SO (2002). A multiple-use planning model for tropical rain forests: The case of Shasha Forest Reserve, Osun State Nigeria Ph.D. Thesis, Department of Forest Resources Management, University of Ibadan, Nigeria. pp: 253.
- Lawes M, Eeley H, Shacleton, CM and Geach BS (2004). Indigenous Forests and Woodland in South Africa: Policy People and Practice. Pietermaritzburg: University of kwazulu- Natal Press.
- NBS (2006). Annual Abstract of Statistics. National Bureau of Statistics, Abuja, Nigeria
- Olsen CS (1998). The trade in medicinal and aromatic plants from central Nepal to northern India. *Economic Botany*. 52(3): 279-292.
- Ogle B (1996). Peoples' dependency on forests for food security: some lessons learned from programme of case studies: In: Ruiz-Perez M and Arnold JEM (eds.). Current issues on non-timber forest products research. CIFOR, Bogor. Pp 219-242
- Ransome-Kuti O (1991). Introduction (pp: x-xiv) In: Ransome-Kuti, O. A. O. O. Somurewa, K.S. Oyegbile and A. Bamiaye (Eds.). Strengthening Primary Healthcare at Local Government Level- The Nigerian Experience, Pp 135.
- Roderick PN and Eric H (2000). Commercialization of Non-Timber Forest Products: Review and

- Analysis of Research. Centre for International Forest Research.23-25.
- Sen AK (1980). Poverty elimination and entitlements: Policy and change. World Bank Staff Report No 401, July 1980. Washington, D.C. The World Bank.
- Schumacher EF (1973). *Small is beautiful. Economics as if people mattered.* Harper Torch Books, London. 289p
- Sunderland TCH, Harrison ST and Ndoye O (2004). Commercialisation of non-timber forest products in Africa: history, context and prospects. In: Sunderland, T.C.H. and Ndoye, O. (eds.). Forest products, livelihoods and conservation: case studies on non-timber forest product systems. volume 2 - Africa: 1-24. CIFOR, Bogor, Indonesia.
- UNDP (2004). The Equator Initiative: Money Grows on Trees. Cameroon Series 5, New York: UNDP.
- Wickens GE (1991). Management issues for Development of non-timber forest products. *Unasylva*, 42(165):3-8.