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## Contribution of Non-Timber Forests Products (NTFPs) to Rural Household Income in Oyo State, Nigeria

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### ABSTRACT

The forests have over the years contributed immensely to the socio-economic development of the nation by generating income and employment however indiscriminate exploitation and depletion of NTFPs has become a threat to those whose livelihood solely depend on it. This paper aims at examining the contribution of Non-Timber Forest Products (NTFPs) to rural household income in Oyo state, Nigeria with a view to suggest a sustainable strategies on the utilization of this product. A multi-stage sampling technique was used to select 160 respondents in Ibadan/Ibarapa Zone of Agricultural Development Programme of Oyo State. Primary data needed for the study were obtained from the respondents with the use of pre-tested questionnaire and analyzed using Descriptive Statistics, and Gini Coefficient. The study revealed that 17.5% of the respondents were within the age of 41 – 49 years, 63% had no formal education. The most extracted of all the NTFPs were fuel wood (79.38%), mushroom (10.3%), and vegetable/herbs (6.2%) while honey (5.1%) was the least extracted. Gini Coefficient showed that the income from NTFPs lowered income inequality by 7%. It is therefore recommended that government through the ministry of land and housing should promulgate laws and policies that would restrict indiscriminate sales of land.

**Keywords:** NTFPs, Contribution, Income, Rural household, Income inequality, Land.

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### Introduction

In most parts of Sub-Saharan Africa, forests are considered important for rural livelihoods, sources of food, medicine, shelter, building materials, fuels, and cash income. (Kaimowitz, 2003). It is estimated that more than 15 million people in Sub-Saharan Africa earn their income from forest-related enterprises such as fuelwood and charcoal sales, small-scale saw-milling, commercial hunting, and handicraft production (Kaimowitz, 2003). Non-timber forest products (NTFPs) are components of the forest system that exist in nature and are generally not cultivated. Neumann and Hirsch (2000), define NTFPs as “literally any and

every natured resource from the forest except timber”.

NTFPs harvesters are people who live at the margins of economic and political systems and indeed the CIFOR global comparative study characterised the NTFPs case studies in Africa as predominantly part of a ‘coping strategy’ (Shanley *et al.*, 2002; Sunderland *et al.*, 2004). According to Kusters *et al.* (2006) stated that less than 50% of the rural household income came from NTFPs, the importance of this contribution was linked to its accessibility during times of need. Hence whilst incomes from NTFPs are not a panacea for poverty reduction, they do make a significant contribution to rural livelihood in various and diverse



ways.(Agrawalet *al*, 2013). Quang and Anh (2006) found that in an open economy where trading is free, NTFP support both cash income and employment. However, it is anticipated that the income contribution of NTFPs, and the role they play in providing a safety-net, will remain important both to the poorest rural households who may not be able to access new economic opportunities, and for those who have sought external employment options in a changeable economic climate, and may need to fallback on NTFP income (Malleon *et al.*, 2014). Therefore, commercialization of NTFPs in poorer communities has potential for trade expansion and it is expected to increase employment opportunities as well as rural household incomes.

Research at a global scale has identified that rural households draw from a diversity of income sources, adopt a wide range of livelihood strategies in order to achieve and maintain a sustainable livelihood (Famuyide *et al.*, 2013). In a study of household use of natural resources in the Kat River Valley of South Africa, the NTFP share of total household income is about 20% (Shackleton and Shackleton 2006). The study revealed that a greater proportion of poor households were involved in the sale of one or more NTFPs, and they sold greater quantities and volumes per household, as compared to wealthy households.

Nimai and Debnarayan (2008) conducted a study on joint forest management (JFM) and found out that there is a narrow scope to expand inequality with the increase in forest sources of income to total income relative to non-forest income irrespective of the type of villages and types of forest protection committee. It is estimated globally that 1.6 billion rural people depend on forests to some extent, of which 300 –350 million people

depend highly on forests and live within or adjacent to dense forests (Cao, 2012). Nigeria forests provides food, medicine, aesthetics and income to sustain the livelihood for people living around and outside the forest communities. The indiscriminate exploitation and depletion of NTFPs has become a threat to those whose livelihood solely depends on it. There is need to showcase the contribution of NTFPs. Therefore this study is geared to assessing the contribution of Non-timber forests products to rural household income in Oyo State, Nigeria.

## Methodology

### Study Area

Oyo state is located in the South West Region of Nigeria on Latitude 7°3' and longitude 4° 31' East with its population at 5,591,589 comprising 2,809,840 males and 2,781,749 females (NPC, 2006). The State covers a total of 27,249 square kilometers of landmass and is ranked 14th by size. The area lies within the rainforest region of Nigeria and has two distinct seasons, the raining season from April to October with an August break and dry season from November to March. The annual rainfall ranges from 1,200 – 1,300 mm. The temperatures vary from a minimum of 21°C in July to a maximum of 39°C in February. A good percentage of the populace are engaged in agriculture producing staple crops. The state is divided into three agro ecological zones which are: the rainforest, the savannah and the derived savannah. Oyo state is covered by Oyo-State Agricultural Development Programme (ADP) with four zones namely; Saki, Ogbomosho, Oyo and Ibadan/Ibarapa zones.

### Method of Data Collection

Primary and secondary data were used for the study. Primary data was collected through



personal interview and administration of questionnaire in the study area. A multi-stage sampling technique was used to select 160 respondents. The first stage involves the purposive selection of Ibadan/ Ibarapa Zone of Agricultural Development Programme of Oyo State due to the prevalence of NTFPs in the zone. The second stage involved a random selection of four blocks from the zone; four cells from each block in the third stage; two communities from each cell in the fourth stage and five farming households were selected from each community in the last stage.

**Method of Data Analysis**

The Gini-Coefficient was use to source income inequality

$$G = \frac{\sum_{i=1}^I W_i C_i}{I} = 1 - W_1 C_i \dots \dots \dots (1)$$

Where  
I = the total number of source incomes

**Results and Discussion**

**Table 1: Socio-economic characteristics of households heads**

Description	Frequency	Percentage	Mean	Standard deviation
<b>Age of household head</b>				
21-30	16	10	45.4188	12.29
31-40	56	35		
41-49	28	17.5		
50-59	30	18.75		
60-70	30	18.75		
Total	160	100		
<b>Gender</b>				
Male	131	81.9		
Female	29	18.1		
Total	160	100		
<b>Marital Status</b>				
Single	11	6.9		
Married	131	81.9		
Widow	13	8.1		

W<sub>i</sub> = represents the share of source income I in aggregate household income.

C<sub>i</sub>= the concentration ratio of source i

$$C_i = 1 - \sum_{j=1}^n P_j^2 (Q_{ij} - W_{ij}) \dots \dots \dots (2)$$

Where;  
P<sub>j</sub> = the population shares of household j in the total population  
W<sub>ij</sub> = the income share of household j for source i.  
Q<sub>ij</sub> = is the cumulative income share up to household j for income source I

$$Q_{ij} = \sum_{k=1}^j W_{ik} \dots \dots \dots (3)$$

For each source income (I) I, the concentration ratio (C<sub>i</sub>) was computed using equation ,Gini coefficient (G<sub>i</sub>) was calculated using equation (2) sorting observations in ascending order of the given source income i.



Widower	5	3.1		
Total	160	100		
<b>Household Size</b>				
1-4	127	79.4		
			3.24	1.74
5-7	33	20.6		
Total	160	100		
<b>Educational level</b>				
No formal education	101	63.1		
Primary education	34	21.3		
Secondary education	2	1.3		
Vocational education	4	2.5		
Tertiary education	19	11.9		
Total	160	100		

Table 1 shows that majority 81.9% of respondent were male this maybe as a result of the tedious nature of some of the NTFPs extracted in the study area. From the age distribution, majority (81.29%), of the household head were between the age brackets of 31-59 with the mean age of 45years, this constitute the main workforce who are involved in collection of NTFPs, agriculture, wage earning and allied activities. This is in line with Nwanko *et al.*, (2009)who reported that the most active farmers are

within age group 31-50 years. Also, the distribution of the household size revealed that 79.4% had household sizes of 1-4. Furthermore, majority of the sampled household were married (81.9%), this is an indication that NTFPs serve as a source of income which makes them to be more financially responsible for their families. This finding is in line with Jibowo (2000) that a high percentage of rural population who engage in farming are married.

**Table 2: Socio-economic characteristics of household heads**

Description	Frequency	Percentage	Mean	Standard deviation
<b>Annual Income(₦)</b>				
= 100,000	26	16.2	289600	2.95689E4



100,001	– 45	28.2
200,000		
200,001-	39	24.4
300,000		
300,001-	22	13.7
400,000		
400,001-500,000	11	6.9
500,001	- 9	5.6
600,000		
Above 600,000	8	5
Total	160	100

**Annual Income from NTFPs**

<50000	8	5.00
50,000-100,000	26	16.25
100,000-150,000	31	19.37
150,000-200,000	33	20.62
200,000-250,000	27	16.87
250,000-300,000	21	13.12
Above 300,000	14	8.75
<b>Total</b>	<b>160</b>	<b>100</b>

**Occupation type**

Farming	142	88.8
Artisans	3	1.8
Trading	14	8.8
Salary	1	0.6
Total	160	100

**Religion**

Christianity	58	36.3
Islam	102	63.8
<b>Total</b>	<b>160</b>	<b>100</b>

The result in table 2 revealed that majority (28.2%), of the household head had an annual income of ₦ 100,001-200,000 while 5% of the respondents have an annual income of ₦ 600,000. This shows the wide gap of income in the study area. The table also revealed the

annual income from NTFPs, 20.625% earning an annual income (₦ 150,000-200,000) from NTFPs, while 5% earned less than ₦ 50,000 annually from NTFPs. The table also shows that most of the respondents (88.8%) are farmers.



**Table 3: Income equality table using the total household income**

No. of households	Member per household	Income per household	Income per individual	Relative deviation	Cumulative income	Gini
1	2	14000	7000	-0.0008	14000	28000
2	7	38000	5428.57	-0.0053	52000	462000
3	5	19500	3900	-0.0054	71500	617500
160	4	42000	10500	0.0013	4633600	36900800
Total	513	4633600				3.32E+08 0.14

Table 3 shows the gini index, generally Gini coefficient measures the wealth gap on a scale of 0 to 1. The higher the figure, the greater the inequality. Readings above 0.4 usually marks strong inequality. According to Dillon and Hardaker (1993); Gini coefficient higher than 0.35 indicates higher inequality, indicating inequity in the distribution of income. This

study shows the gini index to be 0.14. The households' income including NTFPs income shows that addition of forest income to total income reduces the departure of the curve from the line of equal distribution. This implies that income from NTFPs reduces income inequality in the study area.

**Table 4: Income equality table using the total income less income from NTFPs**

Hh	Member per household	Income per household	Income per individual	Relative deviation	cumulative income	Gini
1	2	8000	4000	-0.00213	8000	16000
2	7	32000	4571.43	-0.00661	40000	336000
3	5	7500	1500	-0.00803	47500	437500
160	4	35000	8750	0.00017	33378000	26562400
Total	513	33378000				1.39E+09 0.2

Table 4 revealed that the Gini index of the total income from households when income from NTFPs was excluded from the total income. The Gini index increased from 0.14

to 0.20 which shows that addition of forest income reduced measured income inequality by 7 per cent. Comparing the Gini index with and without NTFPs production



(income), the disparity was lowered by a coefficient of 0.06 in the inclusion of NTFPs. This is in line with the study of Getahun Kassa and Eskinder Yigezu, (2015)

who reported that NTFPs play a greater role in reducing income inequality among the sampled respondents.

**Table 5: Number of households involved in gathering identified NTFP's**

NTFPs	Botanical Name	Number of households involved	Percentage
Fuel wood	-	127	79.38
Bush meat	-	51	32
Mushroom	<i>Morchella esculenta</i>	118	73.75
Wrapping leaves	-	19	21.25
Vegetables/herbs such as Water leaf, bitter leaf, Scented leave	<i>Talinum Triangulare Vernonia amygdalina</i>	115	71.88
Fruits	-	81	50.63
Snail	<i>Achatina maginata</i>	85	53.12
Honeybee	<i>Apis cerana</i>	12	7.5
Building pole	-	31	19.38

Table 5 revealed that fuel wood (79.38%) is the most extracted of all the NTFPs, this finding is in line with Pattanayak *et al.* (2004) that access to forest for fuelwood is substantially important to local people and makes substantial contribution to households' welfare. This is followed by mushroom

(73.75%) then vegetable/herbs (71.88%) while 53.12% gathers snails, also, 50.63% gathers wild fruits, Moreover, 32% extracts bush meat, 21.25% extracts wrapping leaves, 19.38% extracts building poles (bamboo), while honey (7.5%) is the least extracted of the NTFPs in the study area.

**Table 6 Respondents Suggestion on better management of NTFPs**

Suggestions	Frequency	Percent
Land Conservation	26	16.25
Planting /domestication of NTFPs	27	16.88
Avoidance of indiscriminate bush burning	22	13.75
Routine management	25	15.53





Storage/Preservation of NTFP's	22	13.75
Prohibition of Indiscriminate Sales of land	33	20.62
None	5	3.12

Table 6 shows that (20.62%) suggested that restriction on indiscriminate land sales will improve the gathering and management of NTFPs; While 16.88% suggested planting and domestication of harvested NTFPs as better management this is in line with Rijsoort (2000) that farmers cultivate NTFPs on their homestead as a strategy for reducing the pressure on natural forest resources. The result further revealed that NTFPs cultivation can also have concrete ecological benefits. For example, it can encourage natural regeneration and mimic natural forest ecosystem in plantation and a forestation sites (Campbell, 1995). 16.25% suggested land conservation as a better management practice. Also, 15.53% suggested routine management as a means of managing NTFPs while about 13.75% suggested that storage and preservation of NTFPs as a means of conserving NTFPs.

### Conclusion and Recommendation

The study revealed that higher percentages are male and the income from NTFPs reduces the inequality index by 7%. Fuel wood (79.38%) is the most extracted NTFP in the study area. It is therefore recommended that restriction on indiscriminate land sales should be enforced so as to improve the gathering and management of NTFPs. Rural dwellers should be encouraged to participate more in the collection of NTFPs as this will help to reduce income inequality among rural dwellers. Households should be encouraged by Agricultural Development Programmes through extension agents to engage in Taungya farming so as to avoid the over

extraction of NTFPs. Government through the ministry of land and housing should promulgate laws and policies that would restrict indiscriminate sales of land. The poverty alleviation programme of government should focus more on how to boost non-farm income of farmers so as to reduce income inequality in the rural areas.

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